We're the backbone, not the backseat: Aboriginal insights into service provision for health and wellbeing

by

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Declaration

I certify that this thesis:

1. does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university;

2. to the best of my knowledge and belief, does not contain any material previously published or written by another person except where due reference is made in the text.

Rosalie Schultz

Abstract

Introduction

Aboriginal people, with Torres Strait Islanders, are the First Australians, but their unique position in Australia is often ignored or considered a barrier to development. Aboriginal people's worldviews and values are built on profound knowledge of the continent, and contribute to their distinction from most non-Indigenous Australians. In remote regions of Australia, Aboriginal people report high levels of wellbeing, but this is overlooked in recurring images of disadvantage in standard indicators of education, employment, health, economic status, and interactions with police and justice systems.

Generally, when people assess their wellbeing, they reflect on their values, priorities and personal aspirations. Subjective measures of wellbeing are valid indicators of social progress. They could be used to support development in Australia, and the livelihoods of all Australians, particularly Aboriginal people. If services improve wellbeing they may lead to improvements in health, learning, work performance and productivity.

This thesis works with the strengths of Aboriginal people in remote Australia, exploring wellbeing as a goal of policy and service provision.

Methods

The research was undertaken in collaboration with Aboriginal and non-Indigenous researchers and government research users, with extensive Aboriginal community consultation.

A framework of wellbeing was developed, comprising government priorities of education, employment and health, and Aboriginal people's priorities of culture, community and empowerment. Priorities interplayed, providing the project's title "Interplay," and this interplay framed our approach to the data.

Aboriginal communities in remote regions were invited to further explore the wellbeing framework. Four communities were selected, representing diverse geography, population, proportion Aboriginal, culture and language. Aboriginal community researchers from each community were employed to refine the methods and collect data in their home communities. Qualitative data were collected through focus groups and interviews, and quantitative data through a purpose-designed survey that measured aspects of the wellbeing priorities.

Results

Findings were broad-ranging, reflecting the breadth of Aboriginal aspirations for wellbeing.

- Culture underpins Aboriginal visions for education, which include transmission of Aboriginal knowledge and skills in art, history, caring for Country, and literacy in both English and Aboriginal languages. Re-imagining Aboriginal education offers opportunities both for overcoming Aboriginal disadvantage and for Australia to reach its commitments to sustainable development goals.
- Caring for Country programs contribute to conservation outcomes and enhance Aboriginal wellbeing through providing access to bush foods, physical activity, respite from community conflict and access to alcohol, and separation of individuals at risk of interpersonal violence.
- Culturally appropriate primary health care would respond to Aboriginal perspectives of health, which include the health and wellbeing of communities and Country.
- For health care services, improving mental health is key to improving wellbeing.
- Cultural practice is strongly linked to empowerment and Aboriginal language literacy, important factors in Aboriginal wellbeing.

Conclusions

Culture, empowerment and Aboriginal language literacy are key priorities for Aboriginal wellbeing, while caring for Country programs provide opportunities to strengthen each of these priorities and a focus for service-collaborations based on Aboriginal aspirations.

Approaching Aboriginal wellbeing from Aboriginal perspectives reveals opportunities for policy and service development to support interplaying benefits for people and the Country.

Thesis and researcher information

Thesis background

This thesis aims to describe and explore wellbeing for Aboriginal people in remote Australia in order to provide strategies to enhance wellbeing and related socio-economic and other outcomes. It assumes that wellbeing is a useful construct for Aboriginal people, based the increasing use of wellbeing as an indicator in global development, economic and health literature.

I have constructed the thesis around a series of publications of qualitative and quantitative analyses of data from the Interplay research, a project of the Cooperative Research Centre for Remote Economic Participation which explored wellbeing with Aboriginal people in remote Australia. Submitting publications provided reviewer feedback and stepping stones towards the completion of the thesis. By publishing research articles through my PhD candidature I have ensured timely access to important research findings. The publications are in a range of Australian and international journals addressing different audiences with different research findings. All requirements for standard thesis have been met.

The Interplay research was led by Professor Sheree Cairney, together with Tammy Abbott, of West Arrernte and Luritja heritage, central Australia, and Jessica Yamaguchi, Gangalidda and Waanyi woman from the Gulf of Carpentaria, Queensland. Further cultural integrity and rigour were provided by an advisory group with Indigenous representation nationwide (Cairney and Abbott 2014).

Thesis structure

The thesis title was provided by an Aboriginal focus group participant, discussing what is required for programs to be successful for Aboriginal people. I understand her statement to encapsulate the role of Aboriginal people as the supporting pillar for policies, programs and services to be effective. The backseat symbolises the situation where no matter how forcefully people speak, it is the driver who determines the trajectory of the vehicle. The conclusion of the thesis returns to the backbone and backseat imagery.

This opening summary describes the structure and my approach to the thesis.

Chapter 1 provides background on the research context, themes and approach, leading to a series of research propositions that were explored through the thesis using data from the Interplay project.

From the research propositions, Chapter 2 describes the research methodology, design and methods. Aspects of this comprehensive methods description are elaborated in the methods

sections of each of the publications that form the basis of subsequent chapters. To maintain the integrity of the peer review of the published works, they are presented in their entirety, so there is some repetition of methods and references where these were used in several articles.

Chapters 3 to 9 are the peer reviewed published articles describing findings of the Interplay project and form the core of the thesis. There is some repetition of the background and methods of the research to enable the articles to be complete in themselves. However, each article has a different focus, and separate findings important enough for publication. Chapter 3 is a narrative literature review, describing Aboriginal land management and its relationship to health (Schultz and Cairney 2017). Chapters 4 to 9 are research publications of core findings about wellbeing for Aboriginal people in remote Australia. Qualitative analyses explore wellbeing in relation to education (Chapter 4), employment (Chapter 5), and culture and health (Chapter 6). These are followed by quantitative analyses of relationships between employment in Ranger work, speaking Aboriginal languages and local biodiversity (Chapter 7), cultural practice and wellbeing (Chapter 8), physical and mental health and wellbeing (Chapter 9).

Chapter 10 comprises four published letters to journal editors related to improving services for Aboriginal people, written in response to four published research articles. Despite the involvement of Aboriginal people in research, publications often focus on the most negative results and outlooks. My responses show how commitment to Aboriginal wellbeing and building on strengths offer alternative opportunities and visions for health services.

Chapter 11 overviews the research findings and concludes with a list of recommendations for improvement in policy and services for Aboriginal people in remote Australia, for a person in my position.

This is followed by a series of appendices, which provide a glossary of technical, specific and Aboriginal English meanings used in the thesis; explanation of abbreviations; ethics approvals; the chapters as published articles, and a list of conference presentations in which the work was presented.

Terminology

Australia's First Nations peoples are Aboriginal and Torres Strait Islander peoples, collectively Indigenous Australians. Recognising each group individually respects their unique identity (NSW Health 2004). Since the Interplay research was conducted in Aboriginal communities and no Torres Strait Islander communities were involved, I aim to use the term "Aboriginal" when discussing my research. In order to protect the privacy of

communities I have not referred to specific language groups, even though these are the most appropriate names for writing about Aboriginal people (Cultural Diversity and Inclusivity Practice 2015).

Internationally the term “Indigenous” is more widely recognised than “Aboriginal” (United Nations Permanent Forum on Indigenous Issues 2007), and because the thesis comprises a series of publications in academic journals mostly based in countries other than Australia, I have often used the word “Indigenous”. In general, I have used the word “Indigenous” for brevity and simplicity in writing for international readers, and “Aboriginal” for Australian readers in recognition that this is the way Aboriginal Australians, who were the participants in the study, prefer to identify themselves. When discussing indigenous people from any part of the world, I have used the word “indigenous” without an initial capital throughout most of the thesis (NSW Health 2004). The exception is Chapter 7 which was written for the International Indigenous Policy Journal, which prioritises the needs and concerns of indigenous peoples themselves (International Indigenous Policy Journal 2019) so in Chapter 7, the term “Aboriginal” is used in recognition of the preference of Aboriginal Australians. Although different terminology is used in the thesis, terminology within each chapter is consistent and a statement at the beginning of each chapter describes the terminology used and the reason.

Words are the basis of communication, so I have included as Appendix 1 a list of words that were important for communicating my understanding of Aboriginal people and their wellbeing. Their importance lies in how their definitions represent understandings and values. Key examples are Country, remoteness and traditional.

Researcher background

I regard myself as white anti-racist as I oppose racism, and consciously seek to promote racial tolerance and reduce power differentials (Kowal, Franklin, and Paradies 2013). My presence in remote Australia with Aboriginal people reflects my background as a medical doctor, with specialist training in public health medicine and general practice. I recognize that I approach Aboriginal people from a position of privilege, and I am aware of the obligation of non-Aboriginal Australians to repair relationships with Aboriginal Australians (Rowse and Pertierra 2019). I am also an environmentalist, keenly aware of the impacts of human populations on Australia’s natural environment (Cresswell and Murphy 2016). These various aspects of my background impact my interpretation of the research.

My interest in Aboriginal Australians arose while I was living and working as a doctor in remote regions of the Northern Territory (NT). I am particularly interested in Aboriginal people’s knowledge and authority for their Country. When cared for, Aboriginal Country can

offer people meaning to their lives, strengthening of culture, spirituality, refreshment, recreation and beauty, as well as food and shelter. My understanding of the inherent value of healthy Country for itself and for humans made me want to undertake this research.

Chapter 1: Research Context

1.1 Chapter outline

Chapter 1 provides the context of the research that forms the basis of the thesis, which in essence is about the disadvantage of Aboriginal and Torres Strait Islander people.

Fundamentally, Aboriginal and Torres Strait Islander disadvantage is an effect of historic and on-going colonisation of Australia, and economic, political, social and cultural personal racism (Moreton-Robinson 2015). The research and thesis attempt to contribute in a small way to the decolonisation of Australia through their approach to research, knowledge and understanding, shared leadership with Aboriginal people and concern with alleviating disadvantage (Smith 2012). However, I acknowledge that the research undertaking itself is evidence of my own privilege.

Chapter 1 begins by responding to the question of the importance of research into the wellbeing of Aboriginal and Torres Strait Islander Australians (1.2). This is followed by an outline of how wellbeing is defined and measured (1.3). Wellbeing measurements from three key institutions are then outlined: the United Nations through the Sustainable Development Goals (1.4.1), the OECD through its goals of improving economic and social well-being (1.4.2), and the Australian Bureau of Statistics through the Measures of Australia's Progress and General Social Surveys (1.4.3).

Description of general population wellbeing indicators leads to discussion of how specific wellbeing indicators are required to represent wellbeing for indigenous peoples (1.5). Such indicators have been proposed by the United Nations Permanent Forum in Indigenous Issues (Section 1.5). Wellbeing for the Indigenous peoples of Australia, Aboriginal and Torres Strait Islander peoples is then discussed (1.5.1).

Discussion of wellbeing for indigenous people leads to general discussion of research involving Aboriginal and Torres Strait Islander peoples, which has been a part of colonisation and oppression (1.6).

The Interplay project, which researched wellbeing for Aboriginal and Torres Strait Islander people, is then introduced (1.7). The Research Context chapter concludes with propositions that are explored in the Interplay research into wellbeing for Aboriginal and Torres Strait Islander people in remote regions (1.8).

1.2 Why research wellbeing for Aboriginal and Torres Strait Islander people?

Aboriginal and Torres Strait Islander people are distinct within the Australian population, identifying themselves as Aboriginal and Torres Strait Islander people, while being very diverse through different cultures, geography and contact with non-Indigenous peoples (Hunt 2013). Being distinct from non-Aboriginal Australians leads to frequent comparisons by and with non-Aboriginal Australians, which often emphasise the disadvantages of Aboriginal and Torres Strait Islander people.

Negative comparisons underlie government policy seeking to reduce or overcome differences and this essentially means bringing Aboriginal and Torres Strait Islander to be more like other Australians, literally “closing the gap” (Walter 2016). However, such policy is often led by non-Indigenous people, who bring their own values and priorities to its development. Uniform national targets for Aboriginal and Torres Strait Islander populations are unable to represent either the diversity or their specific concerns, and many desire to maintain their distinct identity rather than overcome differences they may have with other Australians (Altman 2009).

Many Aboriginal and Torres Strait Islander Australians, particularly those in remote regions, report high levels of wellbeing (Australian Bureau of Statistics 2016a), despite measures of statistical disadvantage representing the popular perception of this population (Walter 2010). Building on people’s strengths, including wellbeing, cultural identity and knowledge, may be more acceptable as a policy goal than reducing culture-based differences (Adler and Seligman 2016).

1.3 Wellbeing characterisations: Life satisfaction, quality of life and wellbeing

Life satisfaction, quality of life and wellbeing are recognised globally as individual human aspirations, markers of societal progress and development, and goals to guide policy across sectors of society (Adler and Seligman 2016). These different terms are used interchangeably and may include one another with and without various other elements, reflecting research throughout the world and across disciplines (Carey 2013).

My preferred definition of wellbeing is “feeling and thinking that one’s life is desirable regardless of how others see it” (Diener 2009). This definition is unpretentious; it recognises that wellbeing includes both emotional and cognitive elements; and emphasises the personal assessment of wellbeing irrespective of others’ assessment. It also avoids possible confusion with health, overcoming the risk that health professionals face of overlooking the difference between wellbeing and health (Misselbrook 2014).

Policy attention to wellbeing reflects recognition that gross domestic product (GDP) and other commonly reported statistics are inadequate to describe what matters to people. Development of alternative measures of societal progress provides direction for policy-makers, even though narrowly defined economic markers remain the main focus of policy direction in most countries (OECD 2017).

Criticisms of wellbeing as a goal of human development include the focus of wellbeing on individuals, associated with its Eurocentric origin. The indigenous concept of *buen vivir* is a more holistic development goal, which recognizes that humans are social beings, living in communities with collective material, social and spiritual needs, and dependent on the natural environment (Burchardt 2019). *Buen vivir* has been recognized as a common goal for development for many indigenous populations including Aboriginal and Torres Strait Islander people (Bocksteal and Watene 2016). In practice, *buen vivir* and wellbeing defined by indigenous people for themselves appear to share much in common, and *buen vivir* comprises wellbeing together with sharing and nurturing the earth in community (Bocksteal and Watene 2016; Gudynas 2011).

Besides being a goal in its own right, wellbeing directly affects health. A multitude of different methods have demonstrated this in theoretical and real-world settings:

- longitudinal studies which assess wellbeing then measure health outcomes show less disease develops in people who begin the observation period with greater wellbeing, even after controlling for confounding factors;
- experimental and quasi-experimental studies in which people's wellbeing is impacted either by natural events or by manipulation show that health outcomes are better in groups with higher wellbeing;
- physiological studies in which changes in markers of wellbeing (such as stress hormones) occur spontaneously or are experimentally induced show changes in markers of health such as immune function (Diener and Chan 2011).

Although a wide range of measures of wellbeing is linked to health it is not clear which has the most direct effect. Nonetheless there is evidence that interventions directed at increasing wellbeing may contribute to improvements in a range of important health outcomes including cardiovascular and inflammatory markers and mortality in some groups, although evidence is limited (Diener and Chan 2011).

Besides improved measures of health, increased wellbeing is associated with improvements in a range of indicators linked to education and employment, including increased levels of creativity and problem solving, concentration, cooperation and collaboration (De Neve et al.

2013; Fredrickson and Joiner 2002). Wellbeing is in dynamic interrelationships with many individual and community indicators, which are increased by greater wellbeing, and themselves increase wellbeing. These include motivation, persistence, optimism, resilience, self-control, self-efficacy, trust, fulfilling relationships, workplace satisfaction and loyalty, career satisfaction, sociability and social capital (De Neve et al. 2013). These interactions have been shown across different cultures and levels of industrial development. Thus wellbeing serves as an appropriate marker and goal for progress both as an end in its own right and for potential associated benefits to other important indicators of individual and population progress.

1.4 Measuring wellbeing

Emerging thinking has focussed on how to measure wellbeing and questioned the meaningfulness and validity of applying the same measures for different populations. These questions reflect the influence of our diverse experiences, expectations and aspirations on individual wellbeing (Australian Bureau of Statistics 2014b). It is widely acknowledged that wellbeing is complex and best assessed in a set of measurements. Like measurements of the weather, multiple types of variables are required to quantify wellbeing, as no single dimension or quality can adequately describe either weather conditions or wellbeing (Michalos 2008). This leads to presentations of multiple different aspects of wellbeing which can be compared individually (Australian Bureau of Statistics 2014b). However, some aspects of wellbeing may be incomparable between different people because of the untranslatable concepts among different language cultures. For example, the Ngangikurungkurr people from the Daly River region experience wellbeing in *dadirri*, a deep, spiritual act of reflective and respectful listening (Catholic Education Office n.d.). This sense of wellbeing may be untranslatable to other peoples, and suggests a need for cross-cultural and multilingual approaches to wellbeing (Lomas 2016).

1.4.1 Objective measures of wellbeing

The notion of objective measures of wellbeing suggests that wellbeing exists and can be measured independently of the people experiencing it (Oxford English Dictionary 2019b). Commonly used measures of wellbeing that hold claims of objectivity include various aspects of health, education and economic status. For example, the Human Development Index is a composite wellbeing measure used by the United Nations Development Program, comprising life expectancy, knowledge measured by years of schooling and mean national income (United Nations Development Program 2018). Its strengths include the inclusion of long-term outcomes, and the use of fundamental dimensions of development that are considered essential at all levels of development. However, a single measure is inherently

limited in scope; in addition to masking disparities within the aggregate measures (Jahan 2002). Other dimensions of wellbeing that may be considered objective include aspects of exposure to crime, ecological and environmental measures, equality, transport and information technology. Choosing which aspects to measure and how to measure them reflects individual, societal and cultural values. Even these values may reflect preceding choices; for example how to measure crime, and whether an increase in measures of crime reflects increases in reporting, policing or criminal activity (Diener and Suh 1997). Thus even notionally objective measures of wellbeing reflect subjective decisions, based on culturally determined factors.

1.4.2 Subjective measures of wellbeing

People's experiences and perceptions are subjective aspects of wellbeing and these can be measured only through specific inquiry. Current satisfaction with life is recognised as a central aspect and marker of wellbeing (OECD 2017). Life satisfaction is described as cognitive wellbeing as it reflects someone's personal evaluation of either all aspects or specific domains of their life (Luhmann et al. 2012). Individual life satisfaction depends on personal perceptions, goals and values, and can be conceptualised as a ladder of levels of satisfaction to generate a numerical measurement (Kilpatrick and Cantril 1965). Affective wellbeing, which is the frequency and intensity of positive and negative emotions and moods, is a complementary aspect of subjective wellbeing (Luhmann et al. 2012). Affective wellbeing fluctuates more over time than cognitive wellbeing, but when measured at a population level provides a robust indicator of different aspects of wellbeing from the cognitive elements measured in life satisfaction (Tov and Au 2013; Luhmann et al. 2012). However, life satisfaction, as a measure of cognitive wellbeing, is used in Australia as a single marker to quantify population wellbeing (Australian Bureau of Statistics 2015).

Research into basic theoretical and conceptual issues in measuring wellbeing is made more challenging by culture and communication issues in developing questions and collecting data. Many measures of wellbeing are strongly associated with economic indicators, and it is not clear to what extent economic conditions determine or are determined by wellbeing in different settings. There are striking counter-examples to assumptions about relationships between economic conditions and aspects of wellbeing. Japanese people report lower levels of wellbeing than would be anticipated from Japan's economic indicators (Tov and Au 2013). South Koreans report no improvement in their quality of life despite many years of rapid economic growth and democratisation (Shin 2009). Deteriorating environmental and other measures of future wellbeing in Korea may be linked to the stagnation of wellbeing indicators (OECD 2017). These examples highlight the complexity and subjectivity of wellbeing and

suggest that local populations and communities should be involved in policy development, implementation and evaluation in order to ensure that policies contribute to people's wellbeing.

1.4.3 United Nations measures of wellbeing: Sustainable Development Goals as Wellbeing Indicators

Wellbeing of all humanity is a goal for the United Nations, and the United Nations Agenda 2030 is a vision of international development through achieving economic, social and environmental objectives, through peaceful and inclusive societies. The Agenda is now a commitment of 193 countries, and includes 17 Sustainable Development Goals (SDGs), which assess national progress through 169 targets (United Nations 2015; Sachs et al. 2017). Wellbeing is the ultimate outcome of development and is a specific target in the health goal, which is to *Ensure healthy lives and promote wellbeing for all at all ages*. The SDGs recognise that every nation is undergoing development and that all people's lives are linked since we share the one earth.

The SDGs supersede the Millennium Development Goals 2000-2015 which focussed on aspects of extreme poverty including hunger, lack of formal education, child mortality and communicable diseases. These are development issues linked to low national income, and assumed by rich countries to be issues for poorer countries, rather than their own development (Kroll 2015). The SDG tagline "Leave no one behind" draws attention to the need for equity in international development, and every nation has committed to sustainable and equitable global development. Indigenous groups are recognised in the SDGs as being at risk of disparities, particularly in educational opportunities, so there is a need for dedicated education to support equitable social participation. The SDGs on food security highlight the needs of indigenous peoples, while the importance of traditional knowledge and indigenous peoples' access to land for food are also identified (United Nations 2015).

The SDGs were developed over two years of extensive global consultation, focussing on civil society and marginalised groups (United Nations 2015). There is widespread support for the SDGs which have been agreed to by national governments (Sachs et al. 2017), civil society (Nunes, Lee, and O'Riordan 2016) and the global business community (PWC 2016). Foreign Minister Julie Bishop committed Australia to the SDGs in 2015 ((Australian Government: Department of Environment and Energy 2017). Criticism of the SDGs relates to the risk of failing to adequately recognise marginalised populations in data collection and reporting. Despite some recognition of the importance of equity in the process and the SDGs themselves, groups of people remain at risk of missing out on global development, for example where ethnicity and geography both marginalise people (Winkler and Satterthwaite

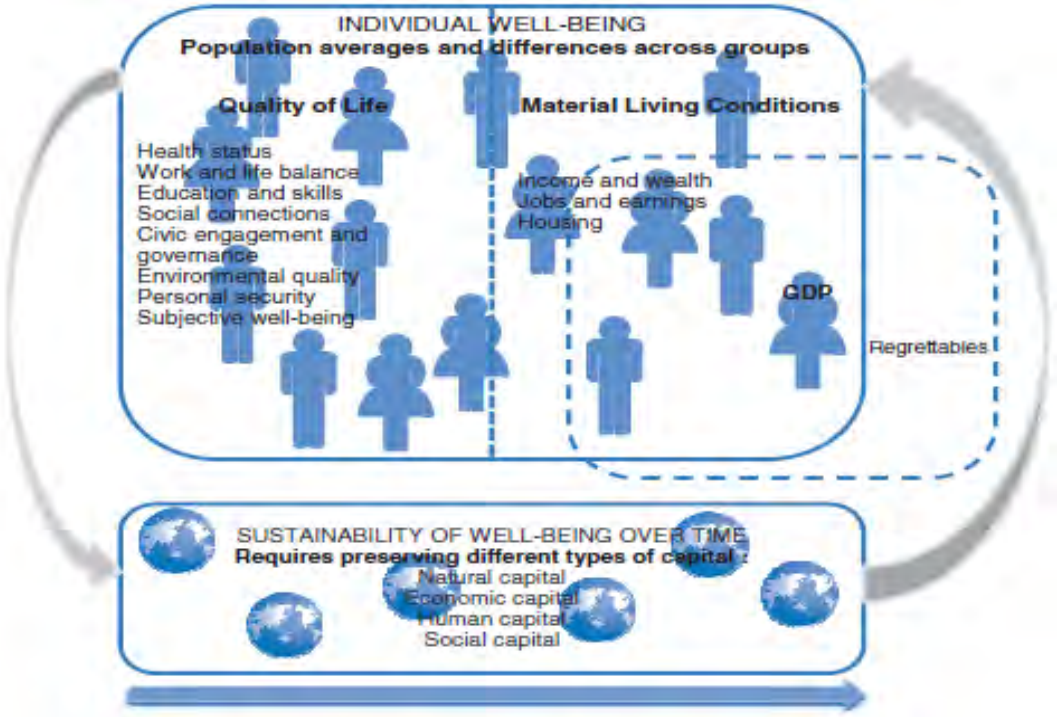
2017). Australia has recognised this risk in its response to the SDGs, and paid particular attention to both the contribution of Aboriginal and Torres Strait Islander Australians to achieving the SDGs, and their vulnerability to exclusion (Department of Foreign Affairs and Trade 2018). Nonetheless Australia's poor and declining performance in achieving the SDGs reflects a lack of government commitment, the view that development is an issue of foreign affairs rather than Australia's national interest, and immutable commitment to growth in GDP rather than wellbeing as a goal of national development (Brolan et al. 2019).

1.4.4 OECD Better Life Initiative

Improving economic and social wellbeing of people around the world is the mission of the Organisation for Economic Cooperation and Development (OECD), established in 1961 by the countries of Europe plus USA (OECD 2018). More countries have joined the OECD since then, including Australia in 1970, and measuring wellbeing and progress remains an OECD strategic priority (OECD 2018).

The OECD Better Life Initiative aims to promote policy development focussed on wellbeing. Through its on-going research, OECD has defined 11 dimensions of current wellbeing, in addition to resources that are required for wellbeing to be sustained into the future, as shown in Figure 1.1 (OECD 2011). OECD has published a statistical report every two years since 2005 documenting a wide range of well-being indicators, showing their change over time, and comparisons between different population groups and countries (OECD 2017). OECD measures of subjective wellbeing include life satisfaction (OECD 2017), which was selected by the Interplay project for its cross-cultural validity and ease of measurement.

Figure 1.1: OECD How's Life? framework for measuring wellbeing and progress



1.4.5 Australian Bureau of Statistics Wellbeing Projects: Measuring Australia's Progress, and General Social Survey

The Australian Bureau of Statistics (ABS) undertook broad national consultation of whether life was getting better in Australia in its project Measuring Australia's Progress. The Bureau ensured that Aboriginal people were heard through expert panels, and as part of the overall consultation (Australian Bureau of Statistics 2014b, 2012).

According to the ABS, Australians defined progress through four perspectives: society, economy, environment and governance. Wellbeing was seen through each perspective, although not mentioned in any of the headline or progress indicators. Over the 11 years of the project from 2002 to 2013, Australia's progress was mixed. There were improvements in some indicators, notably in health, education and the economy, and regress in others, namely sustainable environment and resilient economy. Other indicators did not change over the period, including relationships, trust and safety; while there was insufficient data to determine whether change had occurred in measures of fairness, effective governance and informed debate (5).

Measures of Australia's Progress was replaced in 2014 by the General Social Survey, which included a similarly diverse range of indicators. These include overall life satisfaction rated on a scale from 0 to 10, in addition to survey questions on health, education, employment

and voluntary work, income, assets and liabilities, financial stress and resilience, housing, transport, social capital, family and community, and crime (Australian Bureau of Statistics 2015). Both of these projects utilised a dashboard presentation approach, where diverse indicators are provided for the reader to assess separately, rather than an accounting approach which combines different indicators through a common unit, or constructing a summary measure which would require comparison of diverse elements (Australian Bureau of Statistics 2014b).

Based on the General Social Survey conducted in 2014, Australians' mean overall life satisfaction score was 7.6, ahead of the OECD average of 6.6. Higher life satisfaction was recorded for those aged 75 and over (8.1), and 15 to 24 years (7.7); and for females (7.7) than males (7.6). Lower life satisfaction was reported by people who were unemployed (6.8); had a mental health condition (6.6) or long-term health condition (7.5) or disability (7.2). Education level was not associated with life satisfaction (Australian Bureau of Statistics 2015).

1.4.6 National Aboriginal and Torres Strait Islander Social Survey

Comparative information for Aboriginal and Torres Strait Islander people is from the fourth National Aboriginal and Torres Strait Islander Social Survey (NATSISS), conducted in 2014 and 2015. NATSISS is a six-yearly survey of demographic, social, environmental and economic characteristics of Aboriginal and Torres Strait Islander Australians living in private dwellings across Australia. Over 11000 people were interviewed by representatives of the Australian Bureau of Statistics, selected through random sampling of households within a sample of communities, designed to produce reliable estimates at national and state levels (Australian Bureau of Statistics 2016a).

NATSISS showed that overall life satisfaction for Aboriginal and Torres Strait Islander Australians was 7.3. Life satisfaction was 7.6 for people in remote regions; 7.2 for those in non-remote regions. Lower satisfaction was reported by those who were unemployed, had not completed year 12, had a chronic health condition or disability, had run out of money in the past 12 months, and who had experienced violence in the last 12 months (Australian Bureau of Statistics 2016a).

1.5 Wellbeing Indicators developed for Indigenous Peoples

1.5.1 Global Indigenous Wellbeing indicators

Globally there are about 370 indigenous peoples across 70 countries, identified by a range of different terms, with "indigenous" (without a capital) accepted as a generic term.

Indigenous peoples identify themselves through some of these characteristics (United Nations Permanent Forum on Indigenous Issues 2007):

- Self-identification as indigenous peoples at the individual level and accepted by the community as their member
- Historical continuity with pre-colonial societies
- Strong link to territories and surrounding natural resources
- Distinct social, economic or political systems
- Distinct language, culture and beliefs
- Non-dominant groups of society
- Resolve to maintain and reproduce their ancestral environments and systems as distinctive peoples and communities.

Indigenous peoples are among the marginalised and disadvantaged people in many nations, so it is important that national level data are categorised by indigenous status to show the situation of indigenous peoples. This can enable policy makers and indigenous peoples to identify discrimination, inequality and exclusion and enable more accurate assessments of the effectiveness of programs for indigenous peoples (Indigenous Peoples' International Centre for Policy Research and Education 2008).

The identification of people as indigenous makes it clear that they are distinct from others. Here we are interested in indigenous people's distinct priorities for wellbeing, and the need for specific indicators to monitor the wellbeing of indigenous peoples. These particularly recognise the importance of land, natural resources, subsistence and sustainability to indigenous peoples (Indigenous Peoples' International Centre for Policy Research and Education 2008). The United Nations Permanent Forum on Indigenous Issues conducted workshops with indigenous peoples worldwide in 2006 and 2008 to identify themes for measuring wellbeing, through which different indigenous peoples could develop appropriate indicators of their own wellbeing. Themes which emerged were:

- Material wellbeing based on indigenous people's definitions
- Health, including
    - participation in health service policy making and delivery
    - status of traditional medicinal practices
    - physical and mental health indicators
    - ecosystem and animal health

    - community health
    - violence and crime
- Culturally appropriate education, including
    - cultural knowledge and education systems
    - indigenous education authorities
    - indigenous language use
- Respect for identity and non-discrimination, including policies for renewal and recovery of indigenous identity and culture
- Control and self determination
- Full, informed and effective participation, including free, prior and informed consent, control over land, seas and natural resources, political access and participation, control over social structures and place names, respect for right to cultural change, innovations and practices
- Security of rights to territories, lands and natural resources
- Extent of external threats including environmental degradation, land alienation, conflict, pollution
- Integrity of indigenous cultural heritage, including language, transmission of indigenous cultural heritage, protection of traditional production and subsistence
- Access to infrastructure and basic services
- Demographic patterns of indigenous peoples (Indigenous Peoples' International Centre for Policy Research and Education 2008)

These global indicators of indigenous wellbeing have a role in guiding Australian Aboriginal and Torres Strait Islander people in developing appropriate wellbeing indicators (Taylor 2008).

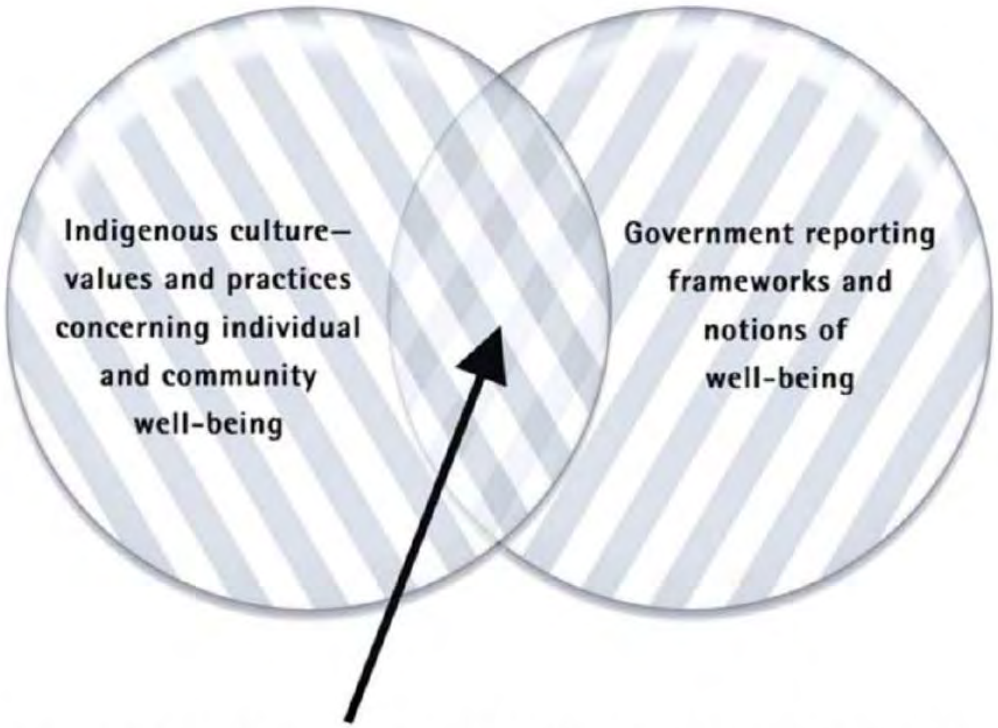
1.5.2 Wellbeing Indicators for Aboriginal and Torres Strait Islander Peoples

In Australia, Aboriginal and Torres Strait Islander people are characterised by great and increasing diversity, with over 250 different language groups in different pre-contact livelihoods, each with different interactions with colonising forces (National Aboriginal Health Strategy Working Group 1989). Since identity and diversity appear so important for Aboriginal and Torres Strait Islander Australians, it has been suggested that the

development of meaningful measurement of wellbeing will entail communities developing their own indicators (Jordan, Bulloch, and Buchanan 2010).

Taylor has highlighted both common and separate wellbeing notions of Indigenous peoples and government, shown in Figure 1.2 (Taylor 2008: 6). Collaborative approaches are needed to develop wellbeing indicators where people's own experiences intersect with government frameworks, while many aspects of people's wellbeing are outside the scope of government frameworks.

Figure 1.2: The recognition space for indicators of Indigenous well-being



Translation in the recognition space: from 'culture' and 'well-being' to appropriate 'social indicators'

For Aboriginal and Torres Strait Islander Australians wellbeing is often discussed and linked with health. The National Aboriginal Health Strategy Working Party provided the first written definitions of health for Aboriginal people in 1989, and equated health with wellbeing. Health was described as:

> "Not just the physical well-being of the individual but the social, emotional, and cultural well-being of the whole community. This is a whole of life view and it also includes the cyclical concept of life-death-life." (National Aboriginal Health Strategy Working Group 1989)

This definition combines health and wellbeing as inseparable or identical. Over the 30 years since it was written the definition has been repeatedly used in discussions of Aboriginal health, including the most recent Aboriginal health plan 2013-2023 (Australian Government 2013).

The melding of health and wellbeing in the literature around Aboriginal health is examined in detail by Carey (2013). Carey begins by highlighting that the National Aboriginal Health Strategy contains both the definition of health as wellbeing, and a definition of health that does not name wellbeing, but highlights control:

> "Health" to Aboriginal peoples is a matter of determining all aspects of their life, including control over their physical environment, of dignity, of community self-esteem, and of justice….(National Aboriginal Health Strategy Working Group 1989) page iii.

Carey emphasises the importance of control to wellbeing for Aboriginal people, and the links between control, wellbeing and health. He argues that:

> "a measure of health from an Indigenous perspective might address the extent to which they are able to determine all aspects of their life rather than, for example, the extent to which they are educated, housed, and employed."

Thus Carey suggests that health, measured as control may be more important than education and employment for wellbeing for Aboriginal and Torres Strait Islander Australians, despite education and employment being among the most widely used measures of wellbeing in Australia and internationally (OECD 2017; Australian Bureau of Statistics 2014b).

Carey suggests that the term "social and emotional wellbeing" is superfluous, as wellbeing is inherently social and emotional (Carey 2013). However, this is a limited non-Indigenous and human-centred view of wellbeing. Other aspects of wellbeing for Aboriginal people extends beyond humans to the land that sustains them:

> "Land is central to wellbeing. Crucially, it must be understood that while the harmony of these interrelations is disrupted, Aboriginal and Torres Strait Islander ill health will persist (Purdie, Dudgeon, and Walker 2014)."

Aboriginal and Torres Strait Islander people may identify their bodies as being part of the land because people and the Country were created together:

> "Because the ancestral spirits gave birth to humans, they share a common life force, which emphasizes the unity of humans with the earth rather than their separation. The ontological relationship occurs through the intersubstantiation of ancestral

> beings, humans, and land; it is a form of embodiment. As the descendants and reincarnation of these ancestral beings, Indigenous people derive their sense of belonging to country through and from them." (Moreton-Robinson 2015)

The immediate juxtaposition of mental, physical, cultural and spiritual health with land and wellbeing suggests that English language translations of wellbeing, with or without social and emotional elements, understate the inherent connections experienced between these elements by Aboriginal and Torres Strait Islander people and their land (Dudgeon et al. 2014). Social and emotional wellbeing represent the internal human aspects, while community and land are critical aspects of Aboriginal and Torres Strait Islander wellbeing.

Carey highlights control as a core element of wellbeing for Aboriginal and Torres Strait Islander Australians, while Taylor has considered specific indicators of wellbeing, based on work of the United Nations Permanent Forum on Indigenous Issues (UNPFII). The UNPII has highlighted how indigenous peoples may enjoy high levels of satisfaction with their lives even while they have low levels of development on global indicators including health, education and wealth. The markers of wellbeing that other societies use to measure progress may decrease the wellbeing of Indigenous peoples, for whom "well-being is to be found in a way of life that minimizes the need for the sorts of material goods and services included in calculations of GDP per capita" (Taylor 2008).

In summary the literature on wellbeing for Aboriginal and Torres Strait Islander Australians highlights commonalities with indigenous peoples globally, such as the interplay of wellbeing with health, control and connection to the land. The diversity of Aboriginal and Torres Strait Islander peoples suggests that communities should be involved in the development of their own wellbeing indicators. Addressing wellbeing as a focus deliberately builds on people's strengths and needs, drawing attention away from stereotypical images of Aboriginal and Torres Strait Islander peoples that are based on deficits, differences and gaps.

1.6 Research involving Aboriginal and Torres Strait Islander people

1.6.1 Research as knowledge creation

Research is the creation of new knowledge, or new understanding of existing knowledge (Western Sydney University), but different people and cultures have different understandings of the nature of knowledge (Smith 2012). Knowledge as "justified true belief" is a circular argument since both truth and its justification are open to interpretation, and significantly influenced by cultural frameworks (Bolisani and Bratianu 2018). Thus what constitutes useful knowledge and the research needed to create that knowledge reflects beliefs of the researchers, and therefore their cultural and social background (Bolisani and Bratianu 2018).

Since the beginning of colonisation in Australia, research based on western scientific frameworks has been conducted on Aboriginal and Torres Strait Islander people. More recently the practice has moved towards putting forward proposals to Aboriginal and Torres Strait Islander communities advising them of its usefulness (Australian Institute of Aboriginal and Torres Strait Islander Studies and Lowitja Institute 2017). Such research has been integral to the colonisation of Australia and its people, which has undermined aspects of Aboriginal and Torres Strait Islander people's wellbeing (National Aboriginal Health Strategy Working Group 1989). Thus interrogation of research as an institution is required to ensure that my own research contributes to my aim of enhancing the wellbeing of Aboriginal people in remote regions, rather than the body of research that is driven solely by the interests and needs of non-Aboriginal people.

The establishment in 2010 of the Lowitja Institute of Indigenous Health and Wellbeing reflected growing realisation about the relationships between researchers and Aboriginal and Torres Strait Islander Australians. Over past decades, researchers driven by concern about Aboriginal and Torres Strait Islander health have conducted extensive research, with deliberate focus on outcomes where differences from non-Indigenous Australians are greatest. While interventions that can reduce disease burden have emerged, this research philosophy ensures that Aboriginal and Torres Strait Islanders continue to be perceived as sick and in need of help (Australian Institute of Aboriginal and Torres Strait Islander Studies and Lowitja Institute 2017). As a result, policies and programs implemented to reduce the burden of disease are often seen to be unsuccessful (Howse and Dwyer 2016). Key issues identified to explain the on-going health disparity despite research commitment were that most research was descriptive of the status of health but did not lead to any changes in practice, and that research often served the priorities of researchers and non-Indigenous people rather than meeting the needs of Aboriginal and Torres Strait Islander people (Australian Institute of Aboriginal and Torres Strait Islander Studies and Lowitja Institute 2017).

1.6.2 Research as colonisation

More fundamental concerns about research into Aboriginal and Torres Strait Islander health and other aspects of indigenous people are the subject of Linda Tuhiwai Smith's Decolonizing Methodologies: Research and Indigenous Peoples (Smith 2012). Smith addresses the ways in which research has supported and continues to support colonisation, the appropriation of land and displacement of people, which continues as an ongoing process with negative impacts on Aboriginal and Torres Strait Islander people and their health (Axelsson, Kukutai, and Kippen 2016)

Research requires observing, describing and interpreting, and this process depends in the perspectives of the researcher, including what we choose to observe and how we undertake and interpret the research. As researchers we hold our own values and conceptualisations of time, space, and knowledge, and these determine how we observe and what we regard as legitimate knowledge. By defining what is considered legitimate knowledge, research has undermined other forms of knowledge. The Maori scholar Smith argues for the need for indigenous peoples to bring their perspectives to research. Her work aims to support indigenous researchers who must live in two worlds, the research world and their own community world. Smith challenges me, a non-indigenous researcher, to critically analyse my knowledge and understanding of Aboriginal and Torres Strait Islander people's health and research (Smith 2012).

1.6.3 Research focus

Much research that claims to address Aboriginal and Torres Strait Islander people's health continues to focus on disease, despite reiterating and supporting the National Aboriginal Health Strategy definition of health: "Not just the physical well-being of the individual but the social, emotional, and cultural well-being of the whole community." (National Aboriginal Health Strategy Working Group 1989). For example, the Menzies School of Health Research website highlights these achievements: improving the health of Aboriginal people through discoveries about ear disease, "deadly tropical bacteria", substance abuse, heart and kidney disease and diabetes. The 2005 discovery that two years abstinence from petrol sniffing results in substantial brain function improvement is an exception to the focus on disease (Menzies School of Health Research). Thus health research conducted with Aboriginal participants continues to seek medical responses to the diseases they face, rather than work to understand and improve health as a positive quality (Mbuzi, Fulbrook, and Jessup 2018).

Examples of contemporary research based on non-Aboriginal ideals of providing knowledge about Aboriginal and Torres Strait Islander people with a focus on disease are common. The high prevalence of disease risk factors detected in Aboriginal and Torres Strait Islander populations motivates researchers to identify best-practice care in screening, diagnosing and managing of risk factors, driven by biomedical paradigm of risk and intervention (Calabria et al. 2018). Further research into failures in optimum health care service delivery aims to provide opportunities and strategies to support organisations to address barriers to delivery of protocol-driven care (Bailie et al. 2017). These approaches address what health care researchers and providers believe that Aboriginal and Torres Strait Islander people need. Underlying assumptions that technical excellence in service provision can improve clinical health outcomes, and that these interventions and associated health outcomes are desired

by Aboriginal and Torres Strait Islander people are unstated. Recent efforts to move the focus of Aboriginal and Torres Strait Islander disease burden from people to health care providers obscure the impacts of colonisation and overlooks the social determinants of health. For Aboriginal and Torres Strait Islander people in NT social disadvantage is the main contributor to the difference in life expectancy from non-Aboriginal people, contributing 47% of the difference, more than smoking (18%), obesity (8%), alcohol (4%) and all these combined (Zhao et al. 2013). Furthermore, the focus on disease risk and medical intervention highlights negative stereotypes and understandings of Aboriginal and Torres Strait Islander people. This draws attention away from community-driven solutions based on the strengths, capabilities and rights of Aboriginal and Torres Strait Islander people (Fogarty, Bulloch, et al. 2018).

Both health literature and media draw attention to the high burden of disease of Aboriginal and Torres Strait Islander people, reflecting the publications of researchers and the concerns of health care services and governments responsible for providing services. However, descriptions of Aboriginal and Torres Strait Islander people that focus on ill-health and disease, particularly in comparison with other Australians, contribute to the overall perception of Aboriginal and Torres Strait Islander people. This “deficit discourse” describes people through their deficiencies and what they lack, which suggests individual and community failure and dysfunction, and can lead to a stereotypical view of Aboriginal and Torres Strait Islander people as sick and in need of care and attention. These depictions can contribute to the people’s own understandings of themselves, so Aboriginal and Torres Strait Islander people accept themselves as inadequate. For the wider community, focus on disease burden of Aboriginal and Torres Strait Islander people can reinforce perceptions of a homogenous community which would benefit from becoming more like non-Indigenous people (Fogarty, Bulloch, et al. 2018). However, for many Aboriginal and Torres Strait Islander people deficit discourse is not how they see themselves because their identities are based on pride in their Aboriginality, community strength, determination and survival (Bond 2005).

Bond, an Aboriginal Health Worker described working in health care services whose measure of success was their ability to bring the health of Aboriginal people to the same level as non-Aboriginal people. She described how Aboriginal and Torres Strait Islander People are depicted by health care providers as samples of health problems that could be remediated if they would only eat better and exercise more, behaving more like non-Aboriginal people (Bond 2005). Alternative approaches to providing health care for Aboriginal and Torres Strait Islander people based on building strengths, resilience and protective factors are outside the scope of current health care services (Tilton and Thomas

2011). Similarly Aboriginal and Torres Strait Islander knowledge and healing expertise is under-recognised by non-Indigenous health care providers (Panzironi 2013; Oliver 2013).

Approaching research and understanding of Aboriginal and Torres Strait Islander health and wellbeing through systems of Aboriginal and Torres Strait Islander knowledge may drive a different research paradigm, and this appears necessary to drive the transformative change needed in Aboriginal health care, health and wellbeing generally (Houston 2016). However, as a non-Aboriginal researcher I recognise my position as an on-looker and advocate for Aboriginal and Torres Strait Islander people, cautious about the potential for appropriation of Aboriginal and Torres Strait Islander knowledge that occurs regularly and unintentionally (McLean et al. 2019) .

1.6.4 Knowledge ownership

Much Aboriginal and Torres Strait Islander knowledge is owned collectively by groups of people rather than individuals. Owners of knowledge have rights and authority to hold and share knowledge in the best interest of their community. However collective and community ownership of intellectual property has largely been ignored in international debates about intellectual property rights. In part this may reflects distinctive qualities of indigenous knowledge, which has been accumulated through generations over centuries, and cannot necessarily be attributed to identified individuals (Johnston and Heathcote 2014).

Sharing knowledge creates relationships which are needed to maintain the authority of the owner of knowledge (Gorman and Toombs 2009). Thus non-Aboriginal researchers must be led by Aboriginal researchers and pay close attention to consent, ownership of knowledge and use of research findings. Organisations with Aboriginal and Torres Strait Islander governance and management provide opportunities to ensure appropriate ownership of the research processes and findings. Leadership of research by Aboriginal and Torres Strait Islander researchers can ensure integrity and adherence to cultural standards and norms. Aboriginal and Torres Strait Islander people’s contributions to analysis, interpretation and presentation of the findings ensure that research responds to the needs of Aboriginal and Torres Strait Islander communities (Cairney et al. 2017).

1.7 Interplay research project

The Interplay research was an integrative project of the Cooperative Research Centre for Remote Economic Participation (CRC-REP), discussed in detail in Section 2.3. It was established to explore wellbeing as an outcome of economic participation for Aboriginal and Torres Strait Islander people. The research of wellbeing for Aboriginal and Torres Strait Islander people transcends economic participation as an end in itself. The need for such an

approach is highlighted by the low levels of economic participation of Aboriginal and Torres Strait Islander adults in remote regions, which is unchanged over many years at approximately 60%, with employment rates under 50% despite this being a key policy goal determined for Aboriginal and Torres Strait Islander people (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018; Australian Bureau of Statistics 2016a). This suggests a mismatch between people's own goals and priorities for wellbeing with governments' employment goal.

Working through deliberately sharing understanding and knowledge between Aboriginal and Torres Strait Islander and non-Indigenous Australians, the Interplay project aimed to meet the needs of communities, researchers and governments.

1.8 Chapter summary

This chapter has described wellbeing as a global aspiration, policy goal and marker of the distinctive needs of different peoples, making it appropriate as a measure of progress for indigenous peoples. Measures of wellbeing include life satisfaction, which is uniquely able to provide a single marker to quantify wellbeing among diverse groups of people, and is widely used in Australia and internationally.

Better understanding of wellbeing for Aboriginal and Torres Strait Islander people provides an opportunity to focus research and policy efforts on more relevant human development goals that better meet the needs of Aboriginal and Torres Strait Islander people. Re-focussing health research and practice away from reductionist approaches to service provision to a holistic model based on wellbeing provides an opportunity to recognise knowledge of Aboriginal people and provide for individual and community wellbeing.

1.8.1 Research propositions

Two research propositions have arisen from this discussion of wellbeing for Aboriginal and Torres Strait Islander people. These are propositions that express my opinion which I have set out to demonstrate (Oxford English Dictionary 2019c), rather than hypotheses which are suppositions as starting points for investigation without assumptions as to their truth (Oxford English Dictionary 2019a). The pair of propositions illustrate the bidirectional relationships between the components and priorities for wellbeing, and the subjective experience of wellbeing and provide a common focus for the articles I have written for this thesis. They also reflect my background as a health professional aware that social determinants and disadvantage are the overwhelming source of health disadvantage for Aboriginal and Torres Strait Islander people.

1. Education, employment and health outcomes for Aboriginal and Torres Strait Islander people could be improved through understanding and addressing wellbeing. This suggests that wellbeing, in its narrow definition as life satisfaction, contributes to outcomes of importance to both Aboriginal and Torres Strait Islander people and governments.
2. An holistic approach to service provision for Aboriginal people in remote regions will optimise wellbeing. This proposition recognises that wellbeing comprises both government priorities of education, employment and health, and community priorities of culture and empowerment, including important subdomains of Country and languages, which impact on the delivery of all services. Addressing these comprehensively will contribute to wellbeing.

The approach to the propositions is described in Chapter 2.

Chapter 2: Research concept and ownership, methodology and methods

2.1 Chapter outline

This chapter moves from the background, literature review and research propositions towards the research publications, and discussion of how these address the propositions. First it describes the context of remote Australia, then the establishment and brief life of the Cooperative Research Centre for Remote Economic Participation which hosted the Interplay project. Conceptualisation and background to the Interplay project are then discussed, followed by details of the methodology and methods of the research. These details provide a comprehensive background to the concise and specific methods sections of research publications that make up subsequent chapters. The Chapter concludes by showing how the Interplay research addresses the propositions.

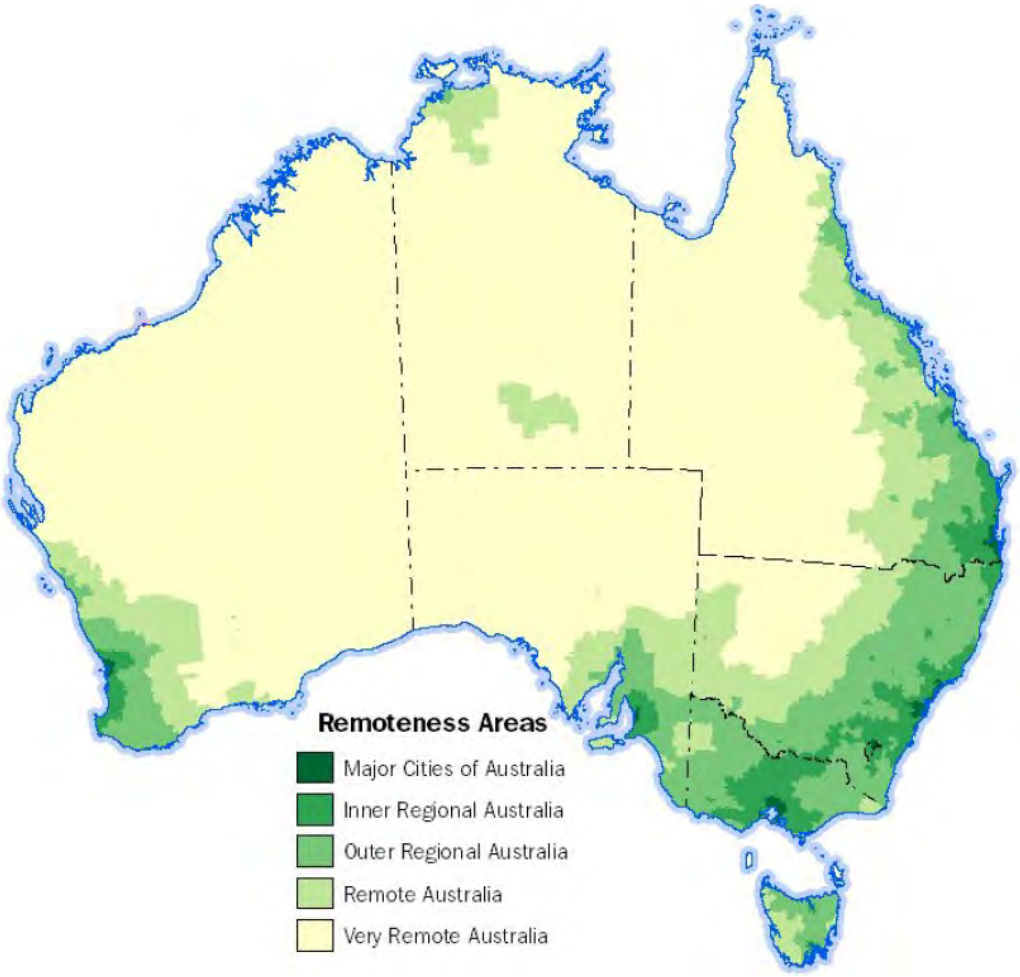
2.2 Remote Australia

Australia's Statistical Geography Standard classifies Australia into five degrees of remoteness based on geographical distance from government service centres. Remote and very remote regions cover 85% of the continent, shown in the map in Figure 2.1. The total remote-dwelling population is approximately 495 000, 1.5% of all Australians. Aboriginal and Torres Strait Islander people make up 30.0% of the remote-dwelling population or approximately 150 000 people. These people constitute 18.6% of the Aboriginal and Torres Strait Islander population of 798 000 (Australian Bureau of Statistics 2018b).

With so few Australians living in remote regions, to most Australians, particularly non-Indigenous people, the idea of remote Australia represents a vast unknown frontier. Other common perceptions about remote Australia are that it drains resources, and is an economic wasteland and market failure. Contrasting perceptions are of remote Australia as a quarry providing minerals for national wealth, and host of an historic but declining pastoral industry (Walker, Porter, and Marsh 2012). Remoteness has a range of meanings, and is a symbol of both geographical, emotional and responsive distance from large population centres where policy decisions are made (Australian Bureau of Statistics 2014a; Sider 2014).

Many Aboriginal and Torres Strait Islander people recognise no meaning in the concept of remoteness (Birch 2016). However, they make up a significant proportion of people in remote Australia, so their cultures and practices can be more influential in development in there (Walker, Porter, and Marsh 2012).

Figure 2.1: Map of the 2016 Remoteness Areas for Australia (Australian Bureau of Statistics 2016c)



Remoteness is associated with poorer statistics in health, education and employment, for both Aboriginal and Torres Strait Islander and other Australians, despite greater expenditure per person. Correlations between education, employment and health data are less clear in remote than in urban centres, where most research is undertaken (Walker, Porter, and Marsh 2012).

2.3 Cooperative Research Centre for Remote Economic Participation (CRC-REP)

The Cooperative Research Centre for Remote Economic Participation (CRC-REP) was established in 2010 in response to perceived need to understand and increase economic participation in remote areas, particularly for local Aboriginal and Torres Strait Islander peoples (Ninti One: CRC Remote Economic Participation 2017). It was part of Australia's

Cooperative Research Centres (CRC) program which was established in the early 1990s to facilitate research collaborations between Commonwealth, State and Territory governments, universities and industries. By joining industries with research expertise, CRCs contributed to economic returns estimated at over three times government investment. Agriculture, manufacturing, mining and service industries have all been involved in CRCs, but most CRCs function in the service sector, and many of these were funded for public good rather than for industry benefits (Allen Consulting Group 2012).

Public good CRCs were established in sectors where commercialisation and profits were unlikely, such as resource sustainability, maintenance of biodiversity, and environmental health (Allen Consulting Group 2012). Evaluations of the CRC program focussed on measures of economic benefits, and this contributed to the 2014 decision that government funding for public good CRCs should end (Cooperative Research Centre for Remote Economic Participation 2017). Public good CRCs that saw government funding cease included the Aboriginal and Torres Strait Islander Health and Wellbeing CRC and the CRC-REP. However, both of these have been able to continue research programs through grants, philanthropic and commercial funding (Australian Institute of Aboriginal and Torres Strait Islander Studies and Lowitja Institute 2017; Cooperative Research Centre for Remote Economic Participation 2017).

Leadership of the CRC-REP recognised the importance of Aboriginal and Torres Strait Islander people in remote regions and the need for Aboriginal and Torres Strait Islander cultural and social practices to guide development (Nguyen and Cairney 2013). The CRC-REP aimed to provide a culturally safe research environment for Aboriginal and Torres Strait Islander and non-Aboriginal researchers to share knowledge and ways of knowing, facilitating two-way learning and collaborative research. Ninti One was established as the non-profit corporate arm of the CRC-REP, and continues to provide research and community development in remote Australia, after the cessation of government funding for the CRC-REP (Cooperative Research Centre for Remote Economic Participation 2017).

The CRC-REP's Investing in People Program aimed to improve the economic livelihoods of people in remote areas through development that recognised the distinctive livelihood aspirations of both Aboriginal and Torres Strait Islander and non-Indigenous people in remote regions. As part of the Investing in People Program, the Interplay Research Project focussed on wellbeing, and the interplay of wellbeing with education, employment and health for Aboriginal people in remote regions (Cooperative Research Centre for Remote Economic Participation 2017).

2.4 Interplay research project

The Interplay research project was conceived and governed through the CRC-REP under Chair Tom Calma, a highly esteemed Aboriginal elder recognised for his commitment and expertise, especially in social justice and Aboriginal and Torres Strait Islander education and employment (Cairney and Abbott 2014; Cooperative Research Centre for Remote Economic Participation 2017; Reconciliation Australia 2017). Researchers and government agencies responsible for services in remote regions worked closely with Aboriginal and Torres Strait Islander community members in the research development. Through a conceptual shared space of knowledge exchange and learning as researchers, we aimed to ensure the project met research needs of both government and communities (Cairney and Abbott 2014).

On-going working relationships contribute to integrity of the approach, providing cultural feedback and evaluation between Aboriginal and non-Aboriginal researchers (Cairney and Abbott 2014).

2.4.1 Interplay project conceptualisation

The establishment of the CRC-REP coincided with increasing recognition that Australian government policies and strategies for improving the lives of Aboriginal and Torres Strait Islander people, particularly in remote Australia, are not achieving intended benefits. The flagship Closing the Gap strategy, based on reducing disparities in statistical indicators, is increasingly recognised as overly simplistic and technocratic (Altman and Fogarty 2010). The focus on perceived deficits of Aboriginal and Torres Strait Islander people and the need for statistical adjustment towards the level of mainstream Australia cannot address complex inter-generational disadvantage across different Aboriginal and Torres Strait Islander cultures (Altman 2009).

Approaches to policy for Aboriginal and Torres Strait Islander people based on self-determination, recognising diversity and working with Aboriginal and Torres Strait Islander peoples' strengths provides a more robust basis to alleviate disadvantage without compromising cultural identity (Altman 2009).

Aboriginal and Torres Strait Islander leadership within the CRC-REP with its focus on Aboriginal and Torres Strait Islander people's priorities in economic development made this a suitable centre for research to address wellbeing, together with education, employment and health for people in remote regions (Cooperative Research Centre for Remote Economic Participation 2017).

The Interplay project was established in the CRC-REP with research representatives from government, university and industry partners. Since Aboriginal and Torres Strait Islander

people are key economic agents in remote regions, Aboriginal and Torres Strait Islander organisations were recognised as users of the research, together with mining industry representatives. Government was represented by the Department of Prime Minister and Cabinet, Indigenous Affairs Branch, and Northern Territory Government (Cairney, Abbott, and Yamaguchi 2015; Cairney and Abbott 2014).

Aboriginal ways of knowing challenge non-Indigenous disciplines, research structures and control of knowledge. Despite altruistic intentions, non-Indigenous researchers continue aspects of historic research patterns of observing, studying, analysing and reporting Aboriginal and Torres Strait Islander people through non-Indigenous knowledge frameworks. The need to account for Aboriginal and Torres Strait Islander peoples' knowledge may contribute to the discrepancy between large numbers of research publications, but persisting social disadvantage of Aboriginal and Torres Strait Islander people (Kendall et al. 2011).

Ninti One employed a Senior Aboriginal Community Researcher in the leadership team developing the research proposal and she was responsible for recruitment, training and management of Aboriginal community researchers. These researchers facilitated engagement within their home communities through both community-controlled organisations and interpersonal networks. Community researchers guided the project from its inception to ensure their interests and aims were included, and in response to the common concern that research is driven by non-Indigenous researchers focussed on their own interests and professional aims (Abbott and Cairney 2014). The research was exploratory in its methods, providing opportunities for Aboriginal community researchers to contribute to questions, methods and findings with explicit efforts at decolonising the research (Smith 2012).

Wellbeing was identified as the focus of the research because its subjective nature enables recognition of personal and cultural aspirations. Wellbeing is a goal shared by individuals and governments, and could be integrated into national and international development strategies as an alternative to narrowly defined economic indicators as discussed in Chapter 1. The focus on wellbeing facilitated involvement of the Aboriginal and Torres Strait Islander communities of the study where as it reflected their own aspirations (Cairney and Abbott 2014). The wellbeing focus also enabled the incorporation of the current government priorities of the Closing the Gap strategy into the framework, since indicators of education, employment and health are recognised as measures of wellbeing (OECD 2017).

The lead Aboriginal and non-Indigenous researchers worked closely together throughout the project, sharing leadership, and enabling both to develop their skills and careers, and meet their own goals in the project (Cairney and Abbott 2014). Over 50 organisations with which

the CRC-REP had established relationships were invited to be involved from the outset, providing a broad network of participation throughout remote Australia (Cairney, Abbott, and Yamaguchi 2015).

2.4.2 Research paradigm

The research sought to explore wellbeing for Aboriginal and Torres Strait Islander people, through their understanding and knowledge of their lives. An interpretive paradigm was used to understand people's perspectives on wellbeing, in historical and cultural contexts (Crotty 1998). This enabled a broad-based approach to the research, with theories arising from the data generated by both qualitative and quantitative methods rather than pre-determined by the researchers.

Validity in the research was assured through the close and on-going involvement of Aboriginal Community Researchers, who share day to day experiences with the population of the study and as members of the community of the research were able to confirm its validity (Cresswell and Miller 2000).

2.4.3 Initial development

Twenty-four meetings and workshops were held from 2011 to 2013 in Alice Springs, Darwin, Adelaide, Melbourne and five remote communities to enable widespread participation in developing the research proposal. Researchers across the CRC-REP contributed their knowledge and experience to the development of the research and the wellbeing framework. Widespread engagement with researchers, funding agencies and Aboriginal and Torres Strait Islander community members established overall project goals, roles, synergies with other research in the CRC-REP, research focus, and approaches to framework and methodology (Cairney and Abbott 2014).

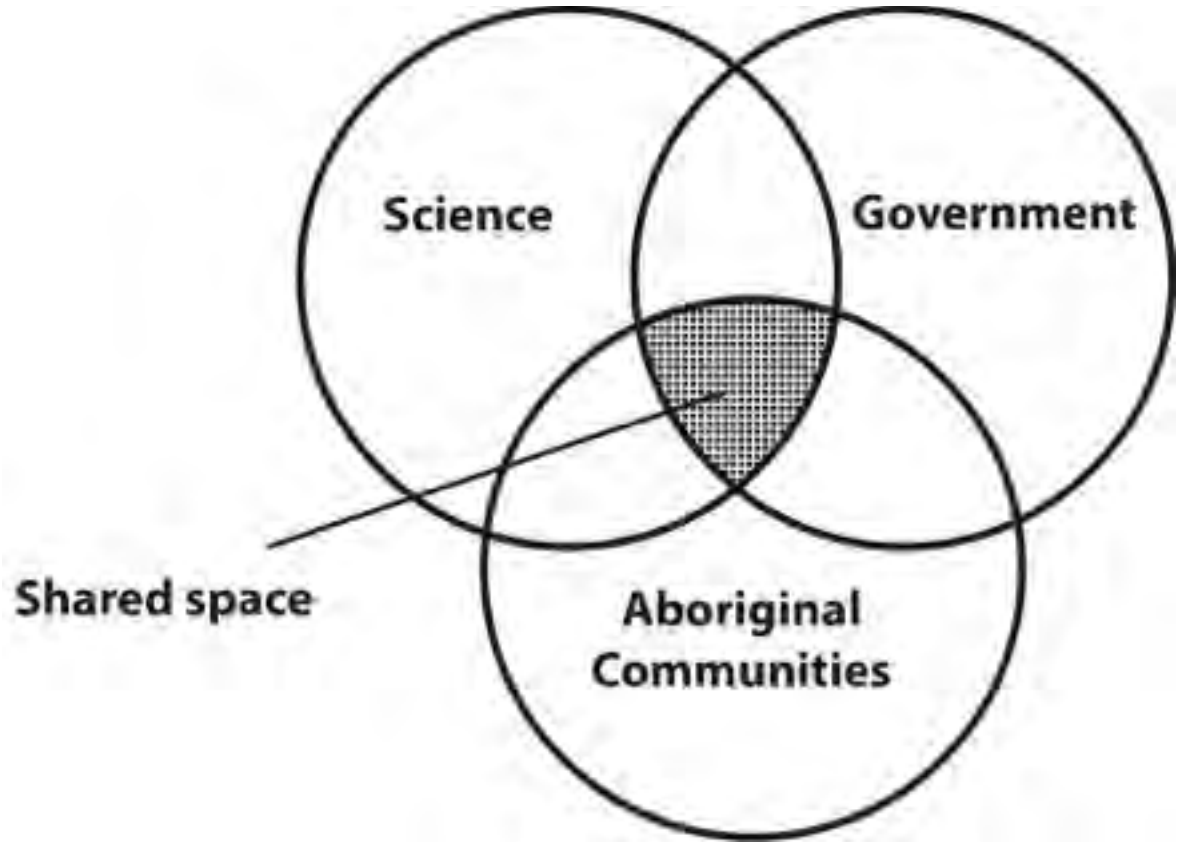
The initial consultation sought input from government and community agencies, so there were both top down and ground up approaches to the research. Involvement of Aboriginal and Torres Strait Islander people from the outset aimed to share ownership of both the process and outcomes, and empower people who were more accustomed to being researched than to developing research (Cairney, Abbott, and Yamaguchi 2015).

Remote community members were recruited and trained as researchers, achieving education, employment and experience of Aboriginal people through the research process. Thus the research contributed to its aim of increasing meaningful employment for Aboriginal people, and developing research experience and expertise. It also enabled community researchers to contribute to the study through their knowledge of wellbeing in remote communities. With 42 Aboriginal Community Researchers employed at any time over the

seven years of the project and some for the entire duration, the project provided many benefits to the communities (Abbott and Cairney 2014).

Aboriginal and non-Aboriginal researchers working and learning together to explore wellbeing led to the idea of what was called a “shared space.” This provided a model of working together where different perspectives, values, knowledge and ways of knowing were recognised. The scientific expertise of the project leader, based on the assumptions, epistemologies and ontologies of Western science (El-Hani and Souza de Ferreira Bandeira 2008), provided rigour in the methods. The fundholding role of government prompted the research to align with government priorities. The Senior Aboriginal Researcher employed by the Information and Evaluation Branch of the Department of Prime Minister and Cabinet represented the face of government and provided cultural integrity, while the community networks and knowledge of the Ninti One Senior Aboriginal Researcher facilitated community engagement and credibility for the project. This is shown diagrammatically as the shared space in Figure 2.2, where Science refers to Western science (Nguyen and Cairney 2013).

Figure 2.2: Shared space



Through the interpersonal and professional networks of Ninti One, Aboriginal and Torres Strait Islander communities in remote regions were offered opportunities to be involved in

research development and data collection. Aboriginal and Torres Strait Islander communities are very diverse and there are no mechanisms or criteria by which communities represent one another. The selection of communities sought to represent some aspects of the diversity of Aboriginal and Torres Strait Islander communities within the resource limits of the project. Aspects of diversity included geography; main community language; predominance of Aboriginal people in the community, which related to both community economy and alcohol availability; land tenure and access; and aspects of service provision.

Eight communities were initially engaged in discussions and meetings (Cairney and Abbott 2014). The research project Advisory Group determined that achieving greater depth of knowledge through involving fewer communities would be more valuable in understanding wellbeing than involving more communities at a superficial level. Thus initially three communities, two in Northern Territory and one in Western Australia, were selected (Cairney, Abbott, and Yamaguchi 2015). One further NT community subsequently joined the project during the data collection phase (Cairney et al. 2017), so four were involved in most of the research. All communities involved in the research were Aboriginal rather than Torres Strait Islander communities, the term Aboriginal is used in this report without reference to Torres Strait Islander people, as this is how Aboriginal people prefer to identify themselves (Cultural Diversity and Inclusivity Practice 2015). The research propositions have also been narrowed to specifically relate to Aboriginal people only.

2.4.4 Interplay wellbeing framework

Following the initial development and recruitment of communities, further workshops and meetings were arranged by the research team and hosted by remote Aboriginal community organisations in the communities of the study to develop the research approach, methodology and framework (Cairney and Abbott 2014). These meetings led to recruitment of 21 Aboriginal community researchers to further develop the research framework and methods in workshops in Alice Springs. While the research focus was on younger people in education and employment pathways, community researchers ranged in age from young people to senior community members and elders (Cairney and Abbott 2014).

Government priorities for Aboriginal people are education, employment and health, which provide targets in the Closing the Gap Strategy (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018). Respecting the foundations of these priorities, Aboriginal research participants identified alternative definitions and indicators. Education extends beyond mainstream structures, and includes traditional languages, skills, stories, and pathways to employment (Cairney and Abbott 2014). Employment should account for people's livelihoods beyond paid work and recognise cultural and family responsibilities that

people must undertake outside formal paid roles (Cairney, Abbott, and Yamaguchi 2015). Empowerment and culture underpin both education and employment (Cairney, Abbott, and Yamaguchi 2015). For research participants health relates closely to spirituality and inner strength rather than biomedical issues, and is a means to livelihood rather than a goal in itself (Cairney and Abbott 2014).

Complementing the government priorities, community wellbeing priorities were identified to create an holistic wellbeing framework. Culture, including language, kinship, law, ceremony and land, was readily identified as a priority for wellbeing. For the community researchers, culture was closely linked to the priority of empowerment, which is people taking powers and responsibilities for themselves: requiring governments to share, and in some cases to relinquish, certain powers and responsibilities ('Empowered Communities: Empowered Peoples Design Report' 2015). The sixth priority, community, is important because most engagement of Aboriginal people in local and wider society is through their community. Aboriginal communities comprise different family groups, and may include different language speakers and levels of power and responsibility within the community, but share common issues of geographic isolation and feelings of disempowerment in relation to mainstream society (Cairney and Abbott 2014). The Interplay research project name highlighted the intimate interplay of the wellbeing priorities for the research participants.

The Interplay wellbeing framework thus included six wellbeing priorities that were considered as domains of wellbeing for the Aboriginal people in the communities of the study. This is shown in Figure 2.3. The importance of culture was raised in each of the other priorities but a decision was to include it as a separate priority in the wellbeing framework (Cairney and Abbott 2014).

Figure 2.3: Interplay wellbeing framework

A series of workshops was held to elaborate each wellbeing priority as a domain of wellbeing through further exploration of its subdomains, as building blocks for wellbeing. Wellbeing domains and associated subdomains are shown in Table 2.1 (Cairney et al. 2017).

Table 2.1: Wellbeing domains and subdomains

Wellbeing domains	**Subdomains**
Culture	Language, country, law, ceremony, family, importance of culture, practicing culture, culture in school
Community	Leadership, safety, connectedness, trust and respect, services
Empowerment	Inclusiveness, mobility, resilience, self-efficacy, identity, agency, hope
Education	Achievements/outcomes, English literacy and numeracy, focus, motivations, barriers, pathways to work

Employment	Paid job, unpaid volunteer work, cultural and family work, pathways from education, culture at work, motivations, barriers, work life balance, value/meaning in work
Health	Nutrition, food security, exercise, substance use, anxiety, depression, medical conditions, physical health, dental health, health services, barriers
Wellbeing	Now, past, future

Through the development of the wellbeing framework the importance of stories and narrative communication was evident: these have been established as the basis of much research that is meaningful for Aboriginal people (Gorman and Toombs 2009). In contrast, government approaches to Aboriginal affairs and development often focus on numerical indicators to provide evidence of service accountability and progress (Dwyer et al. 2009). To bring both perspectives to the research, both qualitative and quantitative methods were used to explore, develop shared understandings and measure domains of wellbeing. We aimed to respond to questions and information needs of both government and Aboriginal community partners.

2.4.5 Ethical considerations

As a non-Indigenous researcher, I aimed for high standards of ethical practice throughout the research, constantly aware of my non-Indigenous background, worldviews and the histories of non-Indigenous researchers using Aboriginal people as research subjects rather than research leaders and teachers. The shared space of understanding and reflective research practices was useful to draw attention to practices that contribute to colonisation by research.

Ninti One has developed a protocol for ethical research with Aboriginal and Torres Strait Islander people, which includes reference to the UN Declaration on the Rights of Indigenous Peoples and the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Guidelines for Ethical Research in Indigenous Studies (2000). Ninti One research principles include:

- sharing benefits of research, through two-way learning at every stage;
- reinforcing the right to self-determination through full and ongoing active participation throughout the research processes;
- developing research based on people's own priorities;

- ensuring free, prior and on-going informed consent;
- returning and providing feedback of knowledge gained through the research;
- protecting confidentiality;
- recognising intellectual property (Ninti One).

The development phase of the study was approved by Central Australian Human Research Ethics Committee (CAHREC) and Flinders University Ethics Committee, while data collection was approved by the Northern Territory Department of Health and Menzies School of Health Research and the Western Australian Aboriginal Health Ethics Committees, which provide ethical governance for the communities involved in the research (Cairney, Abbott, and Yamaguchi 2015).

Additional approvals and support were received from local Aboriginal community controlled health and education boards, government data-linkage services, land councils and local partner organisations (Cairney, Abbott, and Yamaguchi 2015).

Relationships in the research team, particularly with the Aboriginal community researchers, were maintained throughout the project. The shared space concept provides a model for two-way learning about research processes, methodology and methods that could be meaningful for both Aboriginal and non-Indigenous researchers. We aimed to share understandings of wellbeing during data interpretation and analysis. In particular when quantitative data appeared to contradict qualitative data, it was the qualitative data which expressed meaning that was assumed to be correct, based on the over-riding importance of narrative, and supported by further discussions with the Aboriginal community researchers. Thus ethical research extended beyond the formal research ethics processes.

My participation in the research began after ethics committees had approved the research proposals and it was approved separately through an amendment to the proposal by each ethics committee. As a student of Flinders University, I obtained required approval from Flinders University Social research ethics committee. Ethics approvals are included in Appendix 3.

With the overall aim of guiding policy development and under the leadership of Aboriginal researchers, through the exploration of wellbeing, the Interplay research included both qualitative and quantitative elements.

2.4.6 Qualitative research

Qualitative research can seek to understand a problem or topic from the perspectives of the people involved. This makes it useful for exploring intercultural relationships, and values, beliefs, aspirations and social contexts of particular populations. Qualitative research is

flexible and interactive between researchers and participants and can provide complex descriptions of how people experience a research issue. Open-ended questions enable participants to provide responses that are deeply meaningful, culturally important and unanticipated to the researcher (Mack et al. 2005).

2.4.6.1 Focus groups

Focus groups are widely used in qualitative research, particularly for generating broad overviews of issues of concern and discovering variety within a population (Mack et al. 2005). They are useful for exploring knowledge and experiences and can be used to examine what people think and how and why they think that way. Researchers bring participants together to guide discussion on the research topic, aiming to encourage them to talk to each other rather than to the researcher. Discussion among research participants develops understanding of the topic, as participants exchange stories and discuss each other's experiences and points of view. Participants can joke, tease and argue, bringing attention to norms and differences within the group. While the researcher provides the subject of conversation, participants explore the issues of importance to them in relation to this subject, in their own language, generating their own questions, and pursuing their own priorities (Kitzinger 1995).

Although the main language of the focus groups was English, Aboriginal Community Researchers were involved and their role included language and cultural translation, so no one was excluded because of language barriers. Aboriginal languages are the main language spoken in three of the four study communities (Australian Bureau of Statistics 2011), and even in households where English is spoken the language is systematically different from standard Australian English (Oliver et al. 2013). Communication appeared to drive insightful group dynamics in the focus groups, with participants taking the research in directions that I did not expect.

Importantly for the Interplay research, focus groups do not discriminate against people who cannot read and write, and they can encourage participation from people reluctant to be interviewed on their own or who feel disempowered and unable to contribute (Kitzinger 1995).

Focus groups empower participants through enabling them to guide the focus of the research, criticize services and provide solutions in a setting which is confidential with respect to services and the researcher (Kitzinger 1995). However, discussions are not private among participants, and the possibility that other group members may breach confidentiality can limit participation in the group and the quality of the data. This limitation of focus groups as a research method may particularly affect research in Aboriginal

communities where members are well known to one another. However community based research development led to the selection of focus groups as the preferred method of data collection for the Interplay research (Cairney, Abbott, and Yamaguchi 2015). This choice is consistent with other research which has shown how focus groups address Aboriginal community needs for collective control and display of knowledge and values (Willis, Pearce, and Jenkin 2005).

Because of the breadth of what could be included in discussions of wellbeing, and the inclusion of Aboriginal community researchers as both research leaders and participants, Hugh Mackay's description of "unfocussed" groups could also describe the focus group work of the Interplay project. A challenging range of material arose (Mackay 2012).

For the Interplay project, focus group participants were recruited through community organisations; they generally knew each other through multiple interactions and family connections in the small remote communities of the study. Demographic details of the focus groups are shown in Table 2.2. Each focus group lasted about one hour, and participants were offered snacks afterwards.

Table 2.2: Research participants in focus groups by service, role, Aboriginal status and gender

Focus group	Service	Participant role	Total participants	Aboriginal participants	Female participants
1	Business development	Managers	2	1	0
2	Education	Managers, employees	6	6	6
3	Education	Managers, employees	12	12	9
4	Indigenous Land Management	Participants	4	4	3
5	Indigenous Land Management	Employees	4	4	1
6	Indigenous Land Management	Employees	4	4	4
7	Indigenous Land Management	Employees	7	7	0
8	Indigenous Land Management	Employees	8	8	8
9	Health	Managers, employees	4	1	1

10	Health	Employees, community members	9	9	0
11	Health	Employees	3	1	3
12	Municipal services	Managers, employees	6	6	4
13	Municipal services	Managers	2	1	1
14	Research	Employees	4	4	4
	Total		**75**	**68**	**44**

2.4.6.2 Interviews

In-depth interviews can complement focus groups by providing more individual perspectives on the research topic, including feelings, opinions and experiences, and insights and interpretations of people's lives and aspirations. They can also build relationships and understanding between researchers and interviewees, and provide depth to the research (DiCicco-Bloom and Crabtree 2006). The Aboriginal community researchers were very non-direct in their interview technique and this allowed for a great range of issues to be raised (Britten 1995).

Interviews were conducted with service providers in remote communities in employment, education, art, and land management. Service providers were selected for their expertise and experience in roles of interest in relation to wellbeing for people in remote communities. Interviews lasted between 45 minutes and one hour. One interview was conducted by phone, while others were in person in the remote community. Interviews demographics are summarised in Table 2.3.

Table 2.3: Interviewees by service, Indigenous status and gender

Service provided by interviewee	Total Interviewees	Aboriginal interviewees	Female interviewees
Indigenous Art	1	1	1
Business development	1	1	0
Education	2	2	2
Indigenous Land Management	3	1	1
Total	7	5	4

Focus groups and interviews were audio-recorded, then imported to Nvivo and transcribed.

2.4.6.3 Qualitative data analysis

Interview and focus group data were managed together, and the Interplay wellbeing priorities derived from the preliminary research development provided the basis for initial coding of the focus groups and interviews. Topics and themes emerged, which were developed through further interrogation of the recordings, in a grounded approach to analysis. Separate foci on employment, education, culture and health provided a wealth of insights for a series of research publications which make up Chapters 4,5 and 6 of this thesis.

2.4.7 Quantitative research

Quantitative aspects of the research aimed to measure aspects of wellbeing for Aboriginal people of remote Australia and their interrelationships. By quantifying Aboriginal perspectives and strengths we aimed to actively counter the common use of statistics to illustrate and confirm pejorative stereotypes of Aboriginal people (Walter 2016). This approach recognised the importance of quantification to government in policy development and service evaluation, and the need to develop specific ways for Aboriginal people to quantify their aspirations (Prout 2012).

2.4.7.1 Interplay wellbeing survey development

The six wellbeing priorities which emerged in the project development provided structure for development of the Interplay Wellbeing Survey. The survey was designed with Aboriginal community researchers to enable them to collect data from people in their home community on the wellbeing domains and subdomains. It was important that the survey questions had both scientific validity and utility for the research participants, so it was developed in collaboration between Aboriginal and non-Indigenous researchers, with Aboriginal researchers at both senior and community levels.

To develop the Interplay Wellbeing Survey, an intensive literature search was undertaken for questionnaires and surveys related to wellbeing and its domains and subdomains that had been formally evaluated for reliability and construct validity among Aboriginal Australians. The General Empowerment Measure (GEM) (Haswell et al. 2010); the National Indigenous Language Survey (NILS) (Marmion, Obata, and Troy 2014); the Strong Souls Survey (Thomas et al. 2010); and the Caring for Country Questionnaire (Burgess et al. 2008) were identified as being important for development of the survey. Other key research and data relevant to wellbeing for Aboriginal people in remote Australia was also examined including the Longitudinal Study of Indigenous Children (LSIC) and the West Australian Aboriginal

Child Health Survey (WAACHS) and the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) (Cairney, Abbott, and Yamaguchi 2015).

After the review of these wellbeing questionnaires, surveys and studies, workshops were held with Aboriginal Community Researchers from the study communities to develop the Interplay wellbeing survey. Detailed discussions between Aboriginal Community Researchers and non-Indigenous researchers aimed to ensure the experiences of wellbeing in the lives of people in remote Aboriginal communities were reflected in the survey questions. Considerable time was dedicated to these discussions, with attention to each word of each question to ensure that its meaning was understood across cultures, and in translation from the English version into different languages spoken in the study communities. After several waves of reviewing and refining the survey with Aboriginal Community Researchers and others involved in the research, the Interplay wellbeing survey was pilot tested in two remote communities. It was then finalised and uploaded to computer tablets to be administered by Aboriginal Community Researchers.

This chapter describes the portions of the Interplay wellbeing survey that were used in the analyses in publications of the following chapters.

2.4.7.2 Interplay wellbeing survey description

The survey questions included formal consent to participate, demographic questions and detailed inquiry about each wellbeing domain and subdomain. Most survey questions used a five point scale ranging from none or never, through some or sometimes, to lots or most of the time (Cairney, Abbott, and Yamaguchi 2015). The indicators are self-reported, and have not been cross-validated with other sources such as administrative health or education data, as cross-validation was not considered a priority for the Aboriginal community researchers.

The primary outcome of interest was wellbeing, which was measured on the single question of self-reported current life satisfaction, rated from one to ten. This same question is used in the National Aboriginal and Torres Strait Islander Social Survey (Australian Bureau of Statistics 2016a) and the Australian General Social Survey (Australian Bureau of Statistics 2015), enabling direct comparison between participants in the Interplay project and other Australians. To answer this question the respondent must use their own values and aspirations in assessing their lives, the essence of wellbeing (Kilpatrick and Cantril 1965; Diener 2009).

The Interplay Wellbeing Survey included questions on a range of aspects of culture, avoiding the tautological phrase “Aboriginal culture”. Aboriginal languages were a key aspect of culture that emerged in the development of the research; and the survey asks about languages spoken at home, how many languages are spoken, and whether the participant

can understand, speak, read and write in their most familiar Aboriginal language. These questions are based on the Australian Census (Australian Bureau of Statistics 2018c), the NATSISS (Australian Bureau of Statistics 2016a) and the National Indigenous Languages Survey, in which people report their own levels of literacy (Marmion, Obata, and Troy 2014).

In the culture subdomain of country, participants are asked whether they are on their traditional lands, a question from the NATSISS (Australian Bureau of Statistics 2016a). The Interplay survey also asked participants whether they believe that their land is cared for; and their self-reported level of involvement in and perceived importance of different cultural practices, including caring for country, hunting and gathering, art and craft and ceremony. These questions were based on the Caring for Country Questionnaire (Burgess et al. 2008).

In the domain of work, survey questions included self-reported employment status, type and sector, with land management, administration, health, education, retail, arts and trades being major sectors in remote communities. Other questions about work included relationships between work and different forms of knowledge, reasons for working, and barriers to employment including family and cultural obligations.

Questions investigating the health domain included self-reported symptoms of depression and anxiety, and whether health problems interfere with the participants' day to day life, based on the Strong Souls Survey (Thomas et al. 2010). There were also questions on attendance at different health practitioners and services including traditional healers, Aboriginal health workers, primary care clinics and hospitals; and barriers to using health services. These issues emerged as important aspects of health in the workshops.

Access to health care was quantified by the asking the extent to which people experienced specific barriers, including cost, transport, privacy concerns, language and cultural barriers. These were the barriers identified by Aboriginal community researchers and members during the survey development.

Empowerment was measured by questions on identity, self-efficacy, resilience, community connection and support, based on questions from the General Empowerment Measure (Haswell et al. 2010) that meaningfully reflected wellbeing for the community researchers attending the workshops.

2.4.7.3 Interplay Wellbeing survey administration

Community researchers recruited participants in their home communities through organisations and social networks. The age group of interest with the focus on economic participation was 15 to 34 years, the time of life during which many people transition from education to employment (Cairney, Abbott, and Yamaguchi 2015). The project aimed to recruit between 800 and 1000 participants to provide a suitable sample for structural

equation modelling (Iacobucci 2010). Data were collected by Aboriginal community researchers from July 2014 to June 2015 (Cairney, Abbott, and Yamaguchi 2015). It was anticipated surveys would take 30–40 minutes to complete, and researchers confirmed that the actual time was 45 to 60 minutes (Cairney et al. 2017; Cairney, Abbott, and Yamaguchi 2015). The final cohort comprised 841 participants, with mean age 25.2 years (standard deviation 5.3 years); 352 males (42%) and 489 females.

2.4.7.4 Interplay Wellbeing survey statistical analysis

Statistical analysis comprised handling missing data, coding, descriptive analysis, exploratory factor analysis, then confirmatory factor analysis through structural equation modelling.

The survey data was initially handled by the statistician on the research team. Missing data were estimated using multiple imputations, redrawing 11 samples, and taking the median as the most likely value. All items were coded so that higher response values represent more positive wellbeing.

Descriptive statistics, means, standard deviations, ANOVA and standardized Cronbach alphas were calculated using the SPSS statistical package (SPSS Inc 2015).

Exploratory factor analysis (EFA) is a statistical technique that can be used to provide measurements of unobserved constructs, described as latent variables (Williams, Brown, and Onsman 2010). We used EFA to develop latent variables for domains and subdomains of wellbeing, to answer questions that arose from the qualitative data. Our EFA used maximum likelihood estimation for factor analysis, based on requirements for structural equation modelling (Hox and Bechger 1998). Promax oblique rotation of the data was used because this allows for correlation between the factors (Field 2009), and may produce more accurate results for research involving human behaviours such as in this project (Williams, Brown, and Onsman 2010). Latent variables with eigenvalues greater than one, strong loadings (> 0.4), discriminant and face validity, adequate reliability based on Cronbach alpha, and no cross-loading were selected to be used in the structural equation modelling (Williams, Brown, and Onsman 2010).

Structural equation modelling (SEM) is a set of statistical techniques used to model relationships between multiple observed and latent variables, including both independent and dependent variables (Ullman 2006). SEM develops models or path diagrams that show the strength of relationships between variables (Ullman 2006). These diagrams can assist in discussing complex statistical analysis, and provided useful representations of the data among researchers and with participants and government representatives (Cairney et al.

2017). Online animations and graphical tools were created so users can visualise and interact with the data (Ninti One 2017a).

2.5 Addressing the research propositions

Quantitative and qualitative aspects of the research were carried out in parallel, enabling questions that arose from the qualitative data to be addressed in the statistical analysis. Since the research was driven by the Aboriginal research team the research propositions were answered indirectly based on evidence that emerged, consistent with the narrative and indirect approaches to knowledge that Aboriginal people bring to research (Gorman and Toombs 2009).

2.5.1 Addressing Aboriginal education, employment and health outcomes through improving wellbeing

The primary research proposition is that education, employment and health outcomes for Aboriginal and Torres Strait Islander people could be improved through understanding and addressing wellbeing, as has been described for other populations (Lyubomirsky, King, and Diener 2005).

This proposition underlies the development of the Interplay project, and the exploration of wellbeing as a goal for development. It is addressed directly through qualitative data using education, employment and health as themes of the analysis in publications of Chapters 4, 5 and 6 respectively (Schultz et al. 2018c, 2018b, 2018a), and through quantitative data in Chapter 8 (Schultz, Quinn, Wilson, et al. 2019).

2.5.2 Improving service provision for Aboriginal people will enhance wellbeing

The second research proposition is that an holistic approach to service provision for Aboriginal people in remote regions will enhance wellbeing. In the wellbeing framework in Figure 2.3, the government priorities, education, work and health, and community priorities of culture and empowerment are spokes on the wheel supporting wellbeing. The proposition arises from work that addresses Aboriginal culture and connections to country, which improve both wellbeing and other indicators (Davies et al. 2010), and through analysis of the NATSISS (Dockery 2012).

This proposition is explored through literature review in Chapter 3 (Schultz and Cairney 2017), and through quantitative analysis of Interplay data in Chapter 8 (Schultz, Quinn, Wilson, et al. 2019). The qualitative analyses in Chapters 4,5 and 6 also address this proposition, while the responses to other literature in Chapter 10 highlight current inefficiencies in service provision through racism, deficit discourse and limited perspectives

on health and wellbeing issues. By addressing these issues with service provision, wellbeing will be enhanced.

2.6 Chapter summary

This chapter describes the research methodology, with the underlying intention to decolonise the process of research by as far as possible allowing Aboriginal researchers and participants to guide research focus, approach, methods, analysis and interpretation.

Remoteness is defined; the CRC-REP and the Interplay project are described, including the wellbeing framework, ethical considerations and qualitative and quantitative aspects of the research. These enable the research propositions to be addressed through publications in following chapters, as shown in Table 2.4.

The next chapter is a detailed literature review on health benefits for Aboriginal and Torres Strait Islander people arising from participation in Indigenous Land Management. It shows how the literature responds to research propositions that education, employment and health outcomes for Aboriginal and Torres Strait Islander people could be improved through understanding and addressing wellbeing. Similarly health services could be more effective in enhancing both health and wellbeing when provided with awareness of broader aspects of Aboriginal and Torres Strait Islander people's livelihoods.

Table 2.4: Publications and research propositions addressed

Chapter or section	Publication title	Journal and DOI	Propositions addressed and how	
			Addressing wellbeing will enhance education, employment and health outcomes	Holistic service provision will enhance wellbeing
3	Caring for country and the health of Aboriginal and Torres Strait Islander Australians	Medical Journal of Australia 10.5694/mja16.00687	Literature	Literature
4	Re-imagining Indigenous Education for Health, Wellbeing and Sustainable Development in Remote Australia	Creative Education 10.4236/ce.2018.916222	Qualitative	Qualitative
5	Injury prevention through employment as a priority for wellbeing among Aboriginal people in remote Australia	Health Policy Journal of Australia 10.1002/hpja.7	Qualitative	Qualitative
6	Indigenous Land Management as primary health care: qualitative analysis from the Interplay research project in remote Australia	BMC Health Services Research 10.1186/s12913-018-3764-8	Qualitative	Qualitative
7	Australian Indigenous Land Management, Ecological Knowledge and Languages for Conservation	EcoHealth 10.1007/s10393-018-1380-z	Quantitative	Quantitative
8	Quantification of interplaying relationships between wellbeing priorities of Aboriginal people in remote Australia	International Indigenous Policy Journal 10.18584/iipj.2019.10.3.8165		Quantitative
9	Structural modelling of wellbeing for Indigenous Australians: importance of mental health	BMC Health Services Research 10.1186/s12913-019-4302-z		Quantitative

10.2	The excess burden of severe sepsis in Indigenous Australian children: can anything be done?	Medical Journal of Australia 10.5694/mja17.00194		Literature
10.3	Absolute Cardiovascular Disease Risk and lipid-lowering therapy among Aboriginal and Torres Strait Islander Australians	Medical Journal of Australia 10.5694/mja18.00711		Literature
10.4	Tackling antimicrobial resistance globally	Medical Journal of Australia 10.5694/mja17.01125		Literature
10.5	Implementation of policies to protect planetary health	Lancet Planetary Health 10.1016/S2542-5196(18)30006-8		Literature

Chapter 3: Literature review: Caring for Country and the wellbeing of Aboriginal and Torres Strait Islander Australians

3.1 Chapter outline

This chapter is based around a literature review published in the Medical Journal of Australia entitled “Caring for Country and the wellbeing of Aboriginal and Torres Strait Islander Australians” (Schultz and Cairney 2017). It was co-authored by Sheree Cairney whose contribution was 10%.

3.2 Publication background

Beginning my research in 2015, I became aware of literature on health and medical aspects of relationships between Aboriginal people, culture, land and wellbeing but no recent published review. By publishing a review of this literature, I sought to highlight these relationships to the Australian medical community, in the context of escalating costs of health care for Aboriginal people, without progress towards closing the gap between Aboriginal and non-Aboriginal health outcomes. The transformative changes that are needed in Aboriginal health will reshape organisational and professional cultures and relationships between sectoral siloes (Houston 2016). Considering caring for Country, a colloquial term for Aboriginal land management, as a form of health care, may be part of such transformation because of the strong links between Aboriginal people, culture, land and wellbeing.

The target journal for my review was the Medical Journal of Australia, a general medical journal which addressing health care; attention to employment and economic participation as social determinants of health appeared out of scope (Medical Journal of Australia).

My initial submission included literature which quantified environmental benefits of Aboriginal people caring for Country through increasing land values and reducing carbon emissions, thereby generating income from carbon offsets. Both of these benefits can provide income through government and commercial sources integrating caring for Country into the formal economy, and providing an independent economic base for Aboriginal communities (Hill et al. 2013). However, reviewers of the submission preferred to address only direct health impacts of caring for Country, so socio-economic aspects were excluded from the published work, included in Appendix 5. Additional content describing environmental benefits of caring for Country is included in this Chapter after the conclusion of the published article.

3.3 Perspective

Health services for Aboriginal and Torres Strait Islander people are expensive. The National Aboriginal Community Controlled Health Organisation reported that government Aboriginal and Torres Strait Islander health and hospital service expenditure per person in 2010–11 was $8190 nationally, and as high as $16110 in the Northern Territory, compared with $4054 per non-Indigenous person (Alford 2014). Increasing expenditure on health services for Aboriginal and Torres Strait Islander people is not closing the gap in health outcomes at the rate to which governments have committed (Commonwealth of Australia: Department of Prime Minister and Cabinet 2017).

Gaps in education and employment outcomes between Aboriginal and Torres Strait Islander Australians and other Australians are also not closing, despite significant investment. Overall employment indicators for Aboriginal and Torres Strait Islander Australians are deteriorating (Commonwealth of Australia: Department of Prime Minister and Cabinet 2017). Comprehensive lack of progress in the three key areas of education, employment and health highlights the interplay among these three areas. Transformative changes in our approaches to the health and wellbeing of Aboriginal and Torres Strait Islander people are needed (Houston 2016).

3.3.1 Linking health of people and country

When asked about their health, Aboriginal and Torres Strait Islander people draw attention to the importance of relationships with their culture and country (Australian Government 2013). However, partitions among government departments and service agencies have led to the development of silos within and between government and different service agencies. The relationship between people and their country is rarely considered in policy or service development.

Health services for Aboriginal and Torres Strait Islander Australians have funding and performance indicators linked to their provision of clinical care (Alford 2014). The very meaning of health for Aboriginal and Torres Strait Islander people is often overlooked (Kingsley et al. 2013).

Because health service funding and performance indicators are driven by government, services are limited in their opportunity for innovation (Alford 2014). This may be compounded by government focus on the deficits and deficiencies of Aboriginal and Torres Strait Islander communities — the need to close the gap — and lack of recognition of the importance of the relationships between health and country for Aboriginal and Torres Strait Islander people (Nguyen and Cairney 2013).

To overcome these challenges, Aboriginal and Torres Strait Islander people will need supportive government and industry partners, responsive to people's own aspirations, and a recognition of the complex interplay of factors that affect wellbeing (Nguyen and Cairney 2013).

3.3.2 Indigenous land management — caring for country

Outside the health sector, there has been convergence of interests in Indigenous land management between Aboriginal and Torres Strait Islander people, non-Indigenous land managers and scientists, with increasing recognition of the value of Aboriginal and Torres Strait Islander people's knowledge and skills (Hill et al. 2013). Indigenous land management can maintain and improve the condition of Australia's ecosystems, which have developed in response to people caring for their country over thousands of years. For example, Aboriginal fire regimes could have prevented the huge fires of northern Australia of the late 20th century, which resulted from build-up of fuel through neglect of Aboriginal burning practices (Whitehead et al. 2008).

Through the work of government and non-government environment, resource management and Aboriginal and Torres Strait Islander agencies, Indigenous land management programs now operate in every state of Australia and in the NT (Hill et al. 2013). Health benefits are among the positive outcomes of these programs (Davies et al. 2011).

3.3.3 Health impacts

Direct health impacts for Aboriginal and Torres Strait Islander people's involvement in land management include increased physical activity; less alcohol and illicit substance use; greater access to bush foods; and less access to takeaway foods (Hill et al. 2013; Davies et al. 2011; Burgess et al. 2009).

Recognition of Aboriginal and Torres Strait Islander people's knowledge and skills in land management may enhance individual and community autonomy, cultural identity and sense of control. Addressing these factors may counteract the underlying health disadvantage that reflects profound loss of control, disempowerment and disengagement that many Aboriginal and Torres Strait Islander people suffer (Kingsley et al. 2013).

Young and older, male and female Aboriginal and Torres Strait Islander people are interested in land management, which can provide both education and employment. Land management presents unique opportunities for young people in remote regions who have few other options (Gorman and Vemuri 2012). Non-Indigenous people lack the necessary skills, knowledge, and community and cultural affiliation, and are less likely to live in regions

where land management programs operate. Thus, there is little competition for either participants or program resources (Gorman and Vemuri 2012).

3.3.4 Land management in remote regions

Aboriginal and Torres Strait Islander people are involved in land management in urban, rural and remote regions of Australia (Hill et al. 2013). However, there are more significant opportunities and more potential benefits in remote regions, where health status is worse than in non-remote regions (Campbell et al. 2011; Australian Institute of Health and Welfare 2015).

Aboriginal and Torres Strait Islander people in remote regions suffer even worse health than their compatriots in urban regions. This is attributed to socio-economic determinants of health such as overcrowding, substandard housing, low workforce participation, low school attendance and achievement, and low income (Australian Institute of Health and Welfare 2015). Many risk factors and markers for chronic diseases, notably diabetes, are more common among Aboriginal and Torres Strait Islander people in remote regions (Australian Institute of Health and Welfare 2015).

Despite negative depictions in the media, Aboriginal and Torres Strait Islander people in remote regions are less likely to use alcohol and illicit drugs than their urban compatriots. They experience fewer stressors, suffer fewer injuries, and report better mental health than Aboriginal and Torres Strait Islander people in non-remote regions (Australian Institute of Health and Welfare 2015). These social and emotional wellbeing factors may reflect the fact that many remote Aboriginal and Torres Strait Islander people can access their lands and have more opportunity to participate in land management and other cultural activities (Kingsley et al. 2013; Campbell et al. 2011).

3.3.5 Access to Indigenous lands and funding

Aboriginal and Torres Strait Islander people now have formally recognised interests in over half of the Australian land area, through native title, Indigenous Protected Areas and Indigenous Land Use Agreements (Hill et al. 2013). Aboriginal and Torres Strait Islander people on these lands are increasingly undertaking commercial economic activities such as pastoralism and tourism; control of feral animals, weeds and fire; preservation of their cultural heritage; and improving the conditions of their communities through dust suppression and management of waterways. However, the scale of human input is still small, with less than 800 full-time equivalent Indigenous ranger positions Australia-wide (Department of Prime Minister and Cabinet 2016).

The Australian government is the major funder of Indigenous land management, principally through its Working on Country initiative. This covers wages and operations to support land management activities by Indigenous rangers. In August 2016, the Commonwealth made commitment of $335 million over five years (2013-18), just under $70 million per year, to support Indigenous ranger groups through Working on Country projects (Australian Government: Department of Prime Minister and Cabinet no date). This complements state/ Territory, non-government, philanthropic and other funding to total approximately $120 million annual expenditure on Indigenous land management nationwide (Hill et al. 2013).

Expenditure on land management could be considered in comparison with the total government health service expenditure of $826 million for 2014–2015 for Aboriginal and Torres Strait Islander people (Alford 2014) and the estimated cost savings of $900 per person from the health benefits of participation in land management (Campbell et al. 2011). Estimates of social return on investment suggest net benefits of $2.7 for each dollar invested on Indigenous land management through economic, cultural and environmental outcomes (Social Ventures Australia 2016).

3.3.6 Primary health care

Being responsive to the community is a fundamental principle of primary health care as it was originally conceived (World Health Organisation 1978a). Investment in health is broader than investment in clinical services. Applying this global principle, for many Aboriginal and Torres Strait Islander people — in both remote and urban areas — comprehensive primary health care would require connection to country and support for participation in land management activities. Land management services can provide Aboriginal and Torres Strait Islander people with aspects of primary health care as it was originally conceived: community, economic and social development; self-reliance and self-determination, and provision of basic needs extending beyond clinical health services (World Health Organisation 1978a).

Aboriginal Community Controlled Health Services provide primary health care and have the capacity to provide cultural services including land management (Alford 2014). Integration of land management into health care services may be part of the transformative change needed to better serve Aboriginal and Torres Strait Islander people.

Postulated education, employment and health benefits of participation in land management for Aboriginal and Torres Strait Islander Australians are enough to warrant strong government commitment and investment (Hill et al. 2013). Such investment should include rigorous research and evaluation to optimise the impacts on people and our shared country.

3.3.7 Published conclusion

There are opportunities for efficiency when investment achieves outcomes in several sectors. Investment in land management for Aboriginal and Torres Strait Islander Australians provides opportunities for better health, complemented by empowerment, education, employment and economic development (Nguyen and Cairney 2013), with enhancement of Australian land values benefitting the wider community (Hill et al. 2013). Such transformative change could potentially accelerate progress towards improving the wellbeing of Aboriginal and Torres Strait Islander people through closing gaps in education, employment and health (Campbell et al. 2011).

3.4 Unpublished addendum

3.4.1 Indigenous caring for country – benefits to land values and carbon emissions

There are synergistic benefits of strengthening connections between Indigenous Australians and their lands. Indigenous people's traditional cultural practices enhance land values, and can strengthen their sense of identity, authority and meaning (Hill et al. 2013). Indigenous land management can incorporate disease surveillance, such as vector-borne disease in mosquitoes and zoonoses in pigs, and buffalo; patrolling for illegal fishing; ghost net surveillance; revegetation and rehabilitation of ecosystems, and fire management (Gorman and Vemuri 2012).

Traditional Indigenous fire regimes in northern Australia create mosaics of areas burnt at different times. People light small fires early in the dry season when the vegetation is less flammable. This reduces the overall area and amount of fuel burnt annually, leading to a net reduction in carbon dioxide emissions. Without management on average 20% of the northern Australian savannah burns each year (Russell-Smith et al. 2003; Russell-Smith et al. 2013).

A widely reported example of re-introduction of traditional fire regimes is the West Arnhem Land Fire Abatement Project (WALFA). WALFA offsets emissions from a gas operation in Darwin, which pays Indigenous communities $1 million annually in carbon offsets. WALFA provides a model of opportunities for carbon abatement through re-introduction of traditional Indigenous fire regimes. This model would be viable over vast areas of Australia, providing a sustainable source of income for Indigenous communities (Whitehead et al. 2008).

Depending on the price of carbon, around 2 million metric tons (Mt) CO_2 e annually of Australia's approximately 550 Mt CO_2 e could be offset through re-introduction of Indigenous

land management practices (Heckbert et al. 2012; Department of Environment and Energy 2019).

3.4.2 Conservation and Indigenous land management

Almost half of Australia's total land area is now vested in Indigenous interests through native title, Indigenous Protected Areas and Indigenous Land Use Agreements, and the Australian government, the Indigenous Land Corporation, non-government organisations and donors provided almost $120 million annually for Indigenous land management in 2012 (Hill et al. 2013). The Australian government is the major funder of Indigenous land management, through Working on Country program and Indigenous Protected Areas, which are separate funding mechanisms.

The Working on Country initiative funds Indigenous ranger programs. It covers wages and operational funds to support customary land management activities. There are currently Indigenous ranger programs in every state of Australia and NT, totalling around 100 programs. These employed 775 full time equivalent Indigenous rangers in 2016 and 839 by 2018, with a new injection of $250 million over three years from April 2018 (Department of Prime Minister and Cabinet 2018a).

Indigenous Protected Areas (IPAs) are an alternative funding arrangement. Indigenous communities can declare their land to be an Indigenous Protected Area, formally agreeing to manage their land to meet international conservation standards, in exchange for resources and funding. IPA lands are the most rapidly increasing proportion of Australia's national reserve system, increasing from 20% in 2010 to 44% in 2016 (Cresswell and Murphy 2016). IPAs can be cost effective for the Australia government to achieve conservation outcomes (Weir, Stacey, and Youngetob 2011).

The limited extent of Australian government support for the Indigenous land management despite vast areas of country and multiple benefits has been questioned, with assertions of "free riding" by governments on Indigenous people involved in land management programs (Gorman and Vemuri 2012). These programs are funded for services provided based on conservation outcomes, rather than inputs or participation. Thus Indigenous communities rather than the government carry the risks when outcomes are not achieved. This focus on outcomes does not support community development or Indigenous involvement in planning, decision-making and governance (Gorman and Vemuri 2012). Hence these programs may not achieve potential benefits such as modelling Indigenous leadership and governance, which could have longer term benefits particularly in education and engagement of young people (Hill et al. 2013).

Engagement of Indigenous Australians in education and employment is a challenge, particularly in remote areas. However, many people are interested in land management, which can provide both education and employment (Bandias, Fuller, and Holmes 2012). Non-Indigenous people lack the necessary skills, knowledge and community and cultural affiliation, and are less likely to live in regions where the programs operate. Thus there is little competition from non-Indigenous people or for the program resources. However funding is largely determined by governments, leaving communities vulnerable to political decisions (Weir, Stacey, and Youngetob 2011).

A focus on the benefits of Indigenous land management presents an alternative view of remote communities from that of remote Indigenous people enjoying a lifestyle that is costly to governments (Griffiths 2015). Indigenous people continue to fulfil their responsibilities for the well-being of their country by providing an underfunded service for the benefit of all Australians. Indigenous land management enhances the value of the land and can offset carbon dioxide emissions.

3.5 Chapter summary

This published review of Indigenous land management and health points to the opportunities for caring for Country to contribute to alleviation of Aboriginal disadvantage in education, employment and health outcomes. This supports the first research proposition that understanding and addressing wellbeing for Aboriginal people in remote Australia can improve education, employment and health outcomes. Caring for Country is an important source of wellbeing for Aboriginal people.

“Caring for Country provides primary health care because it contributes to health through community, economic and social development; self-reliance and self-determination, and provision of basic needs extending beyond clinical health services”. This supports the second research proposition that an holistic approach to service provision will optimise wellbeing. Caring for Country contributes to education, employment,

Recognising caring for Country as a form of primary health care, consistent with the original understanding of comprehensive primary health care, would entail recognising employment as part of primary health care. Employment in caring for Country increases conservation and other land values, and can provide comprehensive community benefits, particularly for Indigenous communities where people’s relationships include those with their Country. Employment was a priority of the Interplay wellbeing framework, and a primary theme of the analysis of qualitative data in Chapter 4, which is a publication from the Health Promotion Journal of Australia, in which focus groups and interviews from the Interplay research were analysed with initial themes of work and wellbeing.

USING STORIES TO UNDERSTAND ABORIGINAL WELLBEING
Chapter 4: Education and wellbeing

4.1 Chapter outline

This chapter was published as “Re-imagining Indigenous education for health, wellbeing and sustainable development in remote Australia” in the journal Creative Education (Schultz et al. 2018c), and involved the analysis of qualitative data on the themes of education and wellbeing. Creative Education is an open access journal that records and promotes advances in education (Scientific Research 2019). Co-authors were Tammy Abbott, Jessica Yamaguchi and Sheree Cairney whose contributions were 10%, 10% and 20% respectively. Because the journal is international the term “Indigenous” is used as an internationally recognised word, which includes both Aboriginal and Torres Strait Islander people.

4.2 Abstract

In Australia both Indigenous communities and governments are concerned at the educational outcomes of Indigenous children, especially children in remote regions. However, there are divergent visions of Indigenous education. For Indigenous communities, education embraces culture and contributes to wellbeing, the focus of our research, while for governments, educational goals comprise school attendance, English literacy and completion of year 12. Our team of Indigenous and non-Indigenous researchers explored wellbeing for Indigenous people in remote Australia through focus groups and interviews. Grounded analysis showed how research participants would like more Indigenous education for their children. Their vision for education includes transmission of Indigenous knowledge and skills in art, culture, history, land and sea management, and literacy in both English and Indigenous languages. Remote Indigenous communities hold under-utilised resources and strengths for education, and Indigenous people’s knowledge is needed, particularly in conservation and land and sea management. Research participants feel thwarted by education policies which require competition for funding and segregation of services. Re-imagining education from the perspectives of Indigenous communities offers opportunities to enhance education, together with employment, health and wellbeing, and strengthen Indigenous languages, knowledge and skills. These are important for both overcoming Indigenous disadvantage and for Australia to reach its commitments to conservation and sustainable development goals.

4.3 Introduction

Education directly enhances people's agency, capacity, capabilities and wellbeing. Indirectly, education enhances health and wellbeing, through both economic and intangible benefits, such as creativity, tolerance and community cohesion (Vila 2000). **Error! Bookmark not defined.**Both the people who are educated, especially children, and their communities benefit from education (Robeyns 2006). Benefits of education cross generations, highlighting the importance and urgency of improving the effectiveness of Australia's education systems to meet the needs of Indigenous peoples (Partington and Beresford 2012).

4.3.1 Indigenous Australians

Indigenous Australians comprise two distinct and diverse populations, Aboriginal and Torres Strait Islander peoples, who together number approximately 700 000 people or 3% of Australians. For brevity we refer to "Indigenous" Australians to include both Aboriginal and Torres Strait Islander peoples.

Indigenous Australians have occupied Australia for 50000 years, and continue to identify themselves as distinct from other Australians, whose arrival since the late 1700s led to the deaths of 75% of Indigenous Australians (Australian Institute of Health and Welfare 2015). Forced removal of Indigenous children from their homelands and families continued until the 1970s through Australia's assimilation and protection policies (Partington and Beresford 2012).

Australians voted in a referendum in 1967 for the national government to take responsibility in Indigenous affairs (Partington and Beresford 2012). Since then Indigenous Australians have been included in Australia's population census, providing data on education, employment and other indicators. Availability of data has prompted governments and communities to develop policies intended to improve Indigenous indicators (Altman, Biddle, and Hunter 2008).

Indigenous Australians established that they had legal right to their lands in the 1992 Mabo court case if they could demonstrate that their pre-colonial system of land tenure, dubbed "native title", still functions (Altman and Markham 2015). However, native title rights are limited and Indigenous people's economic opportunities and access to appropriate education, health, and infrastructure remain inadequate, especially in remote regions where Indigenous people comprise 30% of the population (O'Faircheallaigh 2015; Australian Bureau of Statistics 2018b). Indigenous Australians remain disadvantaged in almost all socioeconomic indicators, and many indicators are lower for people in remote regions.

4.3.2 Indigenous Australian Education

Educational disadvantage for Indigenous children in remote Australia is of widespread concern. Less than 2/3 of Indigenous children in remote regions attend school; less than half reach minimum reading standards at Year 3; and only 42% complete 12 years of schooling compared with 89% of all Australian students (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018). Policy-makers believe that improving these education indicators is necessary to improve people's life experiences (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018). However, aspects of Australia's approach to Indigenous education are based on assumptions that are not supported by evidence, and may undermine the strengths and diversity of Indigenous people (Guenther 2013).

Education is much more than schooling, especially for Indigenous people, for whom school has arisen in the context of historic and on-going colonisation. Attending school has costs, particularly where children face racism in its many forms (Bodkin-Andrews and Carlson 2016). Racism at school contributes to the disengagement of Indigenous children and families from school and the education system (Gollan and Malin 2012).

4.3.3 Education, Health and Wellbeing for Indigenous Australians

In most populations, education is directly correlated with health. Education improves health throughout people's lives, through psychological and social effects such as self-esteem and confidence, and increasing health literacy (Cohen and Syme 2013). Education also improves health through increasing employment opportunities, facilitating access to healthier, safer, more secure and higher status work (Vila and Garcia-Mora 2005). The greater economic benefits from skilled and professional employment further increase the health benefits of education (Ross and Wu 1995).

However, relationships between education and health are in both directions: better health enhances people's motivation and capacity to learn, while many medical conditions can interfere with learning (Basch 2011). Hearing impairment is a particular concern for Australian Indigenous children in remote regions where 90% suffer ear disease (Morris et al. 2005)**Error! Bookmark not defined.**. Hearing impairment causes problems at school for both affected children and their peers. Entire classrooms are disadvantaged when children are disruptive because they cannot hear and communicate effectively (Partington and Galloway 2005).

Chronic or recurrent illnesses that lead to frequent absences also affect school performance, an important issue for Indigenous Australian children, in whom many conditions are more common than in non-Indigenous children (Dockett, Perry, and Kearney 2010). These include

anemia, diarrhea, dental caries, and respiratory, skin and urinary infections (Gracey and King 2009). Overall, relationships between children's health and education are complex, with factors such as parental employment affecting both health and education (Lynch and von Hippel 2016)**Error! Bookmark not defined.**. However, assumptions from other populations may be confounded in their application to Indigenous Australians (Biddle 2006).

For Indigenous Australians a U-shaped relationship between education and health has been described, with better health among the people with the lowest and the highest levels of education (Shepherd, Li, and Zubrick 2012). This relationship suggests that the interactions between education and health for Indigenous people differ substantially from the consistently positive associations in other populations (Lynch and von Hippel 2016). Damaging effects of racism that Indigenous people face at school and work may outweigh possible future benefits of education (Shepherd, Li, and Zubrick 2012). Because of incomplete knowledge of relationships between health and education for Indigenous people, current strategies to improve education may not lead to anticipated benefits (Boughton 2000).

4.3.4 Improving Educational Outcomes for Indigenous Australians

The Australian Government's 2009 Closing the Gap: National Indigenous Reform Agreement aimed to address disparities in socio-economic indicators between Indigenous and non-Indigenous Australians. The Agreement recognized interconnections between education, employment and health, and included targets of reduced disparities between Indigenous and non-Indigenous Australians in each (Council of Australian Governments 2012). The education targets were to eliminate disparities in school attendance, and halve the disparities in reading, writing and numeracy between Indigenous and non-Indigenous children by 2018; and halve the disparity in year twelve attainment by 2020. Health targets were to halve the child mortality difference by 2018 and eliminate the difference in life expectancy by 2031 (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018).

While many Australians support the idea of reducing disparities, both Indigenous and non-Indigenous people have raised concerns with the Closing the Gap strategy. The perceived need for Indigenous Australians to overcome disparity and become more like non-Indigenous people reflects a perception of Indigenous people as problematic, and of non-Indigenous people as providing appropriate targets (Walter 2016). This approach can overlook the strengths, diversity and different lifeways and aspirations of Indigenous people (Altman 2009).

Effective approaches to policy development to reduce Indigenous disadvantage require attention to needs defined by Indigenous people and communities themselves.

Wellbeing provides a basis for defining need, and an opportunity for development that is not biased towards any particular culture or section of society (OECD 2017). Enhancing wellbeing as a development goal enables fair comparison between people of different cultures, within societies and over time (Cairney et al. 2017; OECD 2017). Indigenous Australians in remote communities report high levels of wellbeing with mean life satisfaction 7.6, equal to the average life satisfaction of all Australians (Australian Bureau of Statistics 2015, 2016a), an overlooked statistic when much policy focus is on changing poor indicators in education, employment and health, violence, crime and imprisonment (Australian Institute of Health and Welfare 2015). Our research was designed to explore wellbeing for Indigenous people in remote Australia to provide a basis for education and other policy development based on Indigenous people's diverse aspirations and goals.

4.4 Methods

4.4.1 Education as a wellbeing priority

Our research aimed to explore and explain the conundrum of high levels of wellbeing despite low indicators in education, employment and health among Indigenous people in remote Australia, through a framework developed collaboratively with Indigenous researchers and participants. Both Indigenous and non-Indigenous methodologies and knowledge were used, with Indigenous and non-Indigenous people teaching and learning from one another in a two way process (LaFlamme 2011). We aimed to share knowledge between communities, scientists and government, and ensure community development, rigorous science, and policy impact (Cairney et al. 2017).

Six priorities were identified to form a wellbeing framework: education, employment and health being those of government; and Indigenous people's priorities of community, culture and empowerment.

Indigenous communities throughout remote Australia with connections to the research team were invited to participate. Four communities were selected, with a range of levels of remoteness, and diverse geography, culture and language use, population size and proportion who are Indigenous.

In each community, Indigenous Community Researchers were employed in the research, including facilitating focus groups through Indigenous organizations. Focus groups enable exploration of participants' knowledge and experience, building on other group members' contributions. They are particularly valuable in cross-cultural research, and in enabling criticism of services that individuals may withhold from researchers (Kitzinger 1995). No-one was excluded from participation, and people who could not participate in focus groups were

interviewed individually. Demographics of participants are described in Tables 4.1 and 4.2, with 68 Indigenous and seven non-Indigenous participants in 14 focus groups, and four Indigenous and one non-Indigenous service providers interviewed between June 2014 and June 2015.

Table 4.1: Research participants in focus groups by service, Indigenous status and gender

Service	Participants	Total participants	Indigenous participants	Female participants
Business development	**Managers**	2	1	0
Education	**Managers, employees**	6	6	6
Education	**Managers, employees**	12	12	9
Land and Sea Management	**Community members**	4	4	3
Land and Sea Management	**Employees**	4	4	1
Land and Sea Management	**Employees**	4	4	4
Land and Sea Management	**Employees**	7	7	0
Business development	**Managers**	2	1	0
Education	**Managers, employees**	6	6	6
Education	**Managers, employees**	12	12	9
Land and Sea Management	**Community members**	4	4	3
Land and Sea Management	**Employees**	8	8	8
Health	**Managers, employees**	4	1	1
Health	**Employees, community**	9	9	0
Health	**Employees**	3	1	3
Municipal	**Managers, employees**	6	6	4
Municipal	**Managers**	2	1	1

Research	**Employees**	4	4	4
Total		75	68	44

Focus groups and interviews were audio-recorded, then transcribed and thematically coded, based on the wellbeing priorities, and on sub-themes which emerged in the discussions**Error! Bookmark not defined.**.

This article describes findings that relate to education and its relationships with wellbeing for Indigenous people in remote Australia.

Table 4.2: Interview participants by service, Indigenous status and gender

Service	**Participants**	**Total Interviews**	**Indigenous Interviewees**	**Female Interviewees**
Art	**Manager**	1	1	1
Business development	**Manager**	1	1	0
Education	**Founder**	1	1	1
Education	**Manager**	1	1	1

4.4.2 Ethics

All Indigenous people and organizations involved actively engaged with the research, providing an Indigenous ethical framework for the research. Formal ethics approval was granted by the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research (Reference 2013-2125) and the Western Australian Aboriginal Health Ethics Committee (HREC Reference Number 549). All participants gave written informed consent.

4.5 Results

4.5.1 Education for meaningful livelihoods for people in remote regions

Research participants described the need for distinctive Indigenous schooling and education to support Indigenous people to remain on their traditional land with knowledge and skills to engage in contemporary society:

> “We grew up here and are the traditional owners. Our elders fought hard for this country to continue on for other generations.” (Participant in focus group 9)

> “The best learning for our people is on the land.” (Interview 4: Indigenous service provider)

> “The school’s mantra is Indigenous people: strong in both worlds.” (Interview 2: non-Indigenous service provider)

Research confirmed that Indigenous families in remote Australia appreciate and enjoy quality school and education:

> “Lots of our kids love school, they love school.” (Participant in focus group 4)

4.5.2 Improving school attendance and educational participation

Increased school attendance was a target of the Closing the Gap strategy, but there has been no progress nationally in increasing Indigenous school attendance overall, and attendance in the Northern Territory declined (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018). In our research, participants identified reasons children and young people do not attend school. These included children feeling that they lack freedom and connection to the culture of the school, and that they have out-grown school. Non-attendance was then linked to risk-taking behaviours:

> “I think it is the freedom, like our people weren't locked up … enclosed in a school getting all of this stuff pumped into us. …We were out on the land and education was cultural, and education was survival and learning to live off the land in our culture and our country … not in the classroom.” (Interview 4: Indigenous service provider)

> “They obviously don’t want to go to school coz they feel like they’re too big to go to a school. They don’t feel like they little kids going to a school setting. Is there another place they could go to... to learn to continue their learning in [this community]?” (Participant in focus group 4)

> “Some kids reach 13 and 14 years old and think they are adults – they start drinking and gunja [marijuana] and take off.” (Participant in focus group 4)

In our research, participants identified how communities could respond to children not attending school by listening to community elders and seeking cultural advice:

> “The elders say …. send kids to school.” (Participant in focus group 9)

> “Cultural advisors help with any trouble like kids going to school.” (Participant in focus group 9)

4.5.3 Pathways from education to employment

Although the importance of attending school was recognized, some participants in our research believed that culture is more important than school, and if young people are educated about Indigenous culture, then attending school may be less important.

> "If they're old enough to go out, [they should] get away from the community so they learn more cultural stuff. It's an education issue, it's the way learning about the land." (Participant in focus group 1)

For many Indigenous research participants, relationships between education, school and future wellbeing are not closely linked. Research participants stated:

> "The kids don't know how to do things after school, they don't know how to look for a job and they are too shame to. They should have a program at the schools that prepare them for what they do after. They're not working together after they leave school, they don't prepare them for school leaving. Then they get into drugs and everything." (Participant in focus group 6)

> "No pathways – kids leave middle school and don't go onto secondary school." (Participant in focus group 9)

Many employment opportunities in remote communities, such as in art and land and sea management programs arise from Indigenous culture and knowledge. Education to support such employment will enhance Indigenous culture and knowledge, and may be better delivered outside the school environment. Research participants noted:

> "[Young people] recognize the employment pathway between education and programs such as the ranger program, so we support school camps for this program." (Participant in focus group 3)

> "Workplace accredited training, largely not classroom based. TAFE send out teachers to work on site – culturally appropriate, not as invasive." (Interview 2: non-Indigenous service provider)

Indigenous history and culture are of special interest to Indigenous people and may assist in retaining Indigenous students' interest. Research participants noted the importance of these areas:

> "People including our own mob don't know Indigenous history. It's not taught in schools, in training there is nothing on it." (Participant in focus group 10)

> “Learning on country program… working with schools. Culture program has always been here, to help them understand the Dhuwa, Yirritja way that’s been here since the start.” (Participant in focus group 14)

4.5.4 Indigenous knowledge and expertise

Indigenous histories and cultures are described in Australia’s education curriculum as a cross-curriculum priority rather than an area of learning, with the intention of improving outcomes for Indigenous students. Learning from, with and about Indigenous Australians is not required in Australian schools (Australian Curriculum Assessment and Reporting Authority (ACARA) ; Williamson-Kefu 2016).

Research participants identified how Indigenous knowledge may be valuable for all children in the teaching of art, culture, history, ecology, land and sea management and language. Indigenous education occurs both in the school and when working on the land:

> “She walks around the school; shows kids different types of plants and cultural education about the plants.” (Participant in focus group 4)

> “It gives you an opportunity to learn the stories of the country as well …when we're out there working, we're learning, we're passing something on to young people.” (Participant in focus group 1)

Indigenous people in our research welcomed opportunities to share their knowledge, and contribute to schooling and education through other services:

> “I like learning both ways – white fella way and Martu way. Helping one another – learning from one another – teamwork.” (Participant in focus group 1)

> “It was hard first, you know. But now the Balanda [non-Indigenous people] here today they've learned a lot of things what we - that we started to respect them, you know and they respect us, also.” (Participant in focus group 7)

> “The little term is ‘Ngapatji, ngapatji’ and that means - you come and work with us, we work with you. Two way and that's the rule, you know”. (Participant in focus group 7)

4.5.5 Indigenous Languages

Indigenous languages were important for Indigenous research participants. Multilingualism is a feature of Indigenous Australian society and connects people to their land, community and family. Indigenous languages are also used as a sign of resistance against colonisation and Australia’s monolingual Australian government and institutions (Simpson and Wigglesworth

2018). Indigenous research participants described the value of Indigenous languages for Indigenous children at school:

> “[Indigenous] people want to talk their language because to them, it's like they got their language they speak all the time. Why don't we speak our languages at school, you know, like they want to be recognised?” (Participant in focus group 4)

> “Coz our language, they should put our language, that [Indigenous] language, we should be there, coz we're the first nations of the land.” (Participant in focus group 4)

4.5.6 Indigenous Land Management

Indigenous land management involves Indigenous people using customary knowledge and skills together with modern techniques in managing fire, weeds and feral animals; monitoring and protecting threatened species; inland waterway and coastal surveillance; revegetation; pastoralism; harvesting of bush foods; and art and craft work (Hill et al. 2013). Indigenous land management programs are popular and effective for engaging people in education and employment, as one research participant noted:

> “I can’t think of another program that has achieved pathway from training into employment like this program has done. There are not any other examples of things happening in this community that have successfully achieved this outcome. This program provides training within the context of the job…. There's four of the fellows here, they're doing Certificate 3 in Conservation and Land Management, so the work here links into that.” (Interview 1: Non-indigenous Land Management program leader).

4.5.7 Intersectoral partnerships

Some organisations involved in the focus groups were providing services beyond their main role. For example, education services for Indigenous people provide training in land and sea management, and traditional foods and medicines. This supports education, employment and health outcomes. Such collaboration demonstrates commitment to outcomes based on the needs of the Indigenous community:

> “My family have been involved with the kids programs. Every school holidays we go out bush. Over the years they [the school kids] have been supported for this program by DCP [Department of Child Protection] and AMS [Indigenous Medical Service].” (Interview 4: Indigenous service provider)

> "It is a real partnership, that's the way to engage people and the women's group meetings. Engagement, cooking, talking to people, good approach for social work." (Participant in focus group 5)

These examples highlight service perspectives driven by Indigenous communities rather than government departments.

Research participants highlighted commonalities across services and opportunities to work together for common aims:

> "We've had to look at other ways to fund from other avenues and partnerships to pull money in, and taking this on like an enterprise rather than a centrally funded idea." (Interview 2: non-Indigenous service provider)

> "Judy [nurse] is doing preventative work with the school kids, if identified for referral to the Medical services through the school." (Participant in Focus group 3).

Outcomes that Indigenous communities seek from services may not be those that the services are established to provide. These include care of the community and the land. One research participant stated:

> "Government think school and employment are the only priorities. We don't. There's other things." (Participant in focus group 9)

4.5.8 Service models for Indigenous communities

Research participants explained how partnerships and relationships can be important outcomes in themselves:

> "I was apprehensive because I am not Martu [Indigenous] but Martu are working here helping mentor me in my role, it is a good partnership." (Participant in focus group 5)

In remote communities, separation between departments and bureaucracies leads to lack of coordination and inefficiencies in services, and this especially affects Indigenous people. Focussing on the needs of people and communities, and bringing resources together to meet those needs is likely to achieve better outcomes.

Some rules and formalities appeared counter-productive and absurd for research participants. In remote Indigenous communities, greater flexibility around employment and registration conditions may enhance service delivery and outcomes, and reduce the disparities in service provision:

> "We are trying to argue the case that the school-health partnership should allow the psychologist to work in the school…There are 50 odd kids on a waiting list to see the

> psychologist but as she cannot see the kids at school, so they are not getting the services." (Participant in focus group 4)

Policies and regulations designed to improve service provision and quality in urban centres may be inappropriate in small communities.

Lack of attention to relationships was quite distressing for one of the interviewees, because for her as an Indigenous person, relationships are central to wellbeing:

> "Lack of communication and not working together, too much politics and not working together. Jealously business, it disconnects [Indigenous educational organisation] straight away. Not connected." (Interview 5: Indigenous service provider)

These issues are compounded by competition between service providers for a limited pool of resources. Competition can undermine interpersonal relationships and highlight differences and disagreements among community members and services, particularly when people and services have similar overall aims:

> "It all comes back to the same thing, the funding competing for each other. It's all in silos still. If you say interplay between education and health, that's not how it happens on the ground. They're all working separately silos." (Participant in focus group 10)

> "Because when funding comes to [Indigenous educational organisation], clinic gets jealous, and school want to do it on their own, and they have ideas about [Indigenous educational organisation] and they don't work with [Indigenous educational organisation]." (Interview 5: Indigenous service provider)

4.6 Discussion

4.6.1 Remoteness and equity

Australia's remoteness classifications were developed to support equitable service provision, but did not consider what remoteness means for Indigenous Australians (Australian Bureau of Statistics 2014a). For many Indigenous people, their land is their spiritual home, even though this is classified remote and statistically disadvantaged (Walker, Porter, and Marsh 2012; Birch 2016). Indigenous Australians may be the dominant cultural group in remote communities, and less subject to racism (Priest et al. 2011). Thus Indigenous people's insights are needed to understand the importance of associations between remoteness and statistical disadvantage. Education for non-Indigenous Australians about remoteness may improve educational outcomes for Indigenous Australians in remote communities.

4.6.2 School attendance

The goal of increasing Indigenous children's school attendance assumes that their lower attendance contributes directly to their lower educational outcomes compared with other children (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018; Gray and Partington 2012). However, the relationship is complex, and social, cultural and economic factors that contribute to Indigenous children's lower rates of school attendance also impact on their educational outcomes. For communities for whom the overall outcomes of school are less important, attendance is less important (Gray and Partington 2012).

The importance of school attendance depends on the desired outcomes. Focussing on educational outcomes that meet the needs of Indigenous communities may lead to effective teaching and learning outside the formal school environment (Fogarty and Schwab 2012). As research participants highlighted, attending school may not be necessary, and education about Indigenous culture, language and land management may be better provided outside of school.

Even where attending school is considered essential, policies that manipulate families through coercion and punishment may have negative effects. Strategies that limit people's autonomy can increase the resistance of both parents and children to attending school (Guenther 2013). For example, quarantining portions of welfare payments was introduced to Indigenous communities in 2007, with the aim of improving school attendance. Evaluation showed that welfare quarantining led to an initial reduction in school attendance through increased family stress (Cobb-Clark et al. 2017).

Effective approaches to increasing school attendance take account of the reasons why children do not attend school. In our research, reasons for children not attending school were loss of freedom, the removal from culture, and the disconnection from future livelihoods on the land. Addressing these issues through curriculum development may assist in improving educational outcomes, regardless of school attendance.

Research participants recognised the importance of school and education. They described how involving elders and cultural education could assist in retaining adolescents at school.

4.6.3 Indigenous culture, health, knowledge and land management

Research participants identified cultural, knowledge and infrastructure resources in their communities which could improve Indigenous education, and these are summarised in Table 4.3.

Table 4.3: Strengths and resources to inform development of meaningful indicators of Indigenous education in remote Australia

Source of strength or resource		
Student	**School**	**Community**
Creativity	Transmission of traditional knowledge	Elders and cultural advisors
Eagerness to learn	Learning on country	Indigenous knowledge: ecological knowledge, language, history
Independence	Community-based schools	Family desire to support children at school
	Two-way learning	Partnerships and collaborations between organisations and services
	Workplace based training and assessment	Pathways from education to employment such as through Ranger programs
		Building infrastructure
		Elders and cultural advisors

Indigenous child-rearing skills and practices can contribute to Indigenous education. Indigenous parents emphasize promoting children's freedom to explore and experience the world, which increases their independence and creativity (Lohoar, Butera, and Kennedy 2014). These are strengths of Indigenous communities and can assist in education, and promote learning both within and outside school.

Indigenous people's knowledge could improve the response to ear disease, which harms schooling of all children. Australia's national guideline for ear disease focusses on clinical definitions, treatments and outcomes, and recommends that parents be advised to recognise the problem of ear disease and act quickly if the child has symptoms (Morris et al. 2015). Indigenous community responses to children's ear disease based on Indigenous sign languages and non-hearing communication appear under-recognised (Lowell 2013), as is the experience of learning Indigenous cultural knowledge, where communication difficulties related to hearing impairment do not seem to be a barrier (Fogarty and Schwab 2012).

Australia's 1989 National Aboriginal Health Strategy and each of its iterations have pointed to the wellbeing of Indigenous Australians, their community and land as being central to Indigenous health (National Aboriginal Health Strategy Working Group 1989; Australian

Government 2013). However, the wellbeing of Australia's lands and seas is deteriorating, and current conservation strategies are inadequate (Cresswell and Murphy 2016). Environmental degradation directly contributes to the health status of Indigenous people. For example, in NSW Indigenous people affected by drought associated with human induced climate change are suffering mental health problems and social and economic losses (Rigby et al. 2011), while Indigenous people in urban Victoria reported that degradation of ecosystems contributes to their sicknesses (Kingsley et al. 2009).

Over millennia, Indigenous people's management of lands and seas has contributed to the development of Australia's ecosystems. The removal of Indigenous people from their lands and cessation of Indigenous land management practices are contributing to the deterioration of ecosystems and loss of biodiversity (Cresswell and Murphy 2016). The importance of Indigenous ecological knowledge is increasingly being recognised in Australia's conservation strategies. Indigenous knowledge and skills contribute to research and management of feral animals and weeds, protection of coasts, waterways and other ecosystems, fire management leading to increased carbon storage with potential for large-scale carbon farming, and conservation of biodiversity and ecosystems (Cresswell and Murphy 2016; Hill et al. 2013).

Recognition of the role of Indigenous people in conservation and land management has led to the establishment of Indigenous Protected Areas (IPAs), where Indigenous people are given responsibility for managing their traditional lands and seas, in accordance with Australia's commitments to international organisations such as the International Union for the Conservation of Nature (IUCN). IPAs now comprise almost half of Australia's nature reserves (Cresswell and Murphy 2016) so Indigenous people with land management knowledge and skills are needed for Australia to meet international conservation commitments (Commonwealth of Australia 2011; Fogarty 2012). Including Indigenous knowledge in education curricula, as highlighted in our research, will be essential for this to continue. Since Indigenous knowledge has not been consistently transmitted to younger people, Indigenous people are concerned at the loss of their knowledge which is not yet included in the curriculum (Douglas 2011).

Indigenous people's health depends on the health of the land, so health and land management services could be managed cooperatively (Kingsley et al. 2009). Working in land management improves the health of Indigenous people, because it provides opportunities for increased levels of physical activity and improved diet. This can lead to lower rates of obesity, diabetes and renal disease, and lower blood pressure, blood sugar, cholesterol and cardiovascular disease risk (Burgess et al. 2009). These indicators support Indigenous people's holistic understanding of their own and their country's health, where

caring for the country is caring for oneself and one's family. Indigenous individuals' health is associated with wellbeing of community and country, and with using Indigenous languages (Biddle and Swee 2012).

Indigenous culture, knowledge and languages are important areas of Indigenous expertise, which provide opportunities for two-way learning between Indigenous communities and service providers (McRae et al. 2000). Indigenous languages are embedded in the land, and enable Indigenous people to articulate their unique knowledge. Current Australian schooling in English is likely to be contributing to loss of Indigenous languages and irretrievable loss of Indigenous knowledge (Nettle and Romaine 2000). Australian education authorities are ambivalent about Indigenous languages, with for example Northern Territory bilingual programs cut in 1998, then terminated in 2008 in response to media representation of the crises in Indigenous education (Nicholls 2005; Waller 2012). Meanwhile there is global concern at the loss of indigenous languages and the impact of this loss on cultural survival (United Nations Economic and Social Council 2016). The concerns of Indigenous research participants with using, maintaining and strengthening their languages at school reflect a global recognition of the irreplaceable value of indigenous languages as part of human heritage (Nettle and Romaine 2000).

4.6.4 Service partnerships, coordination and collaboration

Research participants described how cooperation among services enables communities to achieve more with limited resources. Different organisations and services have related aims, and partnerships can involve pooling and sharing of resources. Re-imagining education for the needs of Indigenous people could involve changing funding allocation. Rather than services competing for resources, funding that promotes collaboration among service providers may improve relationships, processes and outcomes across sectors in remote communities. Facilitating collaboration between services in remote communities, such as education and health, could improve outcomes in each. For example, education provided by Indigenous Health Workers in schools could be included in employment structures. This may contribute to overcoming conflicting expectations, racism and stress, which may contribute to the poorer health outcomes among the Indigenous people who reach higher levels of education (Shepherd, Li, and Zubrick 2012).

Opportunities for employment in Indigenous land management provide levers for enhancing overall educational outcomes, including Indigenous and English literacy (Fogarty 2012). Rather than removing people from mainstream economic opportunities, providing culturally driven education and employment increases Indigenous people's employment participation rates. The National Aboriginal and Torres Strait Islander Social Survey showed that strong

traditional culture is associated with improved socio-economic outcomes, as measured and valued by mainstream society (Dockery 2012; Cairney et al. 2017)

While the terminology of the Closing the Gap Strategy suggests reducing inequity, current efforts to reduce disparities between Indigenous and other Australians involve employing increasing numbers of non-Indigenous people to provide services for Indigenous people (Moran 2009). Participants in our research reported non-Indigenous service providers in their communities receiving disproportionately high remuneration packages ‘as high as the Prime Minister.’ (Participant in focus group 10). Salaries of AUD $380 000 [USD 280 000] in addition to accommodation and other entitlements are offered for remote general practitioners (Rural Health West 2017). This remuneration is offered despite lack of evidence of improved recruitment or retention (Buykx et al. 2010). Meanwhile overcrowding and associated health and social problems contribute to the disadvantage of Indigenous people, especially in remote regions (Steering Committee for the Review of Government Service Provision 2016).

The stated commitment to reducing disparity between Indigenous and non-Indigenous Australians is inconsistent with high levels of remuneration for non-Indigenous service providers in remote regions where more than half of Indigenous households live in income poverty (Markham and Biddle 2018). Difficulties in recruiting service providers in remote regions, despite high entitlements, draw into question whether there is commitment to reduce the disadvantage of Indigenous people. Commitment to improved wellbeing for Indigenous people could be demonstrated by more equitable social payments in remote communities. For example, subsidising food supply or improving housing would provide community-wide benefit and enhance equity with service providers (Colles, Maypilama, and Brimblecombe 2014; Moran et al. 2016). Classifications of remoteness defined to enhance equity in service provision have the perverse outcome of increasing the entitlements for services providers but not social payments to Indigenous people. This increases the disparity between Indigenous and non-Indigenous people in remote regions.

4.6.5 Education and Indigenous knowledge outside remote Australia

Our research explored wellbeing with Indigenous people in remote communities and identified education as a priority. Opportunities and strategies to re-imagine education to promote wellbeing require appreciating the aspirations of Indigenous people in remote communities, and recognising the importance of Indigenous expertise in languages and land and sea management. Indigenous people’s contribution to education can support economic development in remote regions, and improve equity between service providers and

Indigenous community members. These strategies for re-imagining Indigenous education in remote communities are summarised in Table 4.4.

Table 4.4: Strategies re-imagining Indigenous education in remote communities

Appreciate remoteness
Value Indigenous aspirations and worldviews
Build collaboration and partnerships
Consider equity between service providers and community members
Strengthen Indigenous knowledge of land and sea management
Support Indigenous people's livelihoods in land management
Reflect Indigenous perspectives on health and wellbeing

Beyond remote communities, themes of Indigenous identity, culture, empowerment, and employment aspirations are important for Indigenous people throughout Australia (Grieves 2007; Hunt 2012). There is scope for expansion of Indigenous land management programs, as Indigenous people in urban areas are eager to establish Indigenous land management practices, based on the success of land management remote Australia (Williamson 2017). Valuing Indigenous knowledge and skills, and recognising Indigenous people's goals and aspirations may enhance Indigenous education and wellbeing, and promote Australia's sustainable development.

Australia is committed to the United Nations 17 Sustainable Development Goals (SDGs). These include goals of sustainable use of land and ocean ecosystems, sustainable food production, responding to environmental changes, and building partnerships (United Nations 2015). Australia's report on progress towards meeting these goals confirms the roles of Indigenous people in meeting these goals (Department of Foreign Affairs and Trade 2018). Re-imagining Indigenous education will enable Indigenous people to contribute knowledge and skills to Australia's efforts towards the SDGs.

Around the world, there is increasing recognition of indigenous peoples' expertise in sustainability (Parsons, Nalau, and Fisher 2017). Indigenous people have knowledge and skills in sustainable practices and management of natural resources, shared custodianship of land, and adaptability to and knowledge of climate change (Ens et al. 2015). Many indigenous cultures including many Indigenous people in Australia aspire to buen vivir, 'living well' as a goal for human development (Gudynas 2011). Living well as a policy goal rather than economic growth provides a radically different approach to development. Many issues highlighted in our research allude to such an approach: interdependent relationships rather

than competition; equality and complementarity rather than personal gain; and autonomy and identity as outcomes of education. Internationally, many indigenous communities emphasise the importance of family and community in ensuring transmission of indigenous knowledge, to complement formal schooling (Magni 2017).

Thus greater awareness of Indigenous people and their aspirations in Australia's overall economy may provide a sound basis for development and assist in reaching commitments to global sustainable development agenda (Magni 2017).

4.7 Conclusions

Positive voices for Indigenous education and wellbeing in Australia's remote communities show diverse benefits and opportunities from engaging with Indigenous people's knowledge and skills in education. Indigenous knowledge of art, culture, history, languages and land management has a key role in the future wellbeing of Indigenous children and in Australia's conservation and land management strategies.

Application of these findings requires action across sectors and levels of Australia's education and land management systems. Greater recognition and use of Indigenous knowledge in the education curriculum would increase understanding of Indigenous culture and languages, and promote capacity for land and sea management. This would assist in ensuring that education in Australia offers meaningful options for Indigenous children to improve attendance and literacy outcomes, which are of widespread concern. Developing educational indicators based on Indigenous aspirations will drive policy with benefits for Indigenous people and communities, and Australia as a whole. To attain the Sustainable Development Goals requires Australia to recognise Indigenous knowledge and skills, and adopt approaches to development that meet broader wellbeing goals than economic growth.

4.8 Chapter summary

This chapter presents an article published in the journal *Creative Education* which describes qualitative data on education and wellbeing, and the important but unrecognised and undervalued contribution of Aboriginal people to education, particularly for Aboriginal children. Recognition and development of the contribution that Aboriginal people can make to education could provide opportunities for development of the livelihoods of Aboriginal people through employment. Links between employment and wellbeing are analysed in the next chapter, which describes health benefits of work.

The article responds to aspects of the first research proposition, that education for Aboriginal people could be improved through understanding and addressing wellbeing, and the second

proposition that a holistic approach to service provision which improves wellbeing will contribute to educational outcomes.

The article in this chapter addresses education and its link to wellbeing, and pathways from education to employment, also linked to wellbeing. The next chapter presents comparable analysis of the focus groups and interviews of the Interplay project, addressing themes of employment and wellbeing.

Chapter 5: Work and Wellbeing

5.1 Chapter outline

This chapter is based around a publication entitled “Injury prevention through employment as a priority for wellbeing among Aboriginal people in remote Australia” (Schultz et al. 2018b) which presented analysis of qualitative data from focus groups and interviews on wellbeing from the Interplay project with primary themes related to employment and work. Employment is a government priority for Aboriginal people (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018). However for research participants this is not equivalent to community priorities of meaningful occupation or work, which may not be paid or recognised as economic participation (Cairney et al. 2017).

Themes that emerged were land management as a source of employment, and relationships between employment in land management and protection from interpersonal violence, both perpetration and victimisation, and related interactions with the criminal justice system. The readiness with which participants discussed these issues was striking. The analysis was published in the *Health Promotion Journal of Australia*, the journal of the Australian Health Promotion Association, which publishes articles about educational, cultural, organisational, economic and environmental approaches to promoting health (Wiley Online Library 2019). The publication was timed for a special edition on preventing injury, and co-authors were Tammy Abbott, Jessica Yamaguchi and Sheree Cairney (Schultz et al. 2018b). The research was also presented at the 2017 AITSIS Conference, from where findings were included in a factsheet published by the Department of Prime Minister and Cabinet (2018b).

The term “Aboriginal” is used in this chapter because this is how Aboriginal people like to identify themselves, and more appropriate for this journal which is directed at an Australian audience (Cultural Diversity and Inclusivity Practice 2015).

5.2 Abstract

5.2.1 Issue addressed

Injuries lead to more hospitalisations and lost years of healthy life for Aboriginal people than any other cause. However, they are often overlooked in discussion of relieving Aboriginal disadvantage.

5.2.2 Methods

Four Aboriginal communities with diverse geography, culture and arrangements for service delivery participated in the Interplay Wellbeing project. In each community, Aboriginal researchers conducted focus groups and interviews arranged through Aboriginal

organisations to explore wellbeing. Seventy five participants contributed to 14 focus groups and eight interviews, which were recorded, transcribed and coded. This article reports on injury and possibilities for prevention, unanticipated themes raised in discussions of wellbeing.

5.2.3 Results

Interpersonal violence, injury and imprisonment emerged as themes that were linked with employment and wellbeing. Employment in Aboriginal ranger programs provides meaningful activity, which strengthens people's identity and cultural integrity. This can avert interpersonal violence, through empowering women and reducing alcohol access and consumption.

5.2.4 Conclusions

Ranger programs may provide a much-needed opportunity to control escalating rates of injury for Aboriginal people in remote communities.

5.2.5 So what?

The manifold benefits of Aboriginal ranger programs include reducing violence and its injury and criminal justice consequences.

5.3 Introduction

Injury is the leading cause of loss of years of healthy life among Aboriginal and Torres Strait Islander people; the second most common cause of death after coronary heart disease, and the most common reason for hospitalisation if renal dialysis sessions are excluded (Australian Institute of Health and Welfare 2016b). Preventing injury could provide significant opportunities to enhance the wellbeing of Aboriginal and Torres Strait Islander Australians.

Statistical reports show rates of both injury and its main cause, assault, are increasing among Aboriginal and Torres Strait Islander Australians. The age-standardised burden of injury due to intimate partner violence among Aboriginal and Torres Strait Islander Australians increased 23% between 2003 and 2011 (Australian Institute of Health and Welfare 2016b).

Interactions with the criminal justice system also reflect the damaging impact of interpersonal violence on Aboriginal and Torres Strait Islander Australians. Acts intended to cause injury are the most common offence leading to Aboriginal and Torres Strait Islander people being in custody and imprisoned (Weatherburn 2014). Imprisonment rates for Aboriginal and

Torres Strait Islander people are 13 times higher than those of non-indigenous Australians, and the ratio is increasing (Australian Institute of Health and Welfare 2015).

Imprisonment rates are now so high that Aboriginal and Torres Strait Islander community demographics are affected by missing young men, with 15% of all Aboriginal and Torres Strait Islander men in NT in prison (Payer, Taylor, and Barnes 2015). Aboriginal and Torres Strait Islander women are imprisoned at lower rates than Aboriginal and Torres Strait Islander men but over 20 times more frequently than non-Indigenous women (Weatherburn 2014). These extraordinary rates of imprisonment, often for interpersonal violence against another Aboriginal or Torres Strait Islander person, can undermine community capacity, and contribute to weakening of family structures, child development and cultural identity, further entrenching disadvantage (Weatherburn 2014; Payer, Taylor, and Barnes 2015).

The need for specific strategies to reduce injury among Aboriginal and Torres Strait Islander people has been recognised, together with the inadequacy of research into effective interventions (Sanserrick et al. 2010). Most strategies to reduce injury among Aboriginal and Torres Strait Islander people focus on alcohol control and on alternative approaches to justice (Sanserrick et al. 2010). Preferably, strategies to prevent injury would entail primary prevention through focussing on the aspirations of Aboriginal and Torres Strait Islander people (Eversole 2011).

Aboriginal ranger programs provide opportunities for employment for Aboriginal people in land and sea management, often using a combination of customary and modern knowledge and techniques. Ranger programs include commercial economic activities such as pastoralism and harvesting bush foods, managing fire, water, feral animals and weeds, and ceremonial activities. Substantial economic, environmental, health and social benefits have been demonstrated from ranger programs (Hill et al. 2013).

This report draws on the need for Aboriginal people to lead policy development to enhance their wellbeing (Cairney et al. 2017). Discussion that was unanticipated by the researchers described opportunities to prevent interpersonal violence and its injury and criminal justice repercussions within a research program focussed on the development of a multi-faceted approach to wellbeing in remote Australia.

5.4 Methods

5.4.1 Interplay project

The Interplay project was a study conducted by the Cooperative Research Centre for Remote Economic Participation (CRC-REP) to identify Aboriginal and Torres Strait Islander

priorities for wellbeing in a policy framework for economic development in remote Australia (Cairney et al. 2017).

Based on a 'shared space' approach to collaboration between remote communities, government and scientists, the Interplay Wellbeing Framework was designed to bring together the government's priorities of education, employment and health, with people's priorities of community, culture and empowerment (Cairney, Abbott, and Yamaguchi 2015). The approach throughout was based on the strengths of the Aboriginal and Torres Strait Islander communities. From 2014-2015, qualitative and quantitative data were collected to build on the wellbeing framework. This article reports on the qualitative data relevant to injury that arose in discussions of wellbeing and employment.

5.4.2 Community and individual participants

Four Aboriginal communities in remote regions of WA and NT participated in the research, selected through their relationships with the researchers. Each of these communities was Aboriginal rather than Torres Strait Islander so this report will refer to Aboriginal communities and people.

From these communities 42 Aboriginal community researchers were employed to collaborate in designing the research, collecting data and communicating results (Cairney, Abbott, and Yamaguchi 2015). Community researchers recruited participants from staff and clients of Aboriginal organisations providing services in health and community care, education, employment, consultancy and research, and land and sea management through Aboriginal ranger programs.

5.4.3 Procedure

Fourteen focus groups and eight interviews were conducted between June 2014 and June 2015, exploring the Interplay Wellbeing Framework domains of education, employment and health, community, culture and empowerment. A total of 75 people participated in the research, including 68 Aboriginal people, 30 of whom were men. Demographic details are shown in Table 5.1 (McRae-Williams et al. 2018).

The focus groups and interviews were recorded, transcribed and coded into themes using NVivo (NVivo Qualitative Data Analysis Software 2012). This report describes how employment contributes to wellbeing where coding of these items linked to preventing injury. The Interplay research project did not involve specific enquiry about injury or safety, and these were not anticipated as themes. However, analysis of focus groups and interviews identified the importance of these issues to research participants as they discussed wellbeing.

5.4.4 Ethics

Formal ethics approval was granted by the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research (Reference 2013-2125) and the Western Australian Aboriginal Health Ethics Committee (Reference 549), with letters of support from all participating organisations.

Table 5.1: Focus group and interview participants by gender and Aboriginal status

Service	**Aboriginal**		**Non-Aboriginal**		**Total**
	Male	**Female**	**Male**	**Female**	
Aboriginal Corporations and Associations	7	17	1	0	25
Women's Council	0	4	0	0	4
Health Services	10	1	1	3	15
Ranger Programs	7	0	2	0	9
Small Enterprises	1	0	0	0	1
Community Focus Groups	1	20	0	0	21
Total	**26**	**42**	**4**	**3**	**75**

5.5 Results

Wellbeing as a discussion theme led research participants in both focus groups and interviews to discuss the importance of employment. Most of the employment opportunities discussed were in Aboriginal ranger programs, reflecting the organisations through which the research participants were recruited and how much people value these programs.

5.5.1 Employment provides education and training in both Aboriginal and non-Aboriginal cultures

Employment in Aboriginal ranger programs provides Aboriginal cultural education and training towards formal qualifications. This strengthens Aboriginal identity and can open opportunities for mainstream employment:

> “It gives you an opportunity to learn the stories of the country as well …when we're out there working, we're learning, we're passing something on to young people.” (Ranger focus group 1)

> “If they're old enough to go out, get away from the community so they learn more cultural stuff. It's an education issue, it's the way learning about the land.” (Ranger focus group 1)

Leaders of ranger programs elaborated on formal educational opportunities:

> “There's four of the fellows here, they're doing Certificate 3 in Conservation and Land Management, so the work here links into that.” (Interview 1)

> “I can’t think of another program that has achieved pathway from training into employment like this program has done. There are not any other examples of things happening in this community that have successfully achieved this outcome. This program provides training within the context of the job.” (Interview 1).

In contrast, outside of ranger programs, research participants noted the lack of integration of employment and training, which can impair people’s wellbeing:

> “But you know that doesn't necessarily always work that way. They could see a job that's perfect for them, but then they don't get that job simply because … they don't have enough degrees. Why didn't they get the job? Was it because of the colour of the skin?” (Interview 5)

> “[Organisation] came and stuffed it up. We did all this training when [organisation] came and trained for nothing. No jobs.” (Women’s Group focus group)

5.5.2 Employment strengthens identity

Research participants described how wellbeing is enhanced through strengthening their identity. Employment in Aboriginal ranger programs strengthens Aboriginal identities through its use of their specific skills and expertise required for the work.

Distinctive cultural understandings of employment were raised in a number of interviews. Where employment enhances people’s sense of identity and integrates with the market economy there are mutual benefits for the Aboriginal employees and the economy, as articulated here:

> “You need that initial investment from community to create a market-oriented product. Money that comes into the project is directed by the community into an appropriate supported program that delivers outcomes to market.” (Interview 2)

> "Working on country and land management is one of the most important things we have in these communities… community and land connects everyone together, emotionally, physically, spiritually and culturally." (Interview 1)

> "Ranger program is a blue sky idea, fee for service model where industry can engage with a cultural model. Engaging [local Aboriginal people] with an Indigenous lens. Environment management is a strong knowledge area and skill set of the Aboriginal people. We asked: What are your skills and interests? Engage someone through their assets not their disadvantage – it's empowering." (Interview 2)

In contrast for the research participants, mainstream employment opportunities appear remote:

> "[The mine] has lately been opening up changes to employ people directly. Surprising how little employment is there for the [Aboriginal people]. Roughly twenty [Aboriginal people] employed at the moment." (Aboriginal business focus group)

> "Failed concept is to bring Indigenous into mainstream concepts. Strong concept is that culture and work can give opportunity; it is done well and works." (Interview 2)

5.5.3 Meaningful activity

Research participants described employment as a source of meaningful activity, providing an opportunity to reduce boredom, and enhance self-respect:

> "People need more things to do that are worthwhile." (Women's council focus group)

> "We're providing support across the board like a wrap-around service which I suppose employment agencies don't provide at all – it's part of the job that has meant one on one support – this has been part of the success of the program…. Making sure land managers are getting their licenses and holding onto them – staying out of jail." (Interview 1).

5.5.4 Empowerment particularly for women

Research participants described how they can be empowered through ranger programs by the recognition of their distinctive cultural knowledge:

> "The country and being in charge of managing it is extremely important to people in the desert and probably largely across Indigenous communities in Australia." (Interview 1)

> "That [work] made me stronger within my confidence, my abilities, my knowledge, you know, I can be an outspoken speaker…" (Women's council focus group)

Through strengthening cultural and personal identity, employment empowers people. Women participants described how such empowerment enables them to protect themselves from violence:

> “That's why I think all ladies here, we have got more power over, empower over the men, our tribal men.” (Aboriginal corporation focus group)

> “I was abused in domestic violence but this [employment] made me stronger, more confidence, stronger abilities. No men have anything over me anymore.” (Women’s council focus group)

5.5.5 Reducing access to and consumption of alcohol

Research participants in ranger programs described increased wellbeing through reduced substance use and increased physical activity:

> “Health … like I look at it, I'm get away from drinking, and I'm out there working, I'm fit!” (Ranger focus group)

Of note alcohol and drug tests conducted for workplace safety were described positively in the context of desirable employment:

> “Rangers … have to meet fitness for work tests, drug and alcohol tests, criminal background checks… Some people have actively changed (their health and habits) to get into this work.” (Interview 2)

Participants openly discussed issues with problematic alcohol consumption, and associated interpersonal violence, and the potential for employment to assist in controlling these:

> “[Working] gets them away from the streets and from alcohol and drugs.” (Aboriginal corporation focus group)

> “Drugs and alcohol is the biggest issue – leads to domestic violence and that leads to kids being troubled. Domestic violence at the home.” (Aboriginal corporation focus group 2)

Ranger work, undertaken at a distance from alcohol outlets, supports people to reduce their alcohol consumption:

> “That ranger program… they're getting out and away from the community and some of the men said … ‘It's good you know, you're away from alcohol, you're out on the country. It's good.’” (Women’s council focus group)

Employment removed from alcohol outlets reduces access, while people choose to reduce their consumption in order to hold employment:

> “Takes them away from alcohol and drugs.” (Women’s council focus group)

5.5.6 Rehabilitation after release from prison

Research participants identified the need for employment to support rehabilitation of family members after release from prison:

> “When they come out of prison they have nothing for them for aftercare – they go back in, they come out for a couple of days and steal again and go back into prison. This aftercare service support could be part of employment.” (Women’s Group focus group)

In summary, research participants identified a range of wellbeing benefits from employment, particularly in ranger programs, including reducing interpersonal violence. Stigmatised issues of interpersonal violence, alcohol misuse, and imprisonment were raised spontaneously, leading to the suggestion that employment offers opportunities for prevention. Interpersonal violence was raised explicitly in the discussions about alcohol and empowerment of women. Prevention of imprisonment (“staying out of jail”) was raised by a ranger program service provider as part of ensuring on-going employment, and by women discussing how employment contributes to rehabilitation from prison.

5.6 Discussion

By interpreting employment broadly and flexibly, the Interplay project has established the links between employment and wellbeing for Aboriginal people in remote Australia, who are marginalised in Australia’s economic development through limited employment opportunities associated with poor socioeconomic status (Jordan and Fowkes 2016).

Employment enhances the wellbeing of Aboriginal people in remote communities. Research participants described how employment contributes to education and training, strengthening identity, meaningful activity, empowerment, and reducing access to and consumption of alcohol.

Beyond well-established benefits of employment, and unanticipated in the research project, was discussion of how employment can contribute to preventing interpersonal violence. Research participants explained how employment in ranger programs that strengthen Aboriginal cultural identity reduces the risks of interpersonal violence. In this way, ranger programs could provide community-led injury prevention. This is consistent with World Health Organisation (WHO) reports that employment prevents interpersonal violence. WHO nominates a range of mechanisms relevant to the situation in Aboriginal communities, namely providing a source of income and meaningful activity; offering single-gender environments; separating partners; and reducing access to alcohol for both perpetrators and

victims (World Health Organization and London School of Hygiene and Tropical Medicine 2010). In Australia, remote communities suffer from many risk factors for injury through interpersonal violence, including high rates of alcohol and drug use; low levels of education; high rates of unemployment and receipt of welfare benefits; and remoteness (Heise 2011; Payer, Taylor, and Barnes 2015). The participants in this study described how interpersonal violence directly impacts on themselves as victims, and perpetuates cycles of imprisonment and broken families.

Aboriginal ranger programs provide great benefits in health and wellbeing, cultural and social, economic and environmental outcomes. These programs are increasing in scale and scope, with government, non-government and philanthropic investments totalling around $120 million per year (Hill et al. 2013). Overall benefits have been quantified at $2.7 for each dollar invested (Social Ventures Australia 2016).

Interpersonal violence and injury are not among the benefits anticipated or measured in the literature on Aboriginal ranger programs (Hill et al. 2013). Furthermore, both perpetrators and victims of interpersonal violence often report shame so may not discuss how this violence affects them (World Health Organization and London School of Hygiene and Tropical Medicine 2010). However, participants in focus groups and interviews in this project readily discussed interpersonal violence and its reduction through employment in ranger programs. The results suggest that measures of interpersonal violence should be included in evaluation of ranger and other employment programs. Possible measures of interpersonal violence that could be linked to the establishment of ranger programs include rates of assault, injury and imprisonment in the community.

5.6.1 Strengths and limitations of this work

Aboriginal research interests and concerns drove the Interplay project, seeking to counter the discourse of Aboriginal deficit and disadvantage that permeate research about Aboriginal people (Altman 2009). For disadvantaged communities such as those in this study, the approach based on strengths and the community-driven methodology affirm people's agency, and the research itself provides education and employment opportunities. However, from the perspective of Western research methodologies the research is subject to criticisms of lack of rigour and a range of biases (Day and Francisco 2013; Smith 2012). In particular, the choice of ranger programs to recruit research participants has led to a focus on these programs, and the emphasis on wellbeing may have led to overlooking negative aspects. Nonetheless, exploratory results of this project can guide further research into various aspects of wellbeing, including the mechanisms and extent which employment in ranger

programs may protect against interpersonal violence, and the significance of this in the overall outcomes of Aboriginal ranger programs (Social Ventures Australia 2016).

Participation was limited to four Aboriginal communities in remote NT and WA. Exploration of the perspectives of other communities may provide further insights.

5.7 Conclusion

Ranger programs provide distinctive opportunities for Aboriginal and Torres Strait Islander people.

The decisive finding in this study is that employment in ranger programs may reduce interpersonal violence, and resulting injury and incarceration in Aboriginal communities. A comprehensive strategy is needed to combat injury in Aboriginal and Torres Strait Islander communities: increasing appropriate employment opportunities is part of this strategy.

5.8 Chapter summary

The article in this chapter, published in the Injury Prevention Special Edition of the *Health Promotion Journal of Australia* describes previously unrecognised benefits of Indigenous Land Management, Caring for Country, in preventing interpersonal violence, and related injury and imprisonment. Thus Caring for Country has potential to improve education, employment and health outcomes for Aboriginal Australians, and can provide an holistic approach to services for Aboriginal people in remote communities. This responds to both research propositions. Education, employment and health outcomes for Aboriginal people could be improved through understanding and addressing wellbeing, through caring for Country. An holistic approach to service provision based around land management programs will optimise wellbeing.

With this and the previous chapter addressing education and work in relation to wellbeing, the next chapter uses the same form of analysis of data from the Interplay project to address health and wellbeing for Aboriginal people in remote Australia, highlighting the importance of culture and particularly relationships with land.

Chapter 6: Health, Culture and Wellbeing

6.1 Chapter outline

This chapter is based around a published analysis of qualitative data from focus groups and interviews on wellbeing from the Interplay project, with primary themes related to health, and wellbeing defined by participants for themselves. It was published as “Indigenous Land Management as primary health care: qualitative analysis from the Interplay research project in remote Australia” in *BMC Health Services Research*, an international journal that covers all aspects of health services research, including healthcare needs and demand (Springer Nature 2019a). Co-authors and their contribution to the paper were Tammy Abbott 10%, Jessica Yamaguchi 10% and Sheree Cairney 20%. Because the journal is international the term “Indigenous” is used as an internationally recognised word, which includes both Aboriginal and Torres Strait Islander people.

6.2 Abstract

6.2.1 Background

For Indigenous Australians, health transcends the absence of disease, and includes the health and wellbeing of their community and Country: their whole physical, cultural and spiritual environment. Stronger relationships with Country and greater involvement in cultural practices enhance the wellbeing of Indigenous Australians, and those in more remote regions have greater access to their Country and higher levels of wellbeing. However, this does not translate into improvements in clinical indicators, and Indigenous Australians in more remote regions suffer higher levels of morbidity and mortality than Indigenous people in non-remote areas, and other Australians.

The Interplay research project aimed to explore how Indigenous Australians in remote regions experience high levels of wellbeing despite poor health statistics, and how services could more effectively enhance both health and wellbeing.

6.2.2 Methods

Indigenous Australians in remote regions, together with researchers and government representatives, developed a wellbeing framework, comprising government and community priorities: education, employment and health, and community, culture and empowerment respectively. To explore these priorities Indigenous community researchers recruited participants from diverse Indigenous organisations, including Indigenous Land Management, art, business development, education, employment, health and municipal services. Fourteen focus groups and seven interviews, involving 75 Indigenous and ten non-Indigenous service

providers and users, were conducted. These were recorded, transcribed and analysed, using thematic analysis, based on the wellbeing framework.

6.2.3 Results

Research participants highlighted Indigenous Land Management as a source of wellbeing, through strengthened identity and empowerment, access to traditional food sources, enjoyable physical activity, and escape from communities where large amounts of alcohol are consumed. Participants described how collaboration and partnerships between services, and recognition of Indigenous languages could enhance wellbeing, while competition between services undermines wellbeing. Indigenous Land Management programs work across different sectors and promote collaboration between services, serving as a source of comprehensive primary health care.

6.2.4 Conclusions

Developing primary health care to reflect distinctive health needs of Indigenous Australians will enhance their health and wellbeing, which includes their communities and Country. Indigenous Land Management consolidates aspects of comprehensive primary health care, providing both clinical benefits and wellbeing, and can provide a focus for service collaboration.

6.3 Background

The health of Indigenous Australians is poor compared with that of other Australians and has been so since data were first collected on Indigenous Australians in the 1960s (Altman, Biddle, and Hunter 2004). Indigenous peoples throughout the world, including in Australia, experience poorer health than the dominant peoples in their countries as a result of colonisation, appropriation of peoples' lands and continuing discrimination (Stephens et al. 2006). Life expectancy, infant mortality, low birthweight, and social determinants of health including education, employment, and incomes for Indigenous Australians are considerably worse than for other Australians, and the differentials are more marked than in comparable countries such as New Zealand, Canada and USA (Anderson et al. 2016).

Australian Indigenous people are diverse, being contemporary representatives of over 250 language groups throughout a vast nation, whose initial contacts with non-Indigenous colonisation stretched from the late 1700s until the Pintupi people lost their independence from settler society in the mid-1980s (Kimber 2006; Dixon and Blake 1979). Many socio-economic and health indicators are worse for Indigenous people in more remote regions, particularly literacy, numeracy, income, employment status, many disease risk factors, and mortality (Australian Institute of Health and Welfare 2015). The association between remote

residence and poorer health is so strong that some researchers suggest facilitating movement of Indigenous people to larger towns to improve their health (Zhao 2017).

However, the concept of remoteness is not meaningful for many Indigenous people, especially those who remain on the land their communities have occupied over thousands of generations (Birch 2016). Australian measures of remoteness were developed to assist in equitable distribution of government services without reference to Indigenous people (Australian Bureau of Statistics 2013). For many Indigenous Australians remoteness reflects presence in their own Country, their spiritual and physical home, a place of fulfilment, meaning and identity (Birch 2016). “Country” in this sense, and throughout this article, is defined by Indigenous people, and includes land, sea, sky, rivers, sites, seasons, plants and animals; place of heritage, belonging and spirituality (Australian Museum website 2017).

Indigenous Australians in remote regions describe higher levels of wellbeing and life-satisfaction than those in non-remote regions despite poorer health statistics (Biddle 2012a). For example, a measure of wellbeing that is used in Australia is overall life-satisfaction, based on a single question of how well people feel their life is currently going. People respond based on their own goals, perceptions and values, enabling comparisons across time, and in different cultural, age and gender groups (OECD 2017). In remote regions of Australia, Indigenous people report mean life satisfaction of 7.6; compared with 7.2 for Indigenous people in urban regions and 7.6 for the total Australian population (Australian Bureau of Statistics 2016a, 2015).

Enhancing wellbeing is a function of primary health care, together with responding to individual and community needs, and promoting social justice and leadership for better health. Primary health care includes advocacy for economic, social and community development, and health promotion, to complement clinical services. Indigenous people’s specific needs require attention to ensure the effectiveness of primary health care services (World Health Organisation 1978a, 2008).

Indigenous Australians conceive of health holistically, as an attribute of individuals and their community, which contrasts with narrower individual and clinical understandings of health. Indigenous people’s health includes social, emotional and cultural factors, and is a means to wellbeing rather than a goal in itself (Australian Government 2013; National Aboriginal Health Strategy Working Group 1989). Recognising their distinctive health service needs, Indigenous Australians and their supporters have established community controlled health care services since the 1970s. A range of state and national government sources funds these services, but they depend on government funding, which limits their capacity to provide genuinely community controlled services. For example, undertakings such as

breakfast for undernourished school children, literacy classes, or transport for bereaved people to attend funerals are not supported by funding arrangements, even though clinical improvements have been demonstrated through such approaches (Khoury 2015). Rather, despite the efforts to achieve Indigenous control of the services, there is a focus on defined clinical activity to account for government funding (Australian Institute of Health and Welfare 2016a).

The disease focus of primary health care for Indigenous Australians emphasises monitoring and surveillance of conditions of greatest burden, focussing on people and conditions of highest risk, and prioritising interventions with evidence of greatest clinical benefit (Brough 2001). This epidemiological, disease and risk focussed approach is explicated in funding arrangements, which require health services to report their clinical performance indicators to government funding agencies, including behaviours and risk factors such as prevalence of smoking, alcohol use, obesity and diabetes (Australian Government Department of Health 2015).

6.3.1 Indigenous Land Management

Throughout Australia Indigenous Land Management (ILM) is increasingly being recognised for its benefits across many sectors, including health. ILM involves employment of Indigenous people to manage lands and seas, using both customary and modern techniques. Aims include harvesting of bush foods; monitoring and protection of threatened species; revegetation; control of fires, weeds and feral animals; and art and craft work. ILM depends on Indigenous people's knowledge and skills, including languages and cultural expertise. Colloquially ILM is known as caring for Country (Hill et al. 2013). Since employment rates of Indigenous people in remote Australia are approximately 30%, ILM is an innovative approach to complex disadvantage and disempowerment (Gray, Hunter, and Lohoar 2012).

Indigenous Australians have managed Australia's ecosystems over millennia, and on-going human involvement appears critical for ecosystem function. Recognition of the role of Indigenous people in land management has led to the establishment of Indigenous Protected Areas (IPAs), where Indigenous people are supported to undertake conservation activities on their traditional lands in accordance with Australia's international conservation commitments such as those made to the International Union for the Conservation of Nature (IUCN). IPAs now comprise almost half of Australia's nature reserves (Cresswell and Murphy 2016) so Indigenous people's knowledge and skills are needed for Australia to maintain its conservation estate and meet international environmental commitments (Commonwealth of Australia 2011).

The wellbeing that people experience from involvement in ILM led to Indigenous community leaders asking for research into relationships between their involvement in ILM and clinical indicators. This showed that greater participation in ILM was associated with increased physical activity, better diet, and lower body weight, blood pressure, blood sugar and cholesterol (Burgess et al. 2009).

The Interplay research project explored wellbeing of Indigenous Australians in remote regions who experience high levels of wellbeing despite poor health statistics. In this article, we investigated the role of ILM in wellbeing, through thematic analysis of focus groups and interviews. The Indigenous peoples of Australia comprise both Aboriginal and Torres Strait Islander peoples. For consistency with the term Indigenous Land Management (ILM) and international implications, we have used the capitalised expression term “Indigenous people” in this article for Aboriginal and Torres Strait Islander Australians. Without capitalistion, “indigenous” refers to indigenous peoples worldwide (Cultural Diversity and Inclusivity Practice 2015).

6.4 Methods: The Interplay project

6.4.1 Research design and methodology

The Interplay project was a wide-ranging exploration of wellbeing for Indigenous people in remote regions of Australia, carried out through the Cooperative Research Centre for Remote Economic Participation (Cairney, Abbott, and Yamaguchi 2015). The project brought together Indigenous community members, researchers and government agency staff who are responsible for funding decisions. Qualitative methods were used to increase researchers’ understanding of wellbeing through exchange of experiences, ideas and values, and particularly to explore cross-cultural differences in understanding wellbeing (Petty, Thomson, and Stew 2012). The focus of the Interplay project was on positive experiences and stories, to build a policy approach based on Indigenous people’s strengths, and provide an alternative to the negative perceptions of Indigenous people that pervade the media and literature, undermining Indigenous people’s wellbeing (Bond 2005).

The Interplay project prioritised Indigenous people’s research interests and perspectives throughout the process, which began by developing research methodology and a wellbeing framework. This comprised wellbeing priorities for government agencies, namely education, employment and health, and for community members, namely community, culture and empowerment. The framework is shown in Figure 6.1 (Cairney, Abbott, and Yamaguchi 2015).

Figure 6.1: Interplay wellbeing framework, showing government priorities in blue and communities priorities in yellow

Focus groups were chosen as the main data collection method because they enable intercultural communication and understanding, and allow participants to share and build on one another's ideas. Focus groups can empower participants through enabling them to guide the focus of the research, criticise services and provide solutions in a confidential setting (Kitzinger 1995). Interviews were conducted for convenience of people who were unable to participate in the focus groups, but whose contribution was considered valuable in providing insights into wellbeing for Indigenous people in remote communities.

6.4.2 Participants, sampling and data collection

Indigenous communities in the jurisdictions of Northern Territory and Western Australia who had previous research experience with the Cooperative Research Centre were invited to participate in the project. Communities were selected to achieve diversity in community geography, population size, proportion of people in the community who are Indigenous, and extent of use of Indigenous languages. Research capacity enabled four communities to participate.

Indigenous community researchers were employed to conduct research in each of these communities in 2014 and 2015. They recruited participants who could speak English through

their interpersonal networks and service organisations. This approach ensured that focus group members knew one another, and many worked together as service providers, so within the focus groups, participants could share and compare understandings (Kitzinger 1995). Participants were recruited for fourteen focus groups, which were facilitated in English by the Indigenous community researchers (Malcolm 2013). Notes were taken during the focus group to aid the transcribing process.

Focus groups explored participants' views and experiences of wellbeing. Interviews followed similar format to the focus groups, conducted by Indigenous community researchers and guided by interviewees. The focus was on what works well and why. Focus groups and interviews each lasted approximately one hour, following which participants were offered food and drink but no payment.

Information on focus group members and interviewees' services, role, and demography is summarised in Tables 6.1 and 6.2.

6.4.3 Analysis

Focus groups and interviews were audio-recorded, then transcribed, coded, interpreted and analysed. The priorities of the wellbeing framework, shown in Figure 6.1, provided themes for initial coding and inductive analysis. The importance of ILM to wellbeing, which had emerged in development of the project, provided a coherent central concept (Braun and Clarke 2006). This enabled development of Indigenous perspectives of health and wellbeing expressed in the focus groups and interviews to be formulated as an approach to health care services through ILM.

Table 6.1: Interviewees by service, Indigenous status and gender

Service provided by interviewee	Total Interviewees	Indigenous interviewees	Female interviewees
Indigenous Art	1	1	1
Business development	1	1	0
Education	2	2	2
Indigenous Land Management	3	1	1
Total	7	5	4

Table 6.2: Focus group participants by service, role, Indigenous status and gender

	Service	Participant role	Total participants	Indigenous participant	Female participants
1	**Business development**	**Managers**	2	1	0
2	**Education**	**Managers, employees**	6	6	6
3	**Education**	**Managers, employees**	12	12	9
4	**Indigenous Land Management**	**Participants**	4	4	3
5	**Indigenous Land Management**	**Employees**	4	4	1
6	**Indigenous Land Management**	**Employees**	4	4	4
7	**Indigenous Land Management**	**Employees**	7	7	0
8	**Indigenous Land Management**	**Employees**	8	8	8
9	**Health**	**Managers, employees**	4	1	1
10	**Health**	**Employees, community members**	9	9	0
11	**Health**	**Employees**	3	1	3
12	**Municipal services**	**Managers, employees**	6	6	4
13	**Municipal services**	**Managers**	2	1	1
14	**Research**	**Employees**	4	4	4
	Total		75	68	44

To maintain privacy, numbers in the Table do not correspond to letters used to identify the focus groups in the text.

6.4.4 Interpretative rigour

Conduct of the research through the Cooperative Research Centre for Remote Economic Participation required mutual understanding to support the on-going relationships which are the basis of the Research Centre, particularly between Indigenous and non-Indigenous

researchers. This provided credibility and rigour for all aspects of the research, including transcribing, interpreting, analysing and reporting the findings (Laycock et al. 2011; O'Brien et al. 2014).

6.4.5 Ethics

Engagement and support from the Indigenous services and organisations involved were fundamental for the project. Northern Territory Department of Health/ Menzies School of Health Research Ethics Committee (Reference 2013-2125), and the Western Australian Aboriginal Health Ethics Committee (Reference 549) provided formal ethical approval.

6.5 Results

6.5.1 Wellbeing through Indigenous Land Management

Indigenous Land Management (ILM) services were the main sector represented by participants in the Interplay focus groups and interviews. ILM emerged as a contributor to wellbeing through participants from many sectors, including business development, education, health and municipal services.

Indigenous participants involved in ILM described how the work enhances their wellbeing, through recognising their identity and relationships with the Country. For example:

> “Makes me feel good going out on country. Looking forward to getting up for work – I want to go back and see that place again and again.” (ILM program participant: focus group A).
>
> “My benefit is the land and the sea… It made me strong and it changed my life to be stronger.” (ILM program participant: focus group G)

Indigenous people can experience deep relationships with their Country, as if the Country is part of their family. One participant explained:

> “[The Country is] in your bloodline, you know.” (ILM program participant: focus group G).

Participant’s identification of Country as a family member, meant that for him ILM or caring for Country is caring for his family.

Empowerment is a community priority of the Interplay wellbeing framework, and ILM supports empowerment through employment, a government priority:

> “It's all about empowerment, you're empowering yourself to go to work every day.” (ILM program participant: focus group G)

6.5.2 Health and education through Indigenous Land Management

Participants in the Interplay project described how ILM provides them with direct clinical benefits. These include mental and physical health benefits from exercise and quality diet from harvest of traditional foods.

> "What are the foods that they hunt for?"
>
> "They go fishing, kangaroo, pigeon, goanna, rock wallaby."
>
> "Sugar bag, yep, bush honey." (ILM program participant: focus group E)
>
> "Tons of physical activity – the blokes work really hard – manual labour at parks and wildlife centre and in [the Indigenous Protected Area]." (Non-Indigenous interviewee, ILM program coordinator)

Complementing benefits in nutrition and physical activity, employment in ILM reduces access to alcohol and associated harms, as explained by focus group participants:

> "[Our people are] getting out and away from the community and some of the men said you know 'It's good you know, you're away from alcohol, you're out on the Country.' It's good." (ILM program participant: focus group A)
>
> "Gets [our people] away from the streets and from alcohol and drugs." (ILM program participant: focus group B)

ILM provides an opportunity for education of young people and transmission of knowledge that Indigenous people value, as described here:

> "Through learning on Country, we are actually … making sure our Country is safe, our next generation of young people get educated, in both ways have a healthy life, healthy community, and healthy people…. It forms a career pathway." (ILM program participant: focus group G)

"[Indigenous] people came up with this, started exploring the link between health and education the [Indigenous] way." (Indigenous Education program: focus group K)

6.5.3 Community wellbeing and health

Research participants described the value of ILM in supporting community health, as for example:

> "The [ILM] organisation's growing because of the unity and the friends …we work together, learn together, being healthy together. Healthy workplace, healthy Rangers. [We are] …empowering our organization to be a strong, and we'll have a sustainable future." (ILM program participant: focus group G)

> "Working on Country … is one of the most important things we have in these communities, as community and land connects everyone together, emotionally, physically, spiritually and culturally. The Country and being in charge of managing it is extremely important to people … across Indigenous communities in Australia." (Non-Indigenous interviewee, ILM program coordinator).

Focus group participants also identified the importance of their languages to their wellbeing:

> "[Indigenous] people want to talk their language … it's like they got their language they speak all the time. Why don't we speak our languages? …. [we] want to be recognized." (ILM program participant: focus group B)

> "They should [use] our language, that [Indigenous] language. We should be there, coz we're the first nations of the land." (ILM program participant: focus group B)

These findings show how ILM contributes to sustaining and promoting Indigenous languages for the benefit of speakers, their communities, and the land management knowledge communicated through Indigenous languages.

6.5.4 Interplaying services: alternative frameworks for wellbeing

ILM service providers described how their organisations provide integrated services. For example:

> "… [we provide] support across the board like a wrap-around service." (Non-Indigenous interviewee, ILM program coordinator).

Indigenous research participants described frustration at the competition between different organisations for resources. From their perspective, funding from separate government bureaucracies creates barriers to effective service provision. Competition for resources between services is particularly problematic in small communities where service providers and users may be from the same families. Research participants stated:

> "It all comes back to the same thing, the funding competing for each other. It's all in silos still. If you say interplay between education and health that's not how it happens on the ground." (Indigenous Research organization: focus group F)

"[It's a problem for us] competition. We are talking about people's lives" (ILM program participant: focus group J).

In the remote communities of the research, separation of services through government policy frameworks creates barriers to collaboration and teamwork. Participants described how even within one service sector such as health, service providers must compete for

funds. This can undermine relationships within families and communities which is counterproductive for wellbeing:

> "Some of the NGOs feel threatened by us [Indigenous organization] at times. Like the Red Cross and Anglicare and Centrecare, … they all going for this Indigenous funding… So there is competition for funding." (ILM program participant: focus group E).

Non-Indigenous participants drew attention to bureaucratic barriers to professionals providing effective services in remote Indigenous communities. Specific instances were described of Indigenous health educators and psychologists being barred from providing services outside established settings because of funding or registration restrictions.

In contrast, a collaborative or partnership approach shares Indigenous people's values, as the interviewee here reported:

> "We've had to look at other ways to fund from other avenues and partnerships to pull money in and taking this on like an enterprise rather than a centrally funded idea." (Non-Indigenous interviewee, ILM program coordinator).

6.6 Discussion

In the Interplay project, the opportunity for ILM to enhance wellbeing emerged in discussions with service providers and users in a range of sectors. Research participants described how ILM promotes wellbeing through strengthening people's sense of identity and important relationships, empowering people, providing access to traditional foods and physical activity, limiting access to alcohol, and strengthening and promoting collaboration of community organizations.

6.6.1 Indigenous Land Management enhances wellbeing and provides comprehensive primary health care

Participants in the Interplay project described how ILM builds on their strengths, identity and relationships. This contrasts current service provision for Indigenous people, which focuses on problems perceived in Indigenous people such as poor health status, unemployment and lack of educational attainment. Services established on the basis of negative comparisons of Indigenous with non-Indigenous Australians contribute to negative perceptions of Indigenous peoples, pejorative stereotypes and perceptions that Indigenous Australians are intrinsically problematic (Walter 2016). In contrast, Interplay research participants described how ILM programs arise from common goals of government and Indigenous community members including improving employment and education outcomes, promoting better diet and physical activity, and reducing access to alcohol.

Misuse of alcohol by Indigenous people is a particularly challenging problem when harmful levels of alcohol consumption are a community norm, so interventions with individuals may be ineffective (Kowal and Paradies 2010). Because it services the community, ILM provides a strength-based intervention to reduce alcohol consumption and harm. Negative statistics on Indigenous people's health are pervasive. Although their use is intended to motivate health care service providers to provide quality health care for Indigenous people, they also contribute to undermining the wellbeing of Indigenous people, whose self-perceptions are of pride, strength and survival (Bond 2005). More culturally attuned health services for Indigenous people could monitor their performance with indicators based on Indigenous people's own concepts of health and wellbeing. Validated measures of participation in ILM have been developed, and these are associated with clinical indicators (Burgess et al. 2008). Measures of cultural education and practice, and valuing Indigenous law and ceremony have also been validated as indicators of wellbeing (Burgess et al. 2008; Cairney et al. 2017). These could be incorporated into the performance indicators that Indigenous health services report to the Australian government to complement current clinical performance indicators. Greater emphasis on non-clinical aspects of health service provision will drive more culturally attuned health services for Indigenous people and recognise their distinctive health needs.

Indigenous people in remote communities have lower participation in paid employment than any other group in Australia. This is attributed to prioritisation of family and community responsibilities over paid employment, and remoteness (Gray, Hunter, and Lohoar 2012). From the perspective of Indigenous people, many employment options require them to separate commitments to work from their community relationships, in exchange for monetary income. None of the participants in the Interplay project mentioned income as a benefit of employment or ILM, pointing to a low priority of financial incentives. However, participation in ILM provides employment that can strengthen relationships, build cultural knowledge and skills, and enable people to remain in communities considered by government to be remote (Hill et al. 2013).

With increasing recognition of the rights of Indigenous Australians to their Country, Indigenous people now manage over half of Australia's total land area, and over 70% of the land protected for conservation (Garnett et al. 2018). Thus ILM is of growing importance to Australia's international commitments to biodiversity protection and sustainable development. Relationships between environmental sustainability and the wellbeing of Indigenous people, through ILM, have been under-recognised in Australia's policy development, reflecting the separation of government departments (Biddle and Swee 2012).

Interplay research participants described how their languages provide a source of identity and wellbeing and their disappointment that their languages are not recognised. Lack of Indigenous language training and use of interpreters by health care service providers appear widespread (Mitchell et al. 2018). Indigenous language use itself is an important determinant of health, which is promoted by ILM (Flood and Rohloff 2018). These finding suggest that greater recognition of the need for communication in Indigenous languages would improve health service accessibility for Indigenous Australians. Indigenous language translation or knowledge as a performance indicator for health care services for Indigenous Australian could drive increases in this critical element of health care (Cass et al. 2002).

6.6.2 Intersectoral contributors to health

Indigenous experts have called for a transformation in health care for Indigenous Australians because of the unacceptable costs of current vertical, disease-focussed approaches, and noted that this will require reshaping policies, reinventing organisations, and working across sectors (Houston 2016).

Considering ILM as health care overcomes the tension between promoting the healthy lifestyle conceptualised by non-Indigenous Australians, which may themselves contribute to on-going colonisation, and the Indigenous disadvantage that is attributable to unhealthy behaviours (Kowal 2006). ILM involvement improves lifestyle contributors to health through providing access to traditional foods and physical activity. Indigenous knowledge maintains an holistic perspective on Country including its people, in which people's health depends on the health of Country (Ens et al. 2015; Kingsley et al. 2009). Community gardens, like ILM, have also been identified as a source of comprehensive primary health care for Australians (Marsh, Brennan, and Vandenberg 2018). This suggests that a broader primary health care movement towards outdoor, productive, collaborative activities may provide health benefits to complement clinical health services.

Re-conceptualising service provision based on the needs of Indigenous people and communities in remote regions could have benefits in many sectors. Interplay project participants provide and receive services through separate government sectors, reflecting decisions about resource allocation based on non-Indigenous priorities (Cairney et al. 2017). For Indigenous people these decisions can appear arbitrary. The Interplay project showed how government service priorities of education, employment and health work together with people's priorities in community, culture and empowerment (Cairney et al. 2017).

Interplay research project participants, both Indigenous and non-Indigenous, highlighted the importance of Country to the health and wellbeing of Indigenous people, which suggests the opportunity to conceptualise ILM as a health service. This emphasises the importance of

sectors other than health to people's wellbeing, recognised since primary health care was described in the Alma Ata Declaration of 1978 (World Health Organisation 1978a). ILM is of great value because it provides services in several sectors, including land management, employment, education and health.

The importance of Country for Indigenous people, and caring for Country as a source of economic development provide an alternative basis for service development. Social analysis of four ILM programs that showed a return of $96.5 million for $35.2 million investment over six years, or 29% per year. This analysis included benefits of skill development, work satisfaction, employment income and ability to better provide for families, which facilitate economic and community development (Social Ventures Australia 2016). Scaling up these interventions to enhance the wellbeing of Indigenous people throughout remote Australia would have widespread benefits.

Interplay project participants drew attention to current relationships between services based on competition, and to restrictive employment practices, which appear inefficient in remote communities. Research participants' dislike of competition reflects their values of kinship and community relationships as priorities, rather than cost-effectiveness, which is imposed by government funding agencies.

Other researchers have suggested that Australian governments should encourage Indigenous people to leave remote regions because of the challenges of providing access to services in remote regions and the impacts of limited service access on health (Zhao, Vemuri, and Arya 2016). This would not be supported by findings from the Interplay project that Indigenous people derive health and wellbeing benefits from ILM in remote regions. Longitudinal census and social survey data also show that individual Indigenous people's employment prospects do not improve when they leave remote communities (Biddle and Crawford 2015; Stephens 2010). The Interplay research showed that ILM provides health and wellbeing benefits, which complement environmental and social benefits of participation in ILM. The wellbeing that Indigenous people derive from ILM may explain their attachment to their ancestral lands despite limited employment and educational opportunities in remote regions.

6.6.3 Global perspectives on Indigenous Land Management

Health for indigenous peoples globally has distinctive features, reflecting the distinctive relationships between indigenous peoples and their lands (Charlier et al. 2017). While each indigenous group is unique, close relationships with their lands are a characteristic of indigenous peoples (World Bank 2011). Thus findings about the value of land management for Indigenous Australians may be relevant for health and wellbeing of other indigenous

populations. Indigenous peoples' expertise is important globally in ensuring that ecosystems are maintained to ensure sustainable development for all of humanity. Thus both lands and peoples benefit from ILM (Garnett et al. 2018; United Nations General Assembly 2015).

6.6.4 Study Limitations

Indigenous people in remote regions were the focus of this research, and represent about 21% of Indigenous Australians. Nonetheless, 73% of all Indigenous Australians recognise a homeland or traditional Country, and half visit their Country at least yearly (Australian Institute of Health and Welfare 2015). Furthermore, ILM programs have been established throughout Australia, including in urban regions, following models from remote regions (Patterson and Hunt 2012b). Key barriers to urban Indigenous people participating in ILM are limited respect and practical support for Indigenous knowledge and worldviews and limited access to lands and waters rather than the fact that people are not in remote regions (Hill et al. 2013).

The research team was led by women leading to potential bias towards female perspectives and participation. However there was a high representation of male participants particularly in the ILM programs.

Ability to speak English was a requirement for participation in the research. This would exclude the contribution to the research of 1.9% of the Indigenous population of Australia who do not speak English well or at all (Australian Bureau of Statistics 2018a) .

6.7 Conclusions

For Indigenous Australians, ILM provides opportunities for promoting both individual and community health and wellbeing through empowerment, healthier behaviours, use of Indigenous languages and knowledge transmission across generations. ILM integrates the aims of different services, including education, employment and health, enabling sectors to work together rather than in competition. Collaboration of services through ILM will enhance service productivity and aligns with worldviews of Indigenous people. ILM is unconventional as health care but contributes to the comprehensive primary health care needs of Indigenous Australians.

6.8 Chapter summary

This chapter presents an article published in the journal *BMC Health Services Research* which describes qualitative data on health, culture and wellbeing for Indigenous people in remote Australia, and the key role of Indigenous Land Management as primary health care.

The article responds to aspects of both research propositions. Education, and employment and health for Aboriginal people could be improved through understanding and addressing wellbeing; and an holistic approach to services for Aboriginal people in remote communities, through the interplaying benefits of Indigenous Land Management will optimise wellbeing.

International review and publication of this article created confusion in interpretation of the methods relating to English speaking as a criterion for participation, since one reviewer queried the language transcribed from the focus groups. As a result, the published article states that speaking English was a requirement for participation, and that all participants spoke English. However, the research was undertaken through extensive consultation and development with Aboriginal community researchers who spoke both community languages and English well. This ensured that Aboriginal language speakers with limited English were integrated into the project even though they did not directly participate in the focus groups. English comprehension was not a requirement to participate in the research: on the contrary, the insights of Aboriginal people who did not understand English were key to the depth and value of the project.

This is the last of the chapters with qualitative analysis of the Interplay research. The next three chapters move to quantitative analysis of the Interplay wellbeing research, with Chapter 7 continuing the theme of work, through examining statistical associations between employment, conservation and languages for Indigenous people in remote regions.

USING NUMBERS TO UNDERSTAND ABORIGINAL WELLBEING

Chapter 7: Land Management, Ecological Knowledge and Languages for Conservation

7.1 Chapter outline

The preceding three chapters have used qualitative analysis of data from the Interplay project to explore wellbeing and its relationship with the government priorities for Aboriginal people, education, employment and health. These have suggested relationships of culture, particularly through caring for Country, with wellbeing, and that improving wellbeing could be associated with improvements in outcomes in education, employment and health. In particular, benefits of Caring for Country include supporting Aboriginal authority and knowledge and providing meaningful work, which may have co-benefits in reducing injury and imprisonment.

This chapter continues the theme of work from the previous chapters, here in quantitative analysis. Noting that published results from the NATSISS showed the importance of the sustainability of land, language and culture in wellbeing for Indigenous Australians (Biddle and Swee 2012) we used Interplay data to quantify the relationship between reporting employment in land management (caring for Country, the work of Indigenous Rangers), speaking Indigenous languages and belief that one's Country is cared for. Relationships between these parameters suggest that the work of Rangers is associated with biodiversity, pointing beyond wellbeing to wider cultural and ecological sustainability benefits of Indigenous Land Management. The theme of sustainability within the Interplay project emerged from a local research symposium, which included a strand entitled "Sustainable research." This which drew attention to ethical, cultural and physical aspects of sustainability (Charles Darwin University 2018).

The work was published as a short communication entitled "Australian Indigenous Land Management, Ecological Knowledge and Languages for Conservation" (Schultz, Abbott, et al. 2019*)*, in *EcoHealth* a journal focussed on the integration of knowledge at the interface between ecological and health sciences (Springer Nature 2019b). Co-authors and their contributions were Tammy Abbott 10%, Jessica Yamaguchi 10% and Sheree Cairney 20%. As *Ecohealth* is an international journal this chapter uses the term "Indigenous" when talking about Aboriginal people.

7.2 Abstract

Many Indigenous Australians hold cultural, ecological and language knowledge, but common representations of Indigenous Australians focus on social disadvantage and poor comparisons with other Australians in education, employment and health. Indigenous Land Management works with Indigenous people's cultural, ecological and language expertise, employing Indigenous people in activities contributing to biodiversity conservation.

The Interplay research surveyed 841 Indigenous people in remote communities. Those employed in land management reported greater participation in cultural activities, language fluency, and belief that their land was looked after. These related assets provide an opportunity for policy approaches based on Indigenous people's strengths and contribution to Australia.

7.3 Introduction

Australia's national identity and integrity are being undermined by extinctions of endemic species and Indigenous languages, and the health and social disadvantages reported among Indigenous Australians (McDonald et al. 2015; Moseley 2010; Anderson et al. 2016). Representations of Indigenous Australians focus on differences and deficits compared with other Australians, rather than their strengths and status as Indigenous peoples (Walter 2016). However, in remote regions of Australia, Indigenous Land Management (ILM) is being recognised for its potential to restore ecosystems, revitalise languages and enhance health and wellbeing for Indigenous people (Altman 2012).

ILM includes a range of objectives and activities: management of fire, water, weeds and feral animals; monitoring and protection of threatened species; revegetation; harvesting of bush foods; pastoralism; and artistic work. ILM integrates traditional with modern knowledge and techniques (Hill et al. 2013; Davies et al. 2010). ILM is both leisure and employment, and many Indigenous peoples' views of livelihood do not separate these aspects of life (McRae-Williams and Gerritsen 2010).

Over millennia, ILM has contributed to the processes that sustain Australian biodiversity and ecosystems, although the evolution of different species occurred millions of years before Indigenous people settled the Australian landscape (Cresswell and Murphy 2016). Cessation of ILM and removal of people from their lands have contributed to biodiversity loss throughout Australia since European colonisation. Indigenous peoples' burning practices create mosaics of small areas burnt at different times, which enhances biodiversity and prevents large, intense, late season fires (Woinarski et al. 2011). Ecological processes interact, so changes in fire regimes facilitate invasion by weeds, damage by feral herbivores such as camels and cattle, and loss of vegetation cover for small animals which are

threatened by cats, now one of the leading causes of species loss in Australia (Woinarski et al. 2011).

The vast desert regions of Australia are one of few landscape-scale relatively undisturbed ecosystems globally (Venter et al. 2016). Management of these lands through ILM enables monitoring and enhancing of biodiversity, at scales that are significant to the whole planet. Indigenous Australians are more likely to live in or near desert and other remote areas than non-Indigenous Australians, so Indigenous people have unique opportunities through ILM employment (Traill and Woinarski 2014).

Indigenous Australian languages contain stores of ecological knowledge, which may soon be inexpressible with on-going language losses (Nettle and Romaine 2000). Australia's rate of language loss is amongst the highest of all nation's (Moseley 2010). Of Australia's 250 languages spoken at the time of European settlement, and only 20 remain strong, as measured by regular use by people in all age groups (Karidakis and Kelly 2017). With language loss, knowledge of ILM is lost (Hill et al. 2013).

Non-Indigenous sciences separate ecosystems from languages, so transdisciplinary and cross-cultural communication are required to quantify their inter-relationships (Wilder et al. 2016). Cross-cultural and transdisciplinary understanding provides a foundation for ILM, which offers wide-ranging benefits for Indigenous people, including promoting two-way learning among Indigenous and non-Indigenous experts (Ens et al. 2015). A review of four ILM projects calculated total social return on investment at 29% per year through environmental, economic, social and health outcomes (Social Ventures Australia 2016).

7.4 Methods

The Interplay research used a transdisciplinary approach to explore wellbeing among Indigenous Australians in remote regions. The aim was to guide policy development to enhance Indigenous people's wellbeing, using methodology developed by Indigenous people. Indigenous researchers, scientists and government advisors undertook the project together, through the Cooperative Research Centre for Remote Economic Participation, a government, industry and university collaboration. Four communities in remote regions of Northern Territory and Western Australia with previous relationships with the Research Centre were selected to participate, based on diversity of geography, population size and proportion Indigenous and levels of Indigenous language use. The research was approved by Indigenous community boards and regional ethics committees (Cairney, Abbott, and Yamaguchi 2015).

Priority wellbeing issues were identified. Indigenous communities prioritised culture, empowerment and community, while government representatives prioritised education,

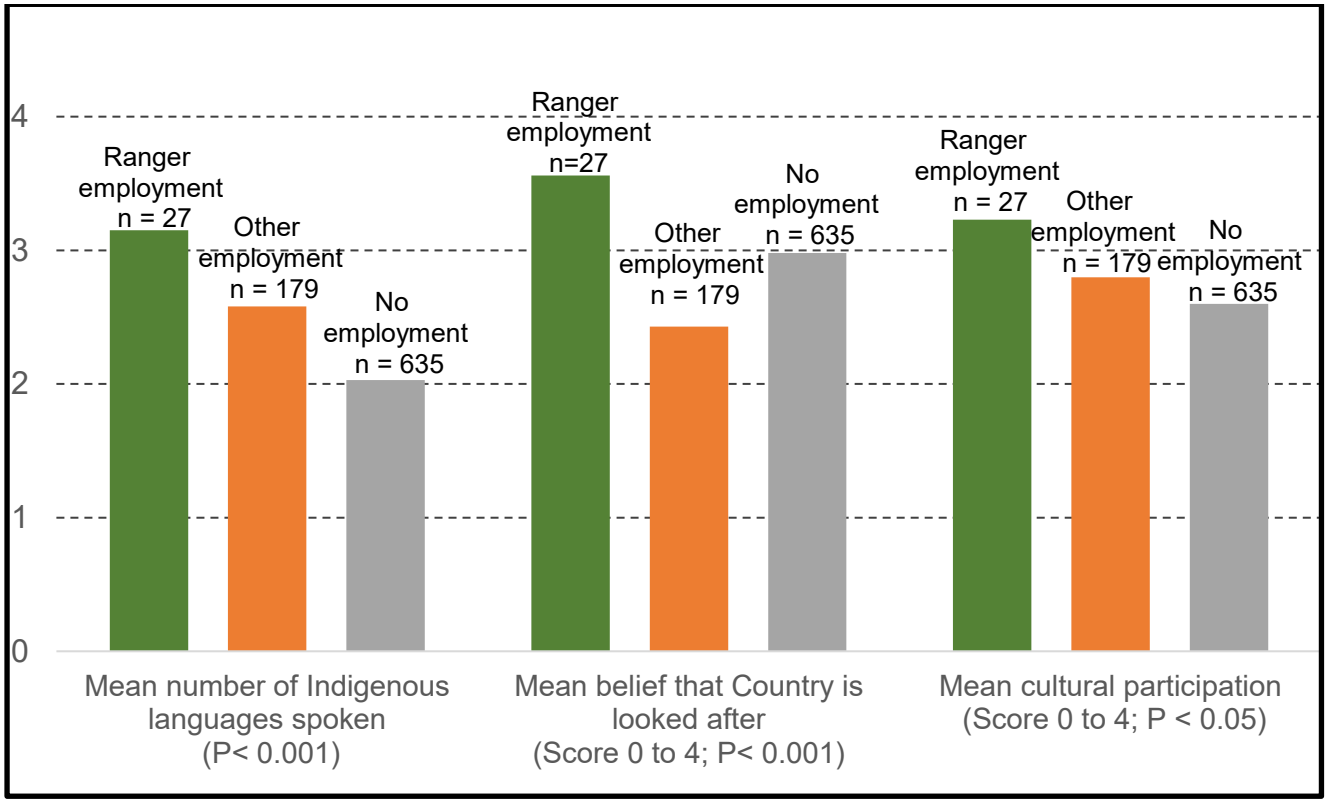
employment and health. Aspects of these priorities were quantified through a survey developed by Indigenous researchers, based on questions previously validated for Indigenous people in remote communities. Surveys were administered by Indigenous community researchers to 841 Indigenous people, aged 15 to 34, in 2014 and 2015 (Cairney et al. 2017).

Of 205 respondents who reported being employed (24.5%), 27 were Indigenous rangers, employed to undertake ILM. We compared rangers with respondents in other employment (n=179), and with respondents who reported no employment (n=635), using ANCOVA. Figure 7.1 and Table 7.1 present summaries of the results.

Most of the rangers were male (22/27) so we controlled for gender in the analysis after testing for homogeneity of variance. The age distributions of employment and gender groups were similar.

Rangers reported greater participation in cultural activities, measured as a composite of art and craft, caring for country, hunting and gathering, and law and ceremony (P= 0.019), and were more likely to believe their country was looked after than those in other or no employment (P<0.001). Rangers spoke more Indigenous languages, with mean 3.2 and up to nine languages spoken (P< 0.001). They reported similar knowledge of English language (P=0.79). Those employed but not as rangers reported several months more schooling than both rangers and the unemployed (10.7 vs 10.4 years schooling; p=0.004). Rangers did not report better functional health at a statistically significant level (P=0.11); nor did they report greater wellbeing (P=0.26). High levels of wellbeing were reported among all groups, with respondents' mean wellbeing 8.1/10.

Figure 7.1: Number of languages spoken, belief that Country is looked after and cultural participation by employment status of survey respondents



Overall, the Interplay study focus was on wellbeing, enabling the research to reflect the aspirations of Indigenous researchers and participants (Cairney et al. 2017). The high level of wellbeing of all participants reflects the research focus and participant selection. The comparable wellbeing level for all Indigenous Australians is 7.3; and for all Australians 7.6/10; (Australian Bureau of Statistics 2015, 2016a). The lack of association between ranger employment and wellbeing is being explored through further work in the Interplay project; the relationship may be statistically mediated by empowerment and Aboriginal literacy (Cairney et al. 2017). A recent cross-sectional study among rangers in central Australia found rangers experienced higher wellbeing by some but not all measures (Jones et al. 2018).

Table 7.1: Demographic, language, cultural participation, and health and wellbeing of rangers and other research participants

	Rangers n=27			**Other employment n= 179**			**No employment n=635**			**ANCOVA**	
	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD	F	P for difference between employ-ment groups
Age (years)	18-33	24.5	4.3	16-35	25.1	5.3	15-35	24.1	4.2	2.9 (2, 838)	0.055
Gender (% male)		81.5%	0.40		44.7%	0.50		39.4%	0.49	10.0 (2, 838)	0.000***
Years of school	7-12	10.4	1.28	5-12	10.7	1.25	5-12	10.4	1.27	5.72 (2, 835)	0.003***
English language	0-16	12.15	4.06	1-16	12.58	3.94	0-16	12.41	3.96	0.440 (2, 751)	0.644
Number of Indigenous languages spoken	1-9	3.15	2.23	1-9	2.58	2.41	0-9	2.03	1.81	6.56 (2, 835)	0.001***
Belief that Country is looked after	0-4	3.56	0.97	0-4	2.43	1.37	0-4	2.98	1.18	15.67 (2, 835)	0.000***
Cultural participation	4-16	12.92	3.19	0-16	11.19	4.47	0-16	10.40	5.06	3.96 (2, 835)	0.019*
Functional health	2-16	8.86	5.43	0-16	7.65	5.15	0-16	5.86	4.39	2.29 (2, 119)	0.105
Wellbeing	5-10	8.00	2.06	3-10	8.27	1.84	1-10	8.01	1.96	1.37 (2, 835)	0.255

English language = total of understanding, speaking, reading and writing in English

Cultural participation = total of involvement in law and ceremony, caring for country, hunting and gathering, art and craft

Functional health = total of ability to participate in normal activities, energy levels, ability to socialise, and capacity for work or study

* = P< 0.05; ** = P< 0.01; *** = P< 0.001

7.5 Discussion

Greater involvement in cultural activities reported by rangers in the Interplay project highlights the integration of ranger employment with Indigenous culture, which connects Indigenous language and ecological knowledge (Hill et al. 2013). There were positive relationships among Interplay respondents between ILM participation, knowledge of languages and belief that land was looked after. Non-Indigenous measures of biodiversity may be related to Indigenous people's belief that their land is looked after, and in order to

ensure sustainability, services must balance Indigenous and non-Indigenous priorities and aspirations (Ens et al. 2015).

In Australia as globally, the languages of Indigenous peoples may be important for their health and wellbeing, and even survival (Flood and Rohloff 2018). This highlights the importance of ILM for Australia's Indigenous peoples, as does research showing clinical health benefits of ILM, which include more physical activity and better nutrition; lower BMI, blood pressure, blood sugar, and risk of cardiovascular disease; and less psychological distress (Burgess et al. 2009).

Although almost 80% of Indigenous Australians are not in remote regions, 73% recognise a traditional homeland or country (Australian Institute of Health and Welfare 2015). Indigenous Australians in urban areas appear eager to follow models of ILM developed in more remote regions (Williamson 2017; Patterson and Hunt 2012a). Furthermore, as in remote regions where the Interplay research was conducted, in urban regions many Indigenous Australians participate in cultural activities and learn Indigenous languages, and this is continuing without decline across generations (Biddle and Swee 2012). ILM has an important role in transmission of knowledge and supporting education for children and young people who would otherwise be disengaged from education (Fogarty 2012).

Through recognising and strengthening culture, providing meaningful employment, limiting access to alcohol, and other mechanisms, ILM may also reduce Indigenous imprisonment (Schultz et al 2018), which contributes to the largest segment of government expenditure for Indigenous Australians (Steering Committee for the Review of Government Service Provision 2017).

Indigenous Australians are often depicted as problematic. This reflects on-going colonisation, non-Indigenous perspectives, and policies that promote non-Indigenous values, contributing to high rates of welfare dependence and imprisonment of Indigenous peoples (Walter 2016). A decolonised view of Indigenous peoples as holders of valuable knowledge and languages could transform relationships between Indigenous and non-Indigenous Australians (Wilder et al. 2016; Smith 2012). Decolonising Australia's policies in relation to Indigenous peoples would recognise their unique place in the nation, and the value of ILM for Indigenous people, other Australians and global biological and linguistic diversity.

7.6 Conclusion

The Interplay project demonstrated positive relationships between employment in ILM, knowledge of Indigenous languages, and biodiversity as measured by people's belief that their land is looked after. Wide-ranging benefits for Indigenous and non-Indigenous Australians, and Australia's ecological and linguistic diversity could be achieved through

increasing the scope of ILM. Adjusting Australia's approach to Indigenous policies to recognise Indigenous Australians as the custodians of knowledge of the land and its languages could provide leadership in supporting ecological and linguistic diversity.

7.7 Chapter summary

This chapter shows correlations in the Interplay survey data between ranger employment, numbers of languages spoken and belief that Country is cared for. No relationship was found between ranger employment and wellbeing, which was high for participants in the Interplay project generally.

The broader meaning of wellbeing for Indigenous Australians described by Biddle and Swee (2012) includes sustainability of natural resources, languages and culture. This points to wider notions of wellbeing that are important for Indigenous people globally (Indigenous Peoples' International Centre for Policy Research and Education 2008). In the Interplay research, although ranger employment has no association with individual level wellbeing, it is associated with belief that Country is cared for, which may represent sustainability and ecological wellbeing. Here results from the Interplay project point to wider notions that the wellbeing of Indigenous people is linked to the wellbeing of Country. Further work is needed to explore this. Important conclusions of qualitative studies with other Indigenous Australians have been that "'If the land is healthy, it makes the people healthy'' (Kingsley et al. 2009), and "If the land's sick, we're sick" (Rigby et al. 2011).

This chapter is the first of three containing quantitative analysis of the Interplay research through the wellbeing survey. The next two chapters use the survey data in exploratory and confirmatory factor analysis to explore and quantify relationships between important wellbeing constructs.

Chapter 8: Culture, Empowerment, Aboriginal Literacy and Wellbeing

8.1 Chapter overview

This chapter continues the quantitative analysis of relationships between aspects of wellbeing. We used structural equation modelling to create pathway diagrams showing relationships between both measured variables and latent constructs for aspects of wellbeing.

The chapter is framed around a publication in the *International Indigenous Policy Journal*, "Quantification of interplaying relationships between wellbeing priorities of Aboriginal people in remote Australia", co-authored by Stephen Quinn, Tammy Abbott, Jessica Yamaguchi and Sheree Cairney, with respective contributions 30%, 10%, 10% and 20% (Schultz, Quinn, Abbott, et al. 2019). This journal addresses issues pertaining to indigenous peoples throughout the world, with goals of promoting evidence-based policy-making, improving scholarship related to indigenous issues, and stimulating debate on important policy issues facing Indigenous peoples around the world (International Indigenous Policy Journal 2019). Indigenous governance of this journal prioritises indigenous people's preferences, so the term "Aboriginal" is used in this chapter, because it is the preferred term of Aboriginal people who were the participants in the study. The journal uses the plural capital "Peoples" which is the preferred term for the collective original people of Canada and their descendants and this terminology is used in the article (International Journal of Indigenous Health n.d.).

8.2 Abstract

Wellbeing is a useful indicator of social progress because its subjectivity accounts for diverse aspirations. The Interplay Research developed a wellbeing framework for Aboriginal Peoples in remote Australia comprising government and community wellbeing priorities. This article describes statistical modelling of community priorities, based on surveys administered by community researchers to 841 participants from four remote settlements. Constructs for Aboriginal language literacy, cultural practice and empowerment were identified through exploratory factor analysis (EFA); structural equation modelling (SEM) was used to confirm relationships. Cultural practice was associated with Aboriginal language literacy and empowerment, both associated with wellbeing. Aboriginal literacy and empowerment mediated negative direct relationships between cultural practice and wellbeing. Direct relationships were significant only for females for whom empowerment and Aboriginal literacy appear key to enhancing wellbeing.

8.3 Introduction

Wellbeing is the experience of flourishing and feeling satisfied with life (Adler and Seligman 2016). Wellbeing is an individual, subjective experience, making it a useful indicator to compare social progress between people and populations across different cultures and periods who may have different values, preferences and goals (OECD 2017).

Subjective aspects of wellbeing include experiences and perceptions, and these can be measured only by specifically inquiring, for example about life satisfaction (OECD 2017). Socio-economic indicators are considered objective aspects of wellbeing, since they do not require people to assess themselves (OECD 2017). However, decisions about which socio-economic indicators to measure and how to measure them reflect culturally influenced values and goals; this means that even if measurement is objective, the indicators themselves reflect subjective assessment about what is important (Tov and Au 2013). Thus, even notionally objective indicators of wellbeing can reflect cultural bias and negative attitudes towards Aboriginal and other minority people (Cairney et al. 2017).

Aboriginal Australians[1] have occupied Australia for over 50000 years. They identify themselves as distinct from other Australians while maintaining their diverse cultures, languages and histories (Australian Institute of Health and Welfare 2015). Many Aboriginal people hold traditional knowledge and maintain strong connections to their Country, their "land, sea, sky, rivers, sites, seasons, plants and animals; place of heritage, belonging and spirituality," and they hold Aboriginal knowledge (Australian Museum website 2017). Aboriginal people are less urbanised than other Australians, with 21% living in the remote regions, which make up 85% of Australia's land area, compared with only 1.7% of all Australians (Australian Institute of Health and Welfare 2014; Walker, Porter, and Marsh 2012). Aboriginal people in remote regions of Australia may be on their traditional or ancestral lands (Altman 2007). Many hold significant land assets or rights yet 53% experience income poverty (Markham and Biddle 2018). Compared with other Australians, Aboriginal people are considered disadvantaged based on a wide range of indicators, including education, employment, health, housing, income, and criminal justice, with most indicators for Aboriginal people in remote regions suggesting greater disadvantage

[1] Indigenous Australians include both Aboriginal and Torres Strait Islander Peoples. This research involved Aboriginal communities, where people collectively prefer to be identified as Aboriginal. The term Aboriginal is used throughout this work, except where Torres Strait Islander people are included; and in international contexts.

compared with urban Aboriginal people (Australian Institute of Health and Welfare 2015; Commonwealth of Australia: Department of Prime Minister and Cabinet 2018).

Despite these statistics, Aboriginal people in remote regions report high levels of wellbeing, with mean life satisfaction at 7.6 on a scale from 0 to 10. This is equivalent to the mean life satisfaction of all Australians, while Aboriginal people outside remote regions report lower levels of wellbeing, with a mean of 7.2 (Australian Bureau of Statistics 2016a, 2015).

Aboriginal people in remote regions often have stronger connections to Country and more opportunities to participate in cultural practices than people in non-remote regions, and these factors may contribute to their higher levels of wellbeing (Davies et al. 2010). Cultural practices such as art and craft, ceremony, caring for Country, and hunting and gathering contribute to the wellbeing of Aboriginal people throughout Australia, including in urban regions (Burgess et al. 2009; Hill et al. 2013; Hunt 2012). Analysis of the National Aboriginal and Torres Strait Island Social Survey (NATSISS) conducted in 2008 showed that cultural identity, speaking Aboriginal languages and participation in traditional economic activities contribute to people's wellbeing, particularly in remote regions (Dockery 2012). An economic analysis commissioned for Australia's national government quantified social return on investment in cultural practice for Aboriginal people in remote communities at 29% per year. This analysis identified specific benefits that Aboriginal people gain from participation in cultural activities, including strengthening their skills, confidence and health, but these were not quantified (Social Ventures Australia 2016). A case study from the Northern Territory identified health, economic and social wellbeing benefits of cultural practice for participants in Aboriginal cultural and natural resource management, and recommended quantification of these relationships (Barber 2015).

Cultural practices contribute to wellbeing and also to empowerment, defined as individuals and groups gaining control over their lives, encompassing both personal development and structural change (Wallerstein 2006). Empowerment reflects cultural, social and environmental contexts. For Aboriginal Australians, spirituality and personal values and strengths are particularly linked to empowerment (Whiteside, Tsey, and Earles 2010). Empowerment has potential to address broad socio-economic inequalities such as those borne by Aboriginal Australians because it enables individuals and communities to participate in and drive structural change (Haswell et al. 2010). The process of empowerment is of particular importance for Aboriginal Peoples because it depends on cultural context, and contributes to wellbeing (Pease 2002; Wallerstein 2006).

Australian Aboriginal languages are also linked to wellbeing and empowerment, and are important as sources of knowledge, identity and culture (Marmion, Obata, and Troy 2014).

Analysis of the NATSISS illustrated how Aboriginal languages enable people to communicate cultures and worldviews, providing a connection between culture and wellbeing (Biddle and Swee 2012).

NATSISS showed that Australian Aboriginal men and women report different cultural strengths. Speaking and understanding Aboriginal languages varies by age and gender. More men participate in harvesting cultural practices, and more older men speak and understand Aboriginal languages, while more women participate in cultural production including arts and crafts; music, dance, theatre and story-telling. Each of these aspects of culture contributes to societal sustainability and wellbeing, and is stronger for Aboriginal Peoples in remote regions compared to urban areas (Biddle and Swee 2012).

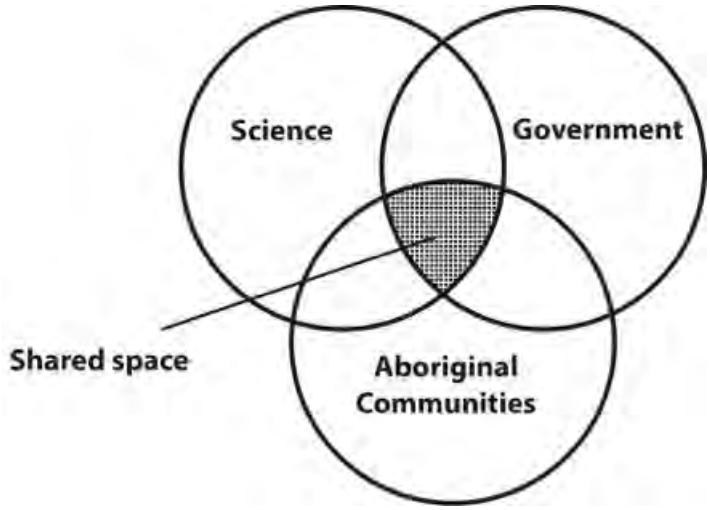
Wellbeing for Aboriginal Peoples in remote regions of Australia was the focus of the Interplay research project, undertaken through the Cooperative Research Centre for Remote Economic Participation (CRC-REP) as part of its broad-reaching investigation into economic development and participation of people in remote Australia (Cooperative Research Centre for Remote Economic Participation 2017). Government departments responsible for funding programs for Aboriginal Australians, researchers employed by the CRC- REP, and community members collaborated in development of the research (Cairney and Abbott 2014). The project name Interplay was chosen to draw attention to the interplaying relationships between different wellbeing priorities. This article aims to quantify relationships between cultural practice and wellbeing, including through mediating variables (Nitzl, Roldan, and Cepeda 2016). We hypothesised that cultural practice, literacy in Aboriginal languages and empowerment each contributes to wellbeing for Aboriginal people in remote communities. Alternatively, there may be mediation between variables in their relationships to wellbeing (Cairney et al. 2017). Understanding relationships between wellbeing priorities can enable services to better address the wellbeing needs of Aboriginal people in remote regions.

8.4 Methods

The Interplay research project was conceived and governed through the CRC-REP, as part of its exploration of issues surrounding economic participation in remote Australia, particularly for Aboriginal and Torres Strait Islander Peoples (Cooperative Research Centre for Remote Economic Participation 2017). Aboriginal People led governance and management of the project (Cooperative Research Centre for Remote Economic Participation 2017). Researchers and government agencies responsible for services in remote regions worked closely with Aboriginal community members in the research development. Through a conceptual shared space of knowledge exchange and learning, we

aimed to ensure the project met research needs of both government and communities (Cairney and Abbott 2014). The shared space is shown diagrammatically in Figure 8.1 (Nguyen and Cairney 2013).

Figure 8.1. Shared space approach represented diagrammatically where areas of knowledge of each research partner group are brought together to overlap



8.4.1 Ethical considerations

The Interplay research project prioritised engagement and collaboration with Aboriginal community organisations, land councils and local partner organisations to ensure that it would meet the research interests of Aboriginal People, particularly participants in the research. This aimed to ensure a fundamentally decolonised and ethical approach to the research (Smith 2012). The Northern Territory Department of Health/ Menzies School of Health Research Ethics Committee (Reference 2013-2125), and the Western Australian Aboriginal Health Ethics Committee formally approved the research (Reference 549). All survey participants gave written consent, in addition to the guardians of participants under 16 years. On-going working relationships, including further research projects, contribute to the integrity of the approach, providing cultural feedback and evaluation to non-Aboriginal researchers (Cairney and Abbott 2014).

8.4.2 Research population

Members of Aboriginal communities throughout remote regions of Australia were the population of interest in the Interplay research. Communities were invited through the CRC-REP to indicate their capacity and interest to be involved, and four were selected to ensure inclusion of different geographies, levels of remoteness, population size and proportions of

Aboriginal people, and extent of use of Aboriginal languages. Geography, demography and participation in the research by each community are shown in Table 8.1.

Table 8.1: Community demography, geography and language

Community	**1**	**2**	**3**	**4**
Geography	River	Island	Desert	Coastal
Distance from major centre	300km	500km	1000km	650km
Remoteness classification	Remote	Very remote	Very remote	Very remote
Total Population	9207	2550	1158	843
Proportion Aboriginal	24.2%	88.6%	24.4%	75.3%
Primary community language	Kriol	Djambarrpuyngu	Martu	Gumatj
Proportion of Aboriginal people who use Aboriginal languages at home	25.7%	98.1%	63.5%	84.3%
Participants in Interplay research	545	104	51	141
Proportion of 15-34 year age group who participated	78.8%	13.6%	46.6%	49.1%

(Australian Bureau of Statistics 2011)

8.4.3 Development of Interplay wellbeing framework and survey

Aboriginal Peoples from the communities of the study collaborated with researchers to develop the Interplay wellbeing framework, which emerged through a series of workshops (Cairney, Abbott, and Yamaguchi 2015). Communities' major priorities for wellbeing, namely community itself, culture and empowerment, and government priorities of education, employment and health comprised the basis of the wellbeing framework as shown in Figure 8.2.

Figure 8.2. Interplay wellbeing framework comprising community priorities in amber and government priorities in turquoise

To explore interrelationships between wellbeing priorities, the Interplay wellbeing survey was developed. Initially, we conducted a comprehensive search for assessment tools that were statistically and culturally validated to measure aspects of wellbeing for Aboriginal Australians (Cairney, Abbott, and Yamaguchi 2015). While these tools were broadly suitable, there was concern by Aboriginal community researchers about their appropriateness for people in remote communities. All the tools were in English, while many Aboriginal people in remote regions do not speak English well or at all (Biddle 2012b). Language issues were compounded by concepts in the assessments that were considered difficult to translate or understand. Aboriginal community members and researchers worked with other researchers familiar with the tools to carefully review and refine the words of each question, to ensure a shared understanding of its meaning that would enable comprehension across different language groups. Working together to refine the survey questions also contributed to shared ownership of and commitment to the final Interplay Wellbeing Survey. This enabled the Aboriginal community researchers to administer the Interplay survey in their home communities to people from different language groups and levels of English proficiency (Cairney, Abbott, and Yamaguchi 2015).

8.4.4 Data collection

Aboriginal community researchers administered the survey from iPads in their home communities between June 2014 and July 2015 (Cairney et al. 2017). Since the research arose from the CRC-REP, people aged 15 to 34 were selected because it is typically within

this age range that people transition from education to employment. We aimed to include 800 to 1000 participants to provide a sample large enough for structural equation modelling and to achieve broad representation of the Aboriginal Peoples in the communities involved in the study (Cairney, Abbott, and Yamaguchi 2015; Wolf et al. 2013).

8.4.5 Statistical methods

Data analysis was conducted using the statistics packages SPSS and AMOS version 25 (Arbuckle 2017; SPSS Inc 2015). Missing data were calculated using multiple imputations, using the median as the most likely value. To reinforce the strength-based approach, items were recoded so that higher response values represented more positive impacts and greater wellbeing.

Exploratory factor analysis (EFA) was performed using maximum likelihood extraction with promax rotation. Factors were selected with eigenvalues greater than one, strong loadings (> 0.4), discriminant and face validity, adequate reliability based on Cronbach's alpha > 0.70, and no cross-loading between survey questions (Williams, Brown, and Onsman 2010). Constructs were identified for Aboriginal language literacy, cultural practice and empowerment. Table 8.2 shows the survey items and Table 8.3 descriptive statistics for each construct, while Table 8.4 shows Pearson bivariate correlations between the constructs.

Based on hypothesised relationships between Aboriginal language literacy, cultural practice and empowerment, a structural equation model of wellbeing was constructed (Arbuckle 2017; Kline 2016). The model was validated through absolute and incremental fit indices, namely chi-square, RMSEA, SRMR, CFI, TLI and PNFI (Hooper, Coughlan, and Mullen 2008). Cook's distance was employed to examine for the presence of influential observations, and variance inflation factors for multicollinearity (Kline 2016).

The positive association between cultural practice and wellbeing anticipated from the literature and research development was not confirmed in the statistical models, suggesting a more complex interplay of factors (Cairney et al. 2017). To explore this association, mediation analysis of the relationship by Aboriginal language literacy and empowerment was conducted. Bootstrapping was required in the mediation analysis to determine 95% confidence intervals and statistical significance of direct and indirect relationships (Nitzl, Roldan, and Cepeda 2016). From these models, relationships of wellbeing with cultural practice, Aboriginal language literacy and empowerment were calculated.

Gender and age were considered as possible confounding factors and multigroup analysis performed. Participants were grouped by gender and age groups under 20, 20 to 24 and

over 24. Age 20 was selected to separate younger age categories because it often marks the division between education and employment, and 24 years was selected as the dividing line between the older age categories because it is the median age of the research participants.

8.5 Results

8.5.1 Descriptive data

From the four communities in the research, 841 Aboriginal people completed the survey, 45% of the target age range 15 to 34 years, with community coverage ranging from 13.6% to 78.8%, as shown in Table 8.1. Mean age of participants was 25.2 years, with standard deviation 5.3 years, while median age was 24 years. All participants identified as either male (352, 42%) or female (489, 58%).

Participants reported high levels of wellbeing with mean score 8.07 out of 10. Males and females reported similar scores (χ^2 = 13.0, df = 9, P = 0.16); while younger people reported higher wellbeing (under 20: mean 8.3; 20 to 24 years: mean 8.2; over 24 years mean 7.9; χ^2=31.3; df= 18; p=0.027).

Exploratory factor analysis identified three constructs, shown in Table 8.2.

Table 8.2: Constructs Derived from Exploratory Factor Analysis of Survey Items

Construct	**Survey items contributing**	**Score**
Aboriginal language literacy	• Reading • Writing	0 to 4
Cultural practice	• Caring for country • Hunting and gathering	0 to 4
Empowerment	• Self-efficacy • Identity • Resilience	0 to 4
Wellbeing	• Life satisfaction	1 to 10

Aboriginal language literacy comprised how well people reported they can read and write in their main Aboriginal language; cultural practice is comprised of participation in caring for Country and hunting and gathering, and empowerment is comprised of resilience, self-efficacy and identity. Table 8.3 shows means, standard deviations and Cronbach's alpha (a measure of reliability) for each construct.

Table 8.3: Descriptive statistics of constructs and wellbeing

Construct	Range	Mean	Standard deviation	Skewness	Kurtosis	Cronbach's alpha
Aboriginal language literacy	0-4	2.33	1.61	-0.31	-1.49	0.96
Cultural practice	0-4	2.99	1.27	-1.11	0.081	0.82
Empowerment	0-4	3.34	0.82	-1.22	0.98	0.84
Wellbeing	1-10	8.07	1.94	-0.65	-0.63	-

n = 841

8.5.2 Bivariate relationships

Aboriginal language literacy, cultural practice, and empowerment were all statistically correlated with one another; while Aboriginal language literacy and empowerment were correlated with wellbeing. There was no statistical relationship between cultural practice and wellbeing, as shown in Table 8.4.

Table 8.4: Pearson Bivariate correlations for constructs of Aboriginal literacy, cultural practice and empowerment

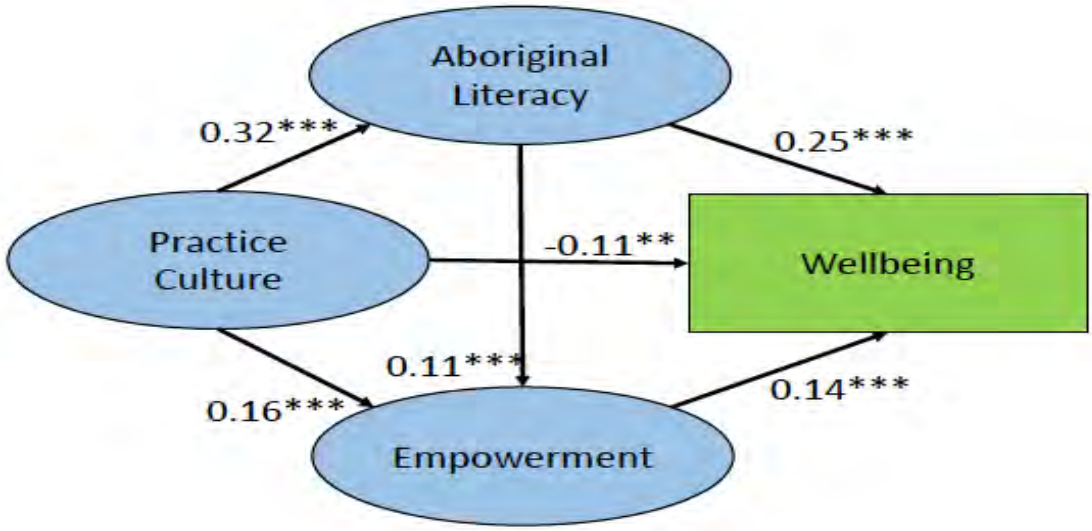
	Aboriginal language literacy	Cultural practice	Empowerment
Cultural practice	0.29***		
Empowerment	0.19***	0.20***	
Wellbeing	0.23***	0.003 NS	0.14***

*** P < 0.001; NS = not significant

8.5.3 Structural Equation Modelling

Based on hypotheses of associations between cultural practice, Aboriginal language literacy, empowerment and wellbeing, structural equation modelling was used to quantify these relationships and develop the model in Figure 8.3. All relationships were statistically significant and the model showed good fit statistics (χ^2 = 49.4; df = 15, χ^2/df= 3.29, RMSEA = 0.052 (0.037,069), RMR = 0.036; CFI = 0.99, PNFI = 0.53) (Hooper, Coughlan, and Mullen 2008). Cook's distance maximum was 0.058, indicating that there were no influential outliers, while variance inflation factors showed multicollinearity was not statistically present (VIF < 10).

Figure 8.3. Structural Equation Model of relationships between cultural practice, Aboriginal language literacy, empowerment and wellbeing for all participants



Goodness of fit: X^2 = 49.4; df = 15; X^2/df = 3.29; p < 0.001
RMSEA = 0.052 (0.037, 0.069); SRMR = 0.036; CFI = 0.99; TLI = 0.98; PNFI = 0.53
*** P < 0.001; ** P < 0.01

There were direct associations between cultural practice and Aboriginal language literacy (β = 0.32; [0.24, 0.40]; p = 0.005), and between Aboriginal language literacy and wellbeing (β = 0.25; [0.17, 0.31]; p = 0.020). Likewise, cultural practice was associated with empowerment (β = 0.16; [0.01, 0.27; p = 0.035), and empowerment with wellbeing (β = 0.14; [0.05, 0.22]; p =0.007). Preliminary analysis identified a statistically significant negative relationship between cultural practice and wellbeing (β = -0.11; [-0.18, -0.031]; p = 0.016), inconsistent with literature and the consultations in the development of the Interplay research project, and suggesting more complex interplay which was explored through mediation analysis (Cairney et al. 2017).

Cultural practice was indirectly associated with well-being through Aboriginal language literacy (β = 0.081; [0.049, 0.12]; p = 0.012), and through empowerment (β = 0.033; [0.015, 0.061]; p = 0.003), and the total relationship between cultural practice and wellbeing was not statistically significant (β = -0.006; -0.071, 0.058]; p = 0.93). Thus the model shows competitive mediation (Zhao, Lynch, and Chen 2010) whereby positive indirect relationships through both Aboriginal language literacy and empowerment mediate the negative direct relationship between cultural practice and wellbeing.

The effects of age were considered through multi-group analysis. When the pathway between cultural practice and wellbeing was constrained to be equal for each age group,

there was no difference between the models for younger and older research participants (χ^2 = 0.90; df = 1; P = 0.34).

In the multi-group analysis by gender, the relationship between cultural practice and wellbeing was constrained to be equal for males and females. This demonstrated differences between the relationships for males and females (χ^2= 10.8; df= 1; P= 0.001), so separate models were constructed for female and male participants, as shown in Figures 8.4 and 8.5.

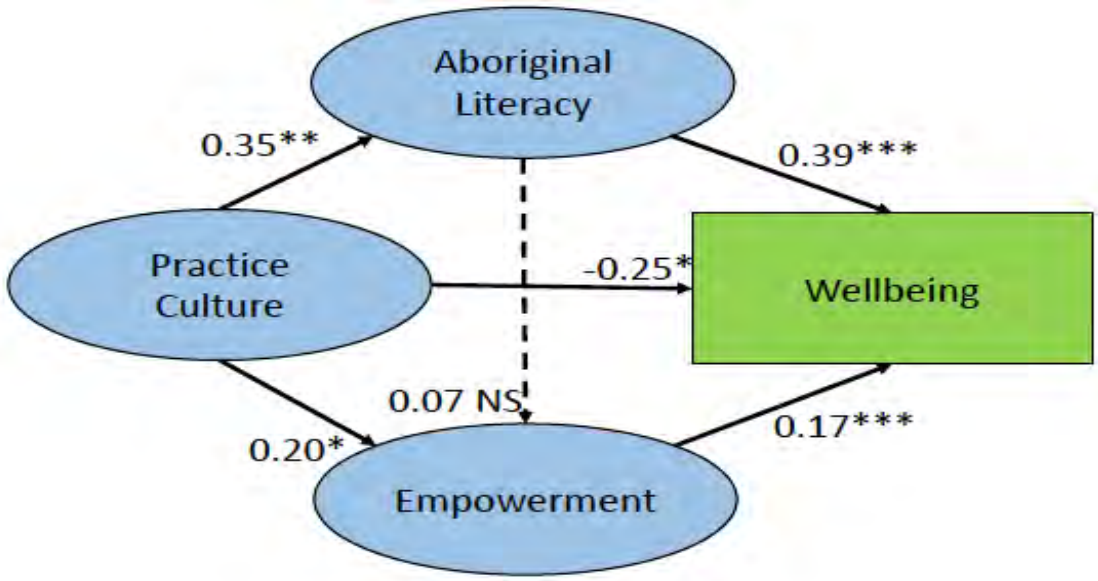
Male and female participants showed different statistical relationships between cultural practice and wellbeing, as shown in Table 8.5. For males, there was a positive indirect relationship between cultural practice and wellbeing (β = 0.17; [0.10, 0.27]; P = 0.003) with both direct and total relationships non-significant; while for females, the direct negative relationship between cultural practice and wellbeing (β= -0.25; [-0.37, -0.11]; P = 0.02) was in competitive mediation with indirect positive relationship (β = 0.11; [0.072, 0.15]; P = 0.007). The total relationships between cultural practice and wellbeing were non-significant for both males and females (β = 0.008; [-0.049, 0.43]; P = 0.24; β = -0.078; [-0.18, 0.43]; P= 0.23).

Table 8.5: Relationships between cultural practice and wellbeing for males, females and all participants

Wellbeing and Cultural practice	**Males (n=352)**	**Females (n=489)**	**All participants (n=841)**
Direct relationship	0.048 (-0.085, 0.18) P = 0.58	-0.25 (-0.37, -0.11) P = 0.02*	-0.11 (-0.18, -0.031) P = 0.016*
Indirect relationship	0.174 (0.105, 0.273) P = 0.003**	0.11 (0.072, 0.15) P = 0.007**	0.040 (0.007, 0.105) P = 0.004**
Total relationship	0.008 (-0.049, 0.21) P = 0.24	-0.078 (-0.18, 0.43) P = 0.23	-0.006 (-0.058, 0.071) P = 0.93

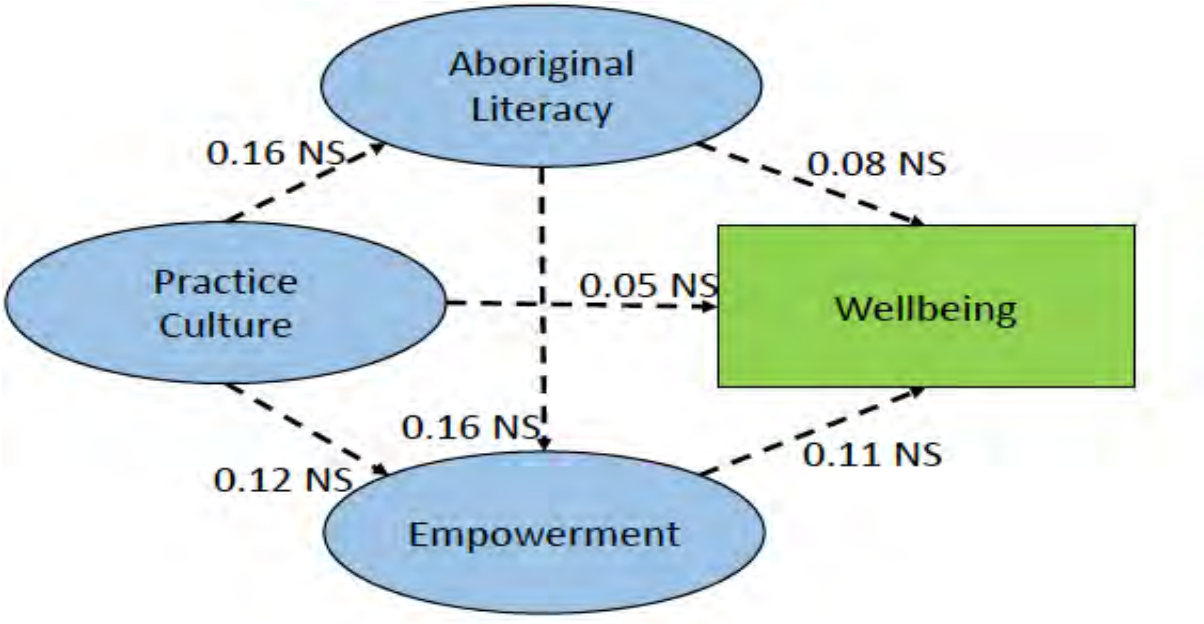
Relationships shown as β; (95% CI); P value. * P < 0.05; ** P< 0.01; *** P< 0.001

Figure 8.4. Structural Equation Model of relationships between cultural practice, Aboriginal language literacy, empowerment and wellbeing for female participants



Goodness of fit: χ^2 = 65.8; df = 15; χ^2/df = 4.38; p < 0.001
RMSEA = 0.083 (0.063, 0.104); SRMR = 0.067; CFI = 0.97; TLI = 0.97; PNFI = 0.52
*** P < 0.001; ** P < 0.01; * P < 0.05

Figure 8.5. Structural Equation Model of relationships between cultural practice, Aboriginal language literacy, empowerment and wellbeing for male participants



Goodness of fit: χ^2 = 19.5; df = 15; χ^2/df = 1.30; P = 0.19
RMSEA = 0.029 (0.00, 0.062); SRMR = 0.040; CFI = 0.98; TLI = 0.99; PNFI = 0.53
NS = not statistically significant

Finally, Aboriginal language literacy and empowerment were associated with wellbeing for females (literacy: β = 0.39; [0.30, 0.49]; P = 0.004; empowerment β= 0.17 [0.067, 0.29]; P = 0.005) but not males (literacy β = 0.079; [-0.030, 0.16]; P = 0.17; empowerment β = 0.11 [-0.015, 0.23]; P = 0.09), as shown in Table 8.6, leading to the weaker but statistically significant relationships for all participants.

Table 8.6: Relationships between Aboriginal language literacy and empowerment, and wellbeing for males, females and all participants

	Wellbeing		
	Males (n=352)	**Females (n=489)**	**All participants (n=841)**
Aboriginal language literacy	0.079 (-0.030, 0.16) P = 0.17	0.39 (0.30, 0.49) P=0.004**	0.25 (0.17, 0.31) P = 0.020*
Empowerment	0.11 (-0.015, 0.23) P = 0.09	0.17 (0.067, 0.29) P = 0.005**	0.14 (0.050, 0.22) P = 0.007**

Relationships shown as β; (95% CI); P value

* P < 0.05; ** P< 0.01; *** P< 0.001

8.6 Discussion

In the Interplay model of wellbeing for young adult Aboriginal Australians in remote regions, practising culture was associated with both Aboriginal language literacy and empowerment, each of which were associated with wellbeing in the model with all participants. However, the effects were significant among women, but not men, in the models by gender.

8.6.1 Cultural practice

The Interplay structural equation model showed no overall relationship between cultural practice and wellbeing for Aboriginal Peoples in remote Australia. Among women the model identified positive direct relationships between cultural practice and both Aboriginal language literacy and empowerment, which in turn had a positive relationship with wellbeing and counter-balanced the negative direct relationship between cultural practice and wellbeing. These relationships highlight the importance of Aboriginal language literacy and empowerment, and the complexity of interplaying priorities for wellbeing, including differences between men and women.

In the model, relationships between cultural practice and wellbeing, including mediation by Aboriginal language literacy and empowerment, were different for male and female

participants. Gender differences in cultural practices for Aboriginal Australians are well-known and recognised in some service provision. For example, through the practice of separation of Aboriginal men and women in work teams, planning consultations, networking and conferences (Davies, Walker, and Maru 2017). Thus, the Interplay research involving young Aboriginal people in remote regions shows that gender should be included as an explanatory variable in future research into wellbeing and related constructs.

8.6.2 Aboriginal language literacy

Wellbeing increased by 0.25 for each standard deviation increase in Aboriginal language literacy, the strongest relationship to wellbeing identified within the Interplay framework, driven by the effects among women (Cairney et al. 2017). For women, Aboriginal language literacy also mediated the relationship between cultural practice and wellbeing.

Relationships between wellbeing and Aboriginal language literacy, especially for women, highlight the importance of Aboriginal languages, which affirm cultural identity, self-efficacy and resilience of Aboriginal Australians (Fogarty 2012). The National Aboriginal and Torres Strait Islander Social Survey (NATSISS) showed that literacy in Aboriginal languages is associated with higher levels of formal education and paid employment, and with participation in cultural activities. These relationships suggest that people who are literate in both Aboriginal languages and English, which is more often used in employment, are well integrated in both mainstream and Aboriginal societies (Biddle and Swee 2012). Re-establishing government support for bilingual Aboriginal education will contribute to strengthening languages, thus enhancing rights of Aboriginal Peoples to their languages (Nicholls 2005; Schultz et al. 2018c).

The relationship between Aboriginal literacy and wellbeing identified in the Interplay project reflects a global phenomenon in which indigenous language literacy promotes identity, empowerment and wellbeing (United Nations 2014). Efforts to enhance Aboriginal language literacy may provide multiple benefits for individuals, communities and Australia's international reputation. Further research is required to explore how Aboriginal language literacy impacts on Aboriginal men, particularly as men have higher overall levels of Aboriginal language knowledge than women (Biddle and Swee 2012).

8.6.3 Empowerment

For women, increased empowerment had a direct positive relationship with wellbeing, and a mediating effect on the relationship between cultural practice and wellbeing. The direct link between empowerment and wellbeing for women in the Interplay model suggests that the

function of health care, education services, Aboriginal organization, and businesses in contributing to empowerment should be considered (McCalman 2013; McEwan et al. 2010).

Relationships between gender and empowerment for Aboriginal Australians reflect how Aboriginal men and women hold different spheres of influence and authority, and this is demonstrated through on-going separation of aspects of men's and women's lives (Fredericks et al. 2017). The findings in the Interplay project that relationships with empowerment differed for men and women are important and novel. Other studies of empowerment for Aboriginal Peoples have not published analyses by gender (McCalman et al. 2018). Research on empowerment for Aboriginal Australians has often arisen from non-Aboriginal concepts of power related to male physical and economic power. These differ from Aboriginal understandings of power, where power is related to cultural knowledge authority (Fredericks et al. 2017). Further research is needed to explore constructs of empowerment for Aboriginal people in relation to gender.

Programs for addressing empowerment of Australian Aboriginal Peoples are available through health, wellbeing, education and employment settings; however, political, ideological and economic conditions have limited program implementation (McCalman et al. 2018). Currently Australian health care services are funded to address clinical indicators for Aboriginal Peoples, rather than to contribute to empowerment, despite demonstrated benefits of empowerment interventions (Tsey et al. 2005). Addressing empowerment through health services, especially for women, may be a key element in the transformative change in health care needed to improve both health and wellbeing for Aboriginal Australians (Houston 2016). For Aboriginal men, there is a need to address barriers to health service access (Canuto et al. 2018).

Effective empowerment programs based on Aboriginal leadership and relatedness in schools, other educational institutions and Aboriginal organisations can enhance wellbeing. However, Aboriginal Peoples require greater influence within policy and program circles in order to overcome barriers to the implementation of additional programs that empower Aboriginal people (McCalman 2013)

8.6.4 Australian policy implications

Australian governments have long sought to reduce measures of socio-economic disadvantage for Aboriginal Peoples (Altman 2009). The current policy framework is entitled "Closing the Gap" and has widespread support for its focus on reducing educational, employment and health disadvantage of Aboriginal and Torres Strait Islander people, particularly in remote regions (Commonwealth of Australia: Department of Prime Minister and Cabinet 2017). However, government defined nationwide targets do not adequately

reflect the diversity of Aboriginal Peoples, and Aboriginal Peoples' aspirations are not reflected in government strategies to meet targets. An alternative policy approach would be driven by and empower Aboriginal Peoples and facilitate the development of targets and strategies that address their own needs (Altman 2009). Aboriginal language literacy and empowerment as indicators of education could be considered as additional targets in the Close the Gap initiative, reflecting Aboriginal aspirations and human development in line with findings of the Interplay research.

Australia's Closing the Gap strategy makes repeated references to the importance of Aboriginal culture (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018), and culture was a priority the Interplay wellbeing project. However, the complexity of relationships between cultural practice and wellbeing suggests that greater awareness is needed of how policies and services address culture and cultural practice. Policy and services focussed on empowerment and Aboriginal literacy in alignment with cultural practice may be more effective in promoting wellbeing.

For Aboriginal Peoples from remote regions, education, employment and health are not simply goals, but also means to enhance their wellbeing (Cairney et al. 2017). Assumptions from government and other non-Aboriginal sectors of society that education should lead to employment and thereby contribute to the growth of the wider economy are not relevant to many Aboriginal Peoples in remote Australia. Rather, education should support Aboriginal languages and culture, affirm connection to Country and strengthen identities in order to promote wellbeing. The notion of direct transition from education to employment was not supported in the Interplay project, consistent with other work with Aboriginal Peoples in remote Australia (McRae-Williams et al. 2016; Schultz et al. 2018c).

Bureaucratising Aboriginal culture can have negative impacts when culture is built into service plans developed externally, rather than through genuine ongoing engagement and empowerment of the communities involved (Fache 2014). Using Aboriginal Peoples' culture as a tool to promote government policy can disempower people and negatively impact their wellbeing when the underlying bureaucracy is insensitive to key Aboriginal relationships and knowledge (Nadasdy 2005). Implementation of cultural practices in unequal settings can reinforce dominant cultural morés that overrule Aboriginal values, methods and institutions (Ens et al. 2012). When non-Aboriginal people do not recognise their own cultural practices and norms yet remain the dominant service providers, their efforts to promote cultural practice may not contribute to Aboriginal wellbeing. Refreshment of the Closing the Gap initiative has highlighted the importance of empowerment and strong connections to Country, rather than narrow representations of Aboriginal culture (Parter, Wilson, and Hartz 2019).

The fundamental implication for Australian policy is that culture is a key component of wellbeing for Aboriginal Peoples in remote regions, but implementation of programs based on cultural practices must also entail other components. The Interplay project demonstrates that for women, empowerment and Aboriginal language literacy mediate the link from cultural practice to wellbeing, while further research with Aboriginal men is required to quantify the insights that emerged in the development of the wellbeing research framework.

8.6.5 International implications:

Structural equation modelling enabled quantification and comparison of relationships between constructs such as wellbeing and empowerment that are meaningful across different cultures. This process translates people's stories into numbers to provide the empirical accountability often required by governments.

The Interplay structural equation models developed for Aboriginal Peoples in remote Australia showed the importance of Aboriginal language literacy for wellbeing. The importance of languages for the health and wellbeing of indigenous peoples globally is increasingly being recognised (Flood and Rohloff 2018). Loss of indigenous languages is contributing to loss of indigenous knowledge communicated through these languages (Nettle and Romaine 2000). International bodies have recommended that all governments recognise, strengthen and re-vitalise indigenous languages for the benefit of individuals, communities and nations (United Nations 2014), and this research highlights the association between Aboriginal language literacy and wellbeing.

The Interplay model suggests that for Aboriginal women in remote Australia, empowerment may contribute both directly and indirectly to wellbeing, and this is consistent with international recognition that empowerment for indigenous peoples is a critical tool for building equity in human development (United Nations 2015). However, empowerment strategies must be developed locally for people to be empowered because of the importance of participation in processes of empowerment, which cannot be standardised across populations (Wallerstein 2006).

8.6.6 Limitations

The research was conducted in Australian Aboriginal communities in regions classified as remote, so generalisation is limited to this Aboriginal population (Australian Bureau of Statistics 2014a). For many Aboriginal Peoples, statistical classification of remoteness is arbitrary. From their perspective, remoteness can also be seen as a reflection of presence on ancestral lands (Rose 2004).

Participation was limited to people aged 15 to 34 so results may not be relevant to other age groups, both because of how priorities change over the lifecourse and because of the changing Aboriginal policy frameworks that shape people's lives (Altman, Biddle, and Hunter 2004).

Both the communities and individuals involved in the research were self-selected, and, although efforts were made to include diverse communities, the distinctiveness of each Aboriginal community may limit generalisation. Data collection by Aboriginal community researchers in their home communities may have led to information bias. Further, gender-specific concerns, language and communication issues were potential limitations.

The research focussed on positive attributes to counter the pervasive negative representation of Aboriginal Peoples, and this may have contributed to bias in both collection and interpretation of results. Despite efforts to reach common understandings of each of the questions, translation and interpretation across languages and cultures may have been a limitation. Relationships are associations between variables and do not suggest causation.

8.7 Conclusion

Delivery of effective services can improve people's wellbeing. As an outcome measure, wellbeing reflects individual aspirations and priorities, overcoming the cultural bias of other outcome measures. The Interplay project identified and explored wellbeing priorities for Aboriginal Peoples in remote regions of Australia to guide service provision. For women, Aboriginal language literacy and empowerment showed both direct and indirect relationships with wellbeing, suggesting including Aboriginal language literacy and empowerment in education, employment and health policy and services may have far-reaching benefits. For men, neither Aboriginal language literacy, empowerment nor cultural practice was statistically associated with wellbeing. Overall, relationships between cultural practice and wellbeing are a complex interplay of factors, but empowerment and Aboriginal language literacy appear to be important priorities. Further research to explore relationships between Aboriginal language literacy, empowerment and wellbeing for Aboriginal men and women is required to understand the different needs of each gender.

8.8 Chapter summary

This chapter provides quantitative evidence regarding the second research proposition, that an holistic approach to services will optimise wellbeing for Aboriginal people in remote Australia. Relationships between cultural practice and wellbeing were complex and interplayed with empowerment and Aboriginal language literacy, which were strongly associated with wellbeing for women. Overall, significant differences between men and

women in relationships with wellbeing emerged in this quantitative analysis. These had not been anticipated based on the research development or qualitative analysis, highlighting a significant research gap.

Further quantitative analysis in Chapter 9 explores relationships between health, health care and wellbeing using structural equation modelling as in this chapter.

Chapter 9: Physical and Mental Health, Service Access and Wellbeing

9.1 Chapter outline

The hypotheses of Chapter 8 arose from the themes of preceding chapters around cultural practice, empowerment, Aboriginal languages and wellbeing, while those of Chapter 9 arose from my experiences as a health professional interested in the role of health services in wellbeing. This presents a practical health service application of the Interplay project, by quantifying the impacts of health services on wellbeing for Aboriginal people in remote Australia through quantifying relationships between health, health services and wellbeing. Structural equation modelling of data from the Interplay wellbeing survey was used to develop path diagrams showing the interplay of these factors.

The chapter is framed around an article which was published in *BMC Health Services Research*, “Structural modelling of wellbeing for Indigenous Australians: importance of mental health” (Schultz, Quinn, Wilson, et al. 2019). This journal addresses all aspects of health services research, including assessment of healthcare needs, measurement of outcomes, and allocation of healthcare resources (Springer Nature 2019a). Co-authors of the article and their percentage contribution are Stephen Quinn 20%, Byron Wilson 10%, Tammy Abbott 10% and Sheree Cairney 20%. Because it is an international journal, the word “Indigenous” is used in referring to the Aboriginal people in the research.

9.2 Abstract

9.2.1 Background

Australia provides health care services for Indigenous peoples as part of its effort to enhance Indigenous peoples’ wellbeing. However, biomedical frameworks shape Australia’s health care system, often without reference to Indigenous wellbeing priorities.

Under Indigenous leadership the Interplay research project explored wellbeing for Indigenous Australians in remote regions, through defining and quantifying Indigenous people’s values and priorities. This article aimed to quantify relationships between health care access, mental and physical health, and wellbeing to guide services to enhance wellbeing for Indigenous Australians in remote regions.

9.2.2 Methods

Indigenous and non-Indigenous researchers worked with Indigenous people in remote Australia to create a framework of wellbeing priorities. Indigenous community priorities were

community, culture and empowerment; these interplay with government priorities for Indigenous development of health, education and employment.

The wellbeing framework was further explored in four Indigenous communities through a survey which measured aspects of the wellbeing priorities. Indigenous community researchers administered the survey in their home communities to 841 Indigenous people aged 15 to 34 years from June 2014.

From the survey items, exploratory factor analysis was used to develop constructs for physical and mental health, barriers to health care access and wellbeing. Relationships between these constructs were quantified through structural equation modelling.

9.2.3 Results

Participants reported high levels of physical and mental health (mean scores (3.76/4 [SD 0.73]; and 3.17/4 [SD 0.96]) and wellbeing 8.07/10 [SD 1.94]. Transport and costs comprised the construct for barriers to health care access (mean access score 0.89/1 [SD 0.28]).

Structural equation modelling showed that mental health, but not physical health was associated with wellbeing (β = 0.25, P < 0.001; β = -0.038, P = 0.3). Health care access had an indirect positive relationship with wellbeing through mental health (β = 0.047, P = 0.007). Relationships differed significantly for participants in remote compared with those in very remote communities.

9.2.4 Conclusions

Greater attention to mental health and recognition of the role of services outside the health care sector may have positive impacts on wellbeing for Indigenous people in remote/ very remote Australia. Aggregation of remote and very remote populations may obscure important differences between Indigenous communities.

9.3 Background

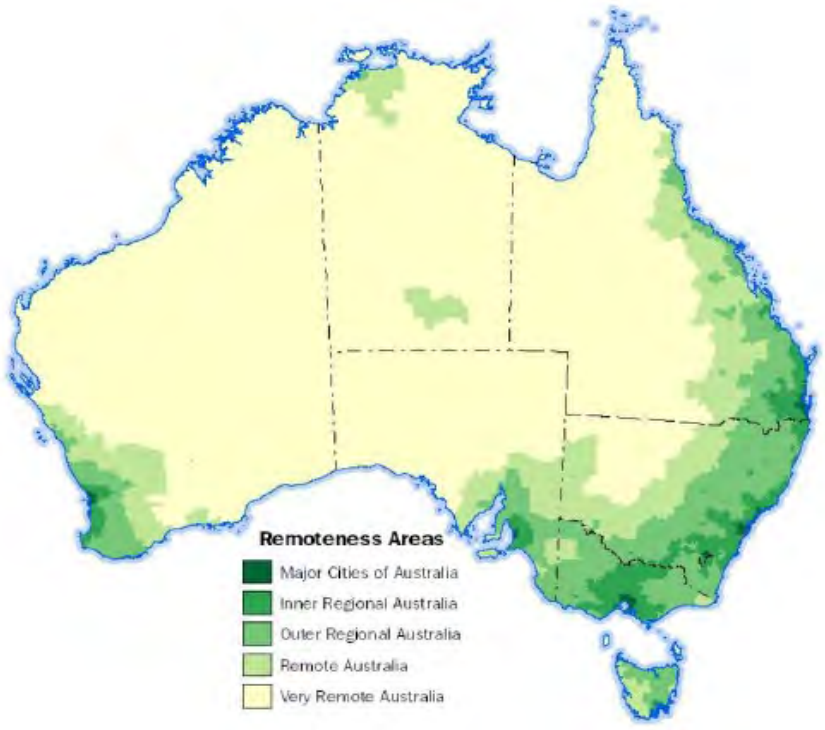
Australia provides services targeted to Indigenous people, aiming to reduce their overall health and socio-economic disadvantage (Altman, Biddle, and Hunter 2008). State, territory and the Australian Governments formally committed to reducing disparities between Indigenous and other Australians in 2008 through the Closing the Gap strategy (Australian Government 2013). Since then, progress has been limited: improvements in the measures of Indigenous people's health and education have stalled, and education and employment gaps are widening (Commonwealth of Australia: Department of Prime Minister and Cabinet 2017).

In Australia as globally, movements for Indigenous self-determination recognise that Indigenous individuals and communities have different goals and aspirations from those of non-Indigenous populations. Socio-economic indicators developed by and for national populations may not address Indigenous peoples' aspirations (Prout 2012). Measuring and monitoring Indigenous community progress requires development of socio-economic indicators that are meaningful for Indigenous people, and that address the distinct and diverse aspirations of individual communities. These could build on life satisfaction and wellbeing, which are fundamental to development, relatively simple to measure and monitor, and unbiased by differences in culture (Prout 2012).

Recognising that Indigenous Australians have distinct social characteristics, the Australian Bureau of Statistics conducts a periodic National Aboriginal and Torres Strait Islander Social Survey (NATSISS); Aboriginal and Torres Strait Islander groups being the two populations of Indigenous Australians. The most recent NATSISS, conducted in 2014-2015, included a question of overall life-satisfaction. Results confirmed that overall, Indigenous people enjoy high levels of life satisfaction, with those in remote and very remote regions reporting mean life-satisfaction of 7.6, and those in non-remote regions 7.2 (Australian Bureau of Statistics 2016a). Mean life satisfaction score for all Australians in 2015 was also 7.6, despite Indigenous people in remote/ very remote regions showing significant differences in other social measures including income, employment, education and health (Australian Bureau of Statistics 2015). This suggests that at a population level, remote residence is associated with increased life satisfaction for Indigenous Australians.

The Access and Remoteness Index of Australia (ARIA) defines five categories of remoteness based on road distance to the nearest urban centre, shown geographically in Figure 9.1 (Australian Bureau of Statistics 2016c). The research described in this article involved communities in areas classified as remote and very remote. More Indigenous Australian live in very remote than remote regions, 95200 and 53 respectively, 11.8 and 6.7% of the total Indigenous population (Australian Bureau of Statistics 2018b).

Figure 9.1: Map of the 2016 Remoteness Areas for Australia.



Remoteness classification of Australia, Australian Bureau of Statistics (2016c)

There is a paradox regarding Indigenous people of remote and very remote Australia, who report high levels of wellbeing despite socio-economic disadvantage as assessed through indicators of education, employment and income (Australian Institute of Health and Welfare 2015; Australian Bureau of Statistics 2016a). Possible explanations include the strength of identity and culture that Indigenous people maintain through their connections to the land particularly when they have access to their ancestral lands (Biddle and Swee 2012). In other populations, improvements in wellbeing are independently associated with improvements in health, education and productivity, through increases in creativity, cognitive capacity, sociability, cooperation and productivity (De Neve et al. 2013). Health benefits of increases in wellbeing include reduced inflammation, lowered risk of cardiovascular disease and susceptibility to infections, and increases in health promoting behaviours including choosing healthier foods, exercising more and smoking less (De Neve et al. 2013). Although such benefits have not been specifically demonstrated for Indigenous Australians, attention to wellbeing may provide opportunities to address complex socio-economic disadvantage where current approaches are inadequate (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018).

Wellbeing as a goal of service delivery was the focus of the Interplay project, an initiative of the Cooperative Research Centre for Remote Economic Participation, whose overall aim

was to guide economic development to meet the aspirations of Indigenous people in remote /very remote regions of Australia (Cairney et al. 2017; Cooperative Research Centre for Remote Economic Participation 2017). The Interplay project began by developing a wellbeing framework, which comprised government priorities of health, education and employment, together with community priorities of community, culture and empowerment (Cairney et al. 2017). Social and emotional wellbeing is often used an alternative term for mental health for Indigenous people, but as the construct in this research related to absence of symptoms of mental illness, we use the term “mental health” (Thomas et al. 2010).

The research presented here aims to quantify relationships between health care access, mental and physical health and wellbeing, assuming that access to health care access contributes to wellbeing both directly and through its impacts on mental and physical health. The hypothesis was that health care access is directly associated with wellbeing for Indigenous people in remote and very remote communities; alternatively, mental and physical health may mediate this relationship. Understanding these relationships can provide direction for services to optimise wellbeing for Indigenous Australians in remote/ very remote regions.

9.4 Methods

9.4.1 Research governance

The Cooperative Research Centre for Remote Economic Participation (CRC-REP) which has community connections throughout remote Australia managed the Interplay research (Cooperative Research Centre for Remote Economic Participation 2017). Indigenous leadership and governance of the project prioritised qualitative approaches to understanding wellbeing, based on peoples’ stories as sources of knowledge and understanding. Government, university and industry partners in the project sought numerical indicators, so the project also included quantitative analysis of aspects of wellbeing.

Design and development of the research extended over three years of consultation with Indigenous communities and researchers. Advisory group meetings, workshops, interviews and discussions, and the employment of Indigenous community-based researchers enabled collaboration between Indigenous community members, researchers and government representatives in all aspects of the research (Cairney and Abbott 2014). Considerable effort was made to ensure that the project encompassed both Indigenous and non-Indigenous knowledge and understandings. Following data collection, the research team continues work with communities of the study. This keeps community researchers, participants and other community members informed of the analyses of the study and ensures support for wider reporting and implementation (Cairney 2019).

9.4.2 Study population

Four communities in Northern Territory and Western Australia from the CRC-REP network identified themselves to participate in the research. To achieve broad representation of remote Indigenous communities, we included a range of geographies; population size and proportion Indigenous; and level of Indigenous language use (Cairney et al. 2017). Table 9.1 provides information on the communities involved in the study.

Table 9.1: Community geography, remoteness, language, and research participation

Community	**1**	**2**	**3**	**4**
Geography	River	Island	Desert	Coastal
Distance from major centre	300km	500km	1000km	650km
Remoteness classification	Remote	Very remote	Very remote	Very remote
Total population	9207	2550	1158	843
Proportion Indigenous	24.2%	88.6%	24.4%	75.3%
Primary community language	Kriol	Djambarrpuyngu	Martu	Gumatj
Proportion of Indigenous people who speak Indigenous languages at home	25.7%	98.1%	63.5%	84.3%

Population data from Australian Bureau of Statistics (2011).

Communities of the study together with Indigenous service providers and leaders nationwide contributed to development of a wellbeing framework. The framework comprises Indigenous community priorities of community, culture and empowerment and government priorities of health, education and employment (Cairney, Abbott, and Yamaguchi 2015).

9.4.3 Survey development and data collection

The Interplay wellbeing survey was developed to further explore wellbeing priorities. It included questions on demography, Indigenous status, physical and mental health symptoms and diagnoses, barriers to health care access, and wellbeing. As far as possible questions were developed from instruments which have been validated for Indigenous

Australians. Experienced researchers worked closely with community researchers to ensure they shared understandings of the meaning of the survey questions, and that the questions could be translated to community languages if required (Cairney et al. 2017). The survey was designed to generate valid, reliable and quantifiable measures of contributors to Indigenous people's wellbeing (Cairney et al. 2017).

Through relationships and community networks, Indigenous Community Researchers recruited young adult participants to complete the survey in their home communities over 12 months from June 2014. The surveys were in English, but where necessary the community researchers who had been involved in the development of the survey used community languages to ensure that participants understood the meaning of the questions (Cairney et al. 2017). The community researchers administered surveys from iPads, taking approximately one hour per survey.

9.4.4 Measures

The Interplay research used standard measurement tools as far as possible. To measure physical health, questions involved health as a resource for living, through asking people whether health problems interfered with aspects of their day to day lives (Cairney et al. 2017). Refined questions from the Strong Souls instrument provided a measurement of mental health (Thomas et al. 2010). The absence of specific barriers to seeking health care formed the construct for health care access, while current life satisfaction was the measurement of wellbeing (Kilpatrick and Cantril 1965). Education and employment measures were completed years of school and employment status respectively, based on questions from the Australian census (Australian Bureau of Statistics 2011). Remoteness was determined by the ARIA classification of the community where participant completed the survey (Australian Bureau of Statistics 2016c).

9.4.5 Statistical Analysis

Structural equation modelling enabled factors from the Interplay wellbeing framework to be developed into measurable constructs, to analyse, interpret and report in meaningful ways to both Indigenous and non-Indigenous communities (Cairney et al. 2017). Data analysis was conducted using SPSS Statistics Software version 24 and AMOS version 23 (Arbuckle 2017). Missing data were estimated using multiple imputations taking the median as the most likely value. Exploratory factor analysis (EFA) was used to develop constructs for mental and physical health and health care access from the survey items, using maximal likelihood extraction with promax rotation (Iacobucci 2010). Three constructs for health care

access and mental and physical health had strong factor loadings (> 0.4), no items with cross-loadings, discriminant and face validity and adequate reliability.

We tested hypothesised relationships between health care access and mental and physical health and wellbeing through confirmatory factor analysis (CFA) using structural equation modelling in AMOS. Bootstrapping enabled mediation analysis to further assess relationships between constructs (Nitzl, Roldan, and Cepeda 2016). Model fit was assessed using a range of types of fit indices, namely χ^2 ratio to degrees of freedom, non-normed fit index (NNFI), comparative fit index (CFI), Akaike's Information Criteria (AIC) closer to saturated model than the independence model and Root Mean Square Error of Approximation (RMSEA) with confidence interval (Koufteros and Marcoulides 2006).

While participant numbers were not large enough to analyse differences between the communities in the research, multigroup analysis was performed to explore differences between participants in very remote and those in remote communities (Australian Bureau of Statistics 2016c).

9.5 Results

9.5.1 Participant demography

Across the four communities of the study, 841 Indigenous participants completed surveys. Mean age was 25.2 years, SD = 5.34, range 15 to 34 years. Females made up 489 (58.1%) of respondents. Based on 2011 census population which was the nearest to the date of the research, participants made up 45% of Indigenous people in the target age group in the study communities (Australian Bureau of Statistics 2011). Participants' community, education and employment status, and relationships of these variables with wellbeing are shown in Table 9.2.

9.5.2 Descriptive statistics

Survey participants described good physical health, with over 88% reporting no interference from health problems with their normal daily activities, energy levels, socialising, or work/ study. However, symptoms of depression and anxiety were common, with nearly half the respondents reporting at least one depression or anxiety symptom. The main barriers to accessing health care were transport (14.0%), cost (8.4%), cultural and language concerns (7.1%) and privacy (4.9%). Participants reported high levels of wellbeing, with mean score 8.1/10 (SD 1.94). Means and standard deviations are summarised in Table 9.3.

Table 9.2: Number and percentage of participants by community, education level and employment status reporting levels of wellbeing

		Wellbeing level			
Demographic variable	**Community number and remoteness**	**Low (0 to 4)**	**Moderate (5 to 7)**	**High (8 to 10)**	**Total**
Community	1 Remote	21 3.9%	174 31.9%	350 64.2%	545 100%
	2 Very remote	1 2.0%	24 47.1%	26 51.0%	51 100%
	3 Very remote	2 1.9%	28 26.9%	74 71.2%	104 100%
	4 Very remote	4 2.8%	54 38.3%	83 58.9%	141 100%
Highest level of schooling	Primary school	4 6.2%	29 44.6%	21 41.2%	65 100%
	Junior high school (years 8 to 10)	21 3.5%	204 34.5%	367 62.0%	592 100%
	Senior high school (years 11 to 12)	3 1.6%	47* 25.5%	134* 72.8%	184 100%
Employment status	No paid employment	14 3.4%	146 35.5%	251 61.1%	411 100%
	Part time employment	8 3.2%	79 32.0%	160 64.8%	247 100%
	Full time employment	6 3.3%	55 30.1%	122 66.7%	183 100%
Total		28 3.3%	280 33.3%	533 63.3%	841 100%

*Indicates value is different from expected based on $P < 0.05$

Relationships of demographic variables with wellbeing:

Education: $\chi^2 = 14.1$, df= 4, $P = 0.007$

Employment: $\chi^2 = 1.07$, df = 4, $P = 0.72$

Community: $\chi^2 = 9.74$, df = 6, $P = 0.14$

Table 9.3: Survey questions on mental and physical health, access to health care and wellbeing with mean response and standard deviation

Construct	Survey questions	Mean	SD
Mental health: Have you felt any of these from too many worries in the last few weeks? (0-4, with high scores indicating good health)	Hard to breathe	3.41	1.07
	Dizzy	3.32	1.13
	Shaky	3.42	1.05
	Too many bad moods	2.94	1.28
	Get angry or wild real quick	2.87	1.33
	Trouble sleeping	3.09	1.33
Physical health: Have health problems got in the way of these in the last few weeks? (0-4, with high scores indicating good health)	Normal activities	3.77	0.77
	Work or study	3.85	0.63
	Energy levels	3.75	0.84
	Socialising with family or friends	3.67	0.99
Health service access: Do any of these things make it hard to use health services? (0-1, with 1 being no barrier)	Costs/ money	0.92	0.28
	Transport	0.86	0.35
	Culture/ language	0.93	0.26
	Privacy	0.95	0.21
Wellbeing:	On a scale of 1 to 10 how well is your life going?	8.07	1.94

N=841

9.5.3 Exploratory Factor analysis

We used maximal likelihood extraction to identify constructs for physical and mental health, and health care access; these are shown in Table 9.4.

Capacity for normal daily activities, work/ study, socialising, and energy levels formed the construct for physical health. There was a high degree of reliability of these factors for the physical health construct (Cronbach alpha reliability 0.92), and participants had mean physical health score of 3.76/4 (SD 0.96).

Symptoms of anxiety (feeling dizzy, feeling shaky, and hard to breathe), and depression (bad moods, quick to anger and difficulty sleeping) formed the construct of mental health. The items showed a high level of reliability (Cronbach alpha reliability 0.88). Mean mental health score was 3.17/4 (SD 0.96).

Costs and transport made up the construct for barriers to health care access, with Cronbach alpha reliability 0.74. Cultural and language barriers and privacy did not load strongly onto the construct (0.42, and 0.28) so the final model did not include these factors.

Distributions and correlations of the constructs in the model are shown in Table 9.4.

Table 9.4: Constructs of mental health, physical health, health care access, with wellbeing and variate correlations

Construct	Range	Mean	SD	Cronbach α reliability	Skewness	Kurtosis	Bivariate correlations		
							Mental health	Physical health	Health care access
Mental health	0-4	3.17	0.96	0.88	-1.29	1.19			
Physical health	0-4	3.76	0.73	0.92	-3.26	10.21	0.16***		
Health care access	0-1	0.89	0.28	0.74	-2.40	4.41	0.23***	0.25***	
Wellbeing	1-10	8.07	1.94	Single item	-0.65	-0.63	0.24***	-0.039 NS	-0.088*

n = 841

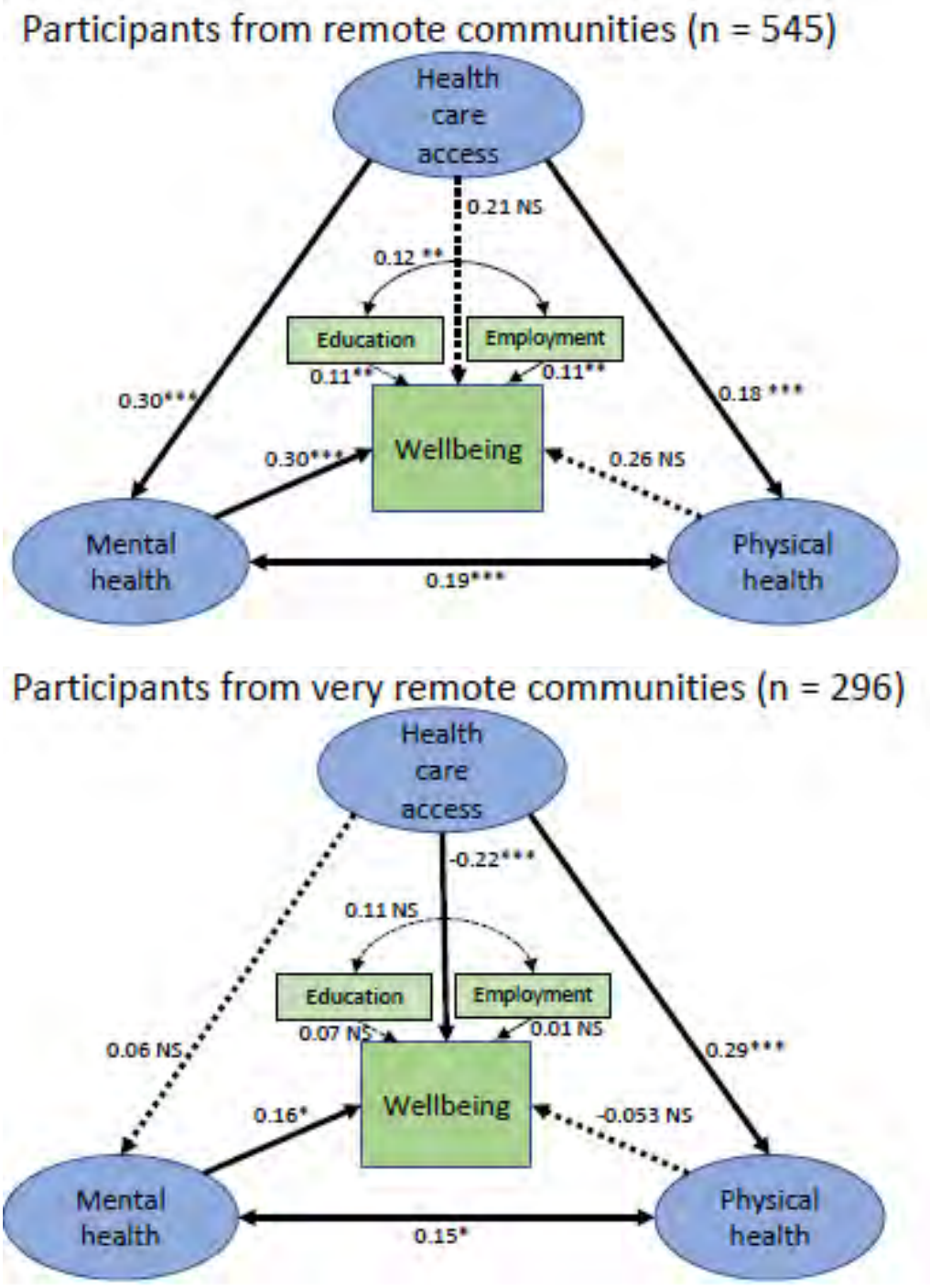
SD = standard deviation

** P < 0.001, *P < 0.05, NS not significant

9.5.4 Model development and confirmatory factor analysis

We developed a structural model to quantify relationships between mental and physical health, health care access and wellbeing. Education and employment were considered as covariates, and participants were grouped by the remoteness of their community. We anticipated negative skew and positive kurtosis of the constructs from the descriptive statistics, but the data fitted the model as shown in Figure 9.2 with participants grouped into remote and very remote communities.

Figure 9.2: Structural equation models showing relationships between health care access, and mental and physical health to wellbeing for participants in remote and very remote communities



***P < 0.001; **P< 0.01; *P< 0.05; NS = not statistically significant.

Model fit indices: χ^2 = 345.13; df= 158; χ^2/df = 2.18

NNFI = 0.96, CFI = 0.97, Model AIC = 509, Saturated AIC = 480, Independence AIC = 6548; RMSEA = 0.038, 90% confidence interval [0.032, 0.043].

Non-significant pathways contributing to the hypotheses are included as dotted lines in the diagrams

Health care access was not statistically associated with wellbeing for participants from remote communities, and had a negative association with wellbeing for participants from very remote communities (for participants in remote communities, β = 0.21, 95% confidence interval [-0.087, 0.14], P = 0.6; for participants in very remote communities β = -0.22, 95% confidence interval [-0.35, -0.076], P = 0.001). Mental health was associated with wellbeing for both groups (remote β = 0.30, [0.18, 0.41], P < 0.001; very remote β = 0.16, [0.053, 0.27], P = 0.014) while physical health was not statistically significantly associated with wellbeing for either group (remote β = 0.026, [-0.08, 0.12], P = 0.5; very remote β = -0.053, [-0.15, 0.056] P = 0.4). Health care access was positively associated with mental health for participants from remote but not very remote communities (remote β = 0.30, [0.15, 0.46], P < 0.001; very remote β = 0.06, [-0.072, 0.22], P = 0.4). Table 9.5 shows standardised regression weights, 95% confidence intervals and P values for direct relationships with wellbeing in the model.

Table 9.5: Standardised regression weights for constructs and wellbeing for participants from remote and very remote communities

	Relationship with wellbeing for participants by community		
	Remote community participants	**Very remote community participant**	**All participants**
Health care access	0.21 [-0.087, 0.14] P= 0.6	-0.22** [-0.35, -0.076] P = 0.001	-0.077 [-0.17, 0.004] P= 0.05
Mental health	0.30*** [0.18, 0.41] P < 0.001	0.16* [0.053, 0.27] P = 0.014	0.25*** [0.17, 0.32] P < 0.001
Physical health	0.026 [-0.08, 0.12] P = 0.5	-0.053 [-0.15, 0.056] P = 0.4	-0.038 [-0.11, 0.041] P=0.3

Relationship, 95% confidence interval, P value

***P < 0.001; **P< 0.01; *P< 0.05; NS = not statistically significant.

We explored the relationship between health care access and wellbeing further through mediation analysis. Physical health had non-significant relationships with wellbeing so was not further considered, while mental health was positively associated with both health care access and wellbeing for remote communities, so was potentially a mediating variable for health care access on wellbeing in remote but not very remote communities.

We found a statistically significant positive indirect effect of health care access through mental health on wellbeing for participants from remote communities. There was also a positive indirect relationship of health care access on wellbeing, through mental health for all participants. The total relationship of health care access with wellbeing was positive for those in remote communities (Total relationship = 0.12, 95% confidence interval [0.036, 0.21], P = 0.005); negative for those in very remote communities (Total relationship = -0.23, 95% confidence interval [-0.34, -0.082], P = 0.005) and not statistically significant when all participants were considered together (Total relationship = -0.03, 95% confidence interval [-0.12, 0.05], P = 0.5). These data are shown in Table 9.6.

Table 9.6: Direct, indirect and total relationships between health care access and wellbeing, for remote and very remote community participants

Health care access relationship to wellbeing	**Remote community participants**	**Very remote community participant**	**All participants**
Direct relationship	0.21 [-0.087, 0.14] P= 0.6	-0.22** [-0.35, -0.076] P = 0.001	-0.077 [-0.17, 0.004] P= 0.05
Indirect relationship through mental health	0.11** [0.043, 0.17] P = 0.002	-0.006 [-0.055, 0.029] P=0.7	0.047** [0.015, 0.087] P = 0.007
Total relationship	0.12** [0.036, 0.21] P = 0.005	-0.23** [-0.34, -0.082] P = 0.005	-0.03 [-0.12, 0.05] P = 0.5

Relationship, 95% confidence interval, P value

***P < 0.001; **P< 0.01; *P< 0.05; NS = not statistically significant.

9.6 Discussion

9.6.1 Interplay between health care access, mental and physical health and wellbeing

The hypothesis that health care access is associated with wellbeing was not confirmed. The relationship was not statistically significant for participants in remote communities and was negative for participants in very remote communities, signifying that greater health care access was associated with lower levels of wellbeing for participants in very remote communities. Mediation analysis showed an indirect positive effect of health care access on wellbeing through mental health for participants in remote communities, and this contributed to a positive total effect. For participants in very remote communities, the indirect effect was not significant, and the total effect of health care access on wellbeing remained negative. Thus, health care access does not have a positive relationship with wellbeing, and relationships between health care access and wellbeing differ for participants in remote and very remote communities.

Mental health was positively associated with wellbeing for participants in both remote and very remote communities. For those in remote communities, this indirect effect contributed to a positive overall effect of health care access on wellbeing.

Relationships between health care access and wellbeing are complex. Interactions between Indigenous people and health care providers do not consistently contribute to wellbeing (Jennings, Bond, and Hill 2018; Bond 2005). In Australia, health care in very remote regions is usually provided by non-Indigenous practitioners despite Indigenous people being the majority of the population. Staff turnover is high, this and can reinforce difference and negative attitudes between health care providers and Indigenous people (Saethre 2013; Russell et al. 2017). Different priorities and poor communication between Indigenous people and health care providers can contribute to experiences of disempowerment and alienation, and may undermine improvements in wellbeing that access to health care could provide (Saethre 2013; Kowal and Paradies 2010). While efforts are made to overcome these issues, greater attention to mental health and to services outside the health sector may contribute to wellbeing for Indigenous people, especially in very remote communities (Kowal and Paradies 2010).

9.6.2 Remoteness

Demographic and socio-economic descriptions of Australians often aggregate remote and very remote populations who together they make up only 1.5% of the Australian people (Australian Institute of Health and Welfare 2018c). The separation between remote/ very

remote and non-remote populations is also used for Indigenous Australians (Australian Institute of Health and Welfare 2015). However, the concept of remoteness does not exist for many Indigenous Australians, and more Indigenous people live in very remote regions than remote regions. This contrasts with non-Indigenous Australians whose population declines with increasing remoteness (Australian Bureau of Statistics 2018b). The model presented here suggests that for Indigenous Australians the remote/ very remote aggregation may overlook important differences.

9.6.3 Wellbeing

The high level of wellbeing 8.1/10 reported by Indigenous people in this study is consistent with other data such as the NATSISS (Australian Bureau of Statistics 2016a) which indicates that Indigenous people in remote / very remote regions enjoy greater wellbeing than those in urban regions. There is little in the literature that explores the high levels of wellbeing of Indigenous people of remote/ very remote regions (Dockery 2016). Instead most research focusses on negative indicators of Indigenous people in remote/ very remote Australia, including disease rates, life expectancy, unemployment, school attendance, literacy and numeracy (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018).

Participants in this study also reported experiencing high levels of functional health, despite the high burden of disease of Indigenous people in remote Australia (Australian Institute of Health and Welfare 2015). Mental health symptoms were more common than physical health problems, which may reflect the high burden of suffering among Indigenous communities attributed to stress, racism, and on-going oppression (Dudgeon et al. 2014). However the model suggests that recognising and managing the burden of mental health symptoms provides an opportunity for health care providers to significantly enhance wellbeing for people in remote regions (Cairney et al. 2017).

9.6.4 Barriers to health care access

Transport and costs were the factors that comprised the construct of health care access. These barriers to health care access have been identified for Indigenous people in settings across Australia (Ong et al. 2012; Thomas et al. 2017; Durey, Thompson, and Wood 2011). Cultural and language differences were identified as barriers to health care access in the descriptive data in this project, and have been identified as important barriers for Indigenous Australians in other research (Australian Government 2013). However, they had low loadings in exploratory factor analysis and reduced the statistical fit of the model. Privacy was also identified in descriptive data as a barrier to health care access but did not load strongly onto the construct of health care access.

9.6.5 Health and wellbeing for Indigenous people

Australian Indigenous people's understandings of health and wellbeing were defined in the 1989 National Aboriginal Health Strategy (NAHS) and remain in the current National Aboriginal and Torres Strait Islander National health plan 2013 to 2023 (National Aboriginal Health Strategy Working Group 1989; Australian Government 2013).

> "Health to Aboriginal peoples is a matter of determining all aspects of their life, including control over their physical environment, of dignity, of community self-esteem, and of justice. It is not merely a matter of the provision of doctors, hospital, medicine or the absence of disease and incapacity." (National Aboriginal Health Strategy Working Group 1989) page ix.
>
> "[Health is] not just the physical well-being of the individual but the social, emotional, and cultural well-being of the whole community." (National Aboriginal Health Strategy Working Group 1989) page x.

The Interplay project identified health as one of six wellbeing priorities, together with community, culture, and empowerment, education and employment. In the model here, mental health, which is freedom from depression and anxiety symptoms, was associated with wellbeing for participants in both remote and very remote regions, and mediated the relationship between health care access and wellbeing for participants in remote regions. Promoting mental health may be an important strategy for enhancing wellbeing for Indigenous people in remote and very remote Australia.

9.6.6 Implications for service provision

The Interplay project provides an integrated framework to understand Indigenous wellbeing, and guide development of effective services. Since mental health is associated with wellbeing, services that contribute to mental health may enhance wellbeing more effectively than health care directed to physical health. This highlights the importance of services outside the health sector to wellbeing, which contribute to comprehensive primary health care, originally conceptualised as an intersectoral undertaking (World Health Organisation 1978a).

Services outside of the health sector contribute to social and emotional wellbeing, which arise from all aspects of Indigenous people's lives rather than being limited to aspects of health (Biddle and Swee 2012; Houston 2016). Services aimed to enhance the strengths of Indigenous people and communities, including commitment to interpersonal relationships, cultural knowledge and language may contribute to the transformative approach required to reduced health and socio-economic disadvantage of Indigenous people (Cairney et al.

2017). Health services based on caring for ancestral lands, the basis of Indigenous health, rather than clinical imperatives may contribute to improved health and wellbeing outcomes (Schultz et al. 2018a).

Within the health sector, there is widespread recognition that interventions that effectively address mental health of Indigenous Australians will improve people's wellbeing (Day and Francisco 2013). Key elements of interventions likely to be effective include delivery outside clinical spaces; attention to the specific needs of Indigenous peoples including historical policies of removing people from their families; and focus on empowerment and self-determination (Day and Francisco 2013). Ensuring that Indigenous people maintain control of services to address their mental health needs and that interventions are rigorously evaluated would contribute to improving mental health outcomes (Day and Francisco 2013).

Primary health care for Indigenous Australians is increasingly driven by performance indicators related to physical health, rather than community needs and aspirations (Khoury 2015). As part of the closing the gap strategy of reducing the disadvantage of Indigenous Australians, a set of numerical indicators of physical health, such as blood pressure, blood sugar and body weight has been defined. Health services are required to report these to government funding agencies annually (Australian Institute of Health and Welfare 2018b). How this intense monitoring affects people's wellbeing or health care access has not been considered. The rationale is to drive services to closely monitor people's clinical status and behaviour through the performance of health care services (Australian Institute of Health and Welfare 2018b). While it is conceivable that improvement in physical health indicators may contribute to mental health, interventions specifically established to improve mental health for Indigenous people may be more effective (Purdie, Dudgeon, and Walker 2014). Improvements in mental health and wellbeing may then lead to improved physical health, as suggested in the Interplay structural model and in the literature (Behan et al. 2015). Mental health complements other contributors to wellbeing identified in the Interplay project, namely cultural practices, empowerment, identity and spirituality, Indigenous and English literacy, employment, community and freedom from substance use (Cairney et al. 2017).

Australia's Indigenous community-controlled health sector has long-advocated for a broader approach to health but been limited by funding requirements that demand a focus on biomedical services (Khoury 2015). This limits both the impact of health care on wellbeing, and also the impact of health care on health because the very meaning of health for Indigenous people may not be represented in the biomedical model (Cairney et al. 2017). Effective community-control of Indigenous health care services and better integration of services may have manifold benefits, through a comprehensive approach including action on

the social determinants of health, and through greater levels of employment of Indigenous people (Saethre 2013).

9.6.7 Study limitations

Limitations of this study include its localised scale, providing detailed information about a convenience sample of participants from four Indigenous communities in remote/ very remote regions rather than a statistically representative sample. Data are cross-sectional so direction of relationships is theoretical rather than experimental. Surveys were conducted by community researchers in their home communities so interpersonal relationships may have led to response bias.

While the survey instrument was developed by experienced researchers working with community researchers, and there was agreement about the meaning of the questions, the accuracy and consistency of interpretations have not been formally established.

Owing to small numbers of participants from individual communities, sample size was inadequate to conduct multigroup analysis separately for each community (Anderson and Gerbing 1984). The analysis with participants grouped by community remoteness highlights the possible differences between communities, and suggests that this may be an important area of further research.

Lack of clinical data and more specific measures of health care access are limitations. Relationships between health care access, biomedical measures of health and Indigenous people's own experiences of health and wellbeing form an important area for further study (Spurling et al. 2017; Saethre 2013).

9.7 Conclusions

The Interplay project worked with Indigenous people in remote/ very remote regions of Australia to explore wellbeing, which is an outcome of service provision. Structural equation modelling of wellbeing and its relationships with health care access and physical and mental health showed that of these constructs, only mental health is associated with wellbeing. For participants in remote communities, mental health also forms an indirect pathway from health care access to wellbeing. Relationships differed between remote and very remote participants.

Mental health and wellbeing for Indigenous Australians in remote Australia may be enhanced through strengthening and collaboration among services outside the health sector, particularly those that contribute to relationships, empowerment, cultural identity and care of the land. Addressing wellbeing may contribute to alleviation of other aspects of socioeconomic disadvantage faced by Indigenous Australians.

9.8 Chapter summary

This chapter responds to the second research proposition that an holistic approach to service provision for Indigenous people will optimise wellbeing.

The findings draw into question the assumed benefits of current health service access for Indigenous people in remote regions, and the routine combining of remote and very remote regions, based on the very small proportion of non-Indigenous Australians in both of these regions.

In the structural model, health service access is negatively associated with wellbeing although positively associated with both physical and mental health. Physical health has no relationship with wellbeing, and health service access has a negative relationship, while mental health has an important mediating role. Ethnographic work supports these findings. If these results are confirmed in other work, two responses emerge. At the health service level, addressing mental health appears to overcome the negative relationship between health services and wellbeing. The need for greater attention to mental health for Indigenous people has been recognised, so these strategies should be strengthened (National Aboriginal and Torres Strait Islander Leadership in Mental Health 2018). At the wider level, greater attention to other wellbeing priorities, notably empowerment, Indigenous literacy, and caring for Country, is required for services to enhance wellbeing, a consistent finding in this thesis.

This chapter is the final chapter of research directly arising from the Interplay project. addresses wellbeing. Further exploration of the research propositions in the next chapter is based around responses to others' research through concepts arising indirectly from the Interplay project research philosophy of Aboriginal research leadership.

OUTCOMES
Chapter 10: Alternative views to promote global health and wellbeing

10.1 Chapter outline

This chapter presents a series of published letters to peer-reviewed journals, written in response to perspectives of Aboriginal and other indigenous peoples worldwide as different, and therefore defective and in need of help.

As I undertook my research, I was sensitised to the frequent publication of research about Aboriginal people designed to draw attention to their health status and burden of disease. Researchers may seek to draw attention to health disparity to benefit Aboriginal people through focussing popular and government attention on the burden of disease and opportunities to change the lives of Aboriginal people. This attention could support advocacy for greater investment in research and clinical attention to the disease of interest. However, such an approach is often based on non-Aboriginal ideas and perspectives, continuing the history of research on Aboriginal people that emerged through colonisation of Australia and its people, leading to loss of land, culture and wellbeing (Griffiths et al. 2016).

Research that focusses on Aboriginal health disparity can overlook Aboriginal people's strengths, values and perspectives. Culture and identity are often ignored in biomedical approaches. Today there is a substantial body of research drawing attention to the need for research to be driven by the people whose lives the findings are intended to improve (Australian Institute of Aboriginal and Torres Strait Islander Studies and Lowitja Institute 2017). Nonetheless, research publications often appear to be based on unquestioned assumptions that Aboriginal people aspire to reach non-Aboriginal health and social norms, rather than choose their livelihoods, based on their individual and community identities.

My own research challenged this approach, and I was surprised to see the extent to which non-Aboriginal perspectives continue to dominate Aboriginal health research. I was shocked to read a letter promoting re-settlement of Aboriginal people from remote communities into larger population centres with the aim of providing solutions to poverty and ill-health (Zhao, Vemuri, and Arya 2016). I was too late to respond to this article in the journal but resolved to monitor the literature and respond where required.

This chapter comprises three letters to journal editors expressing my concerns about research processes directed at Aboriginal health; and a fourth expressing concern about expert claims that evidence for global health development comes only from high-income settings. I am the sole author of all these letters. Each letter uses the terminology of the

article to which it responds, so the first letter talks about “Indigenous” children, while the others use the word “Aboriginal”.

10.2 Cultural competence and care for sick Indigenous children

10.2.1 Background

This letter responded to a 2017 publication in the *Medical Journal of Australia* written by clinicians in Australian hospital intensive care units (Schultz 2017). They reported equivalent levels of clinical care and outcomes between Indigenous and non-Indigenous children admitted to intensive care units. They claim this finding indicates that there is no further role for intensive care in reducing Indigenous health disadvantage. On one hand the report is reassuring as it shows that the authors found no evidence of structural racism in intensive care for Indigenous children, contrasting with widespread racism in other parts of Australia’s health care system (Durey, Thompson, and Wood 2011). However, their report then leaves the burden of responsibility for higher levels of morbidity and mortality of Indigenous children on the children and their families. My letter addresses the assertion that since intensive care units already provide high standards of clinical care for Indigenous children, the units are unable to contribute further to reducing the gap in childhood mortality. Thus, it is the sick Indigenous children themselves who are the problem that must be addressed. Section 10.2.2 is my published letter in response to this inference.

10.2.2 Published Letter: The excess burden of severe sepsis in Indigenous Australian children: can anything be done?

The excess burden of severe sepsis among Indigenous children reflects poorly on Australia’s image of itself as a prosperous and fair nation (Palasanthiran and Bowen 2017). Indigenous children are entitled to fair opportunities like all Australian children. There are also implications for the entire community of high rates of infection in Indigenous communities, because of the risk of spread of multiply resistant organisms (David and Daum 2010).

The recent editorial and article on severe sepsis in children describe a biomedical approach. The focus is on responding to clinical signs and laboratory markers to diagnose and treat disease (Palasanthiran and Bowen 2017) . This approach can explain disease and lead to rational treatments. However, biomedical approaches can dominate perspectives to such an extent that they construct our understanding of health. Then it can seem that there is no alternative approach (Engel 1977). From the biomedical approach the goal of reducing sepsis in Indigenous children appears elusive.

Indigenous Australians describe health as:

> "Not just the physical well-being of the individual but the social, emotional, and cultural well-being of the whole community." (Australian Government 2013)

Aboriginal Community Controlled Health Organisations (ACCHOs) were established to approach Indigenous people's health needs holistically (Khoury 2015). Holistic health services may include advocating for appropriate housing, supporting literacy programs, providing fresh fruit and vegetables to families in need, and assisting children to attend school though breakfast programs (Khoury 2015). A holistic approach to Indigenous health includes culture and language, and relationships among people and their country (Australian Government 2013).

Because Indigenous health emerges from Indigenous people's place in Australian society, biomedical approaches to Indigenous health have limited impact. Meanwhile ACCHOs are limited in their capacity to overcome structural impacts on Indigenous health because they remain primarily accountable to government funding agencies (Khoury 2015).

Considering Indigenous people's approaches to health reveals many opportunities to support Indigenous people to promote their own wellbeing (Khoury 2015). Taking account of how Indigenous people approach health may not only reduce sepsis in Indigenous children, and the likelihood of spread of resistant pathogens, it could contribute to a more equitable Australian society, and enhance the wellbeing of all Australians.

10.2.3 Conclusion

This letter addresses both of the research propositions.

In relation to the first, that *health outcomes for Aboriginal people could be improved through understanding and addressing wellbeing*, the letter responds to the perspective that health and illness are biomedical conditions that can be managed through rational treatments. This perspective ignores the aspects of Australian society that lead to the high burden of illness borne by Indigenous children. Addressing wellbeing, for example through funding of Indigenous health services to provide service needs identified by Indigenous communities, could reduce the burden of disease that brings children into intensive care.

The second research proposition that *an holistic approach to service provision for Aboriginal people in remote communities will optimise wellbeing* is addressed through highlighting the need for all health care services to provide holistic, non-racist care. Lack of cultural awareness in intensive care units as throughout Australia's health system contributes to racism and inadequate care for Aboriginal Australians. Despite the provision of cultural competency training in many health services in Australia, outcomes of the training appear inadequate to Aboriginal Australians for whom it is intended to benefit. In particular cultural

competency training can re-inforce stereotypes and create resentments even though it is intended to promote the development of empathy and the capacity to view the world through different cultural lenses (Westwood and Westwood 2010).

This letter argues that standards of health care based on biomedical approaches to illness are fundamentally and systematically ineffective in addressing the wellbeing of Aboriginal people.

The next letter further develops this concept by drawing attention to negative representations of Aboriginal people. Such representations can lead to stereotyped perceptions among both health care providers and Aboriginal people themselves, undermining efforts to address wellbeing.

10.3 Cardiovascular disease risk and Aboriginal and Torres Strait Islander people

10.3.1 Background

This letter responded to an analysis of cardiovascular risk assessments of Aboriginal and Torres Strait Islander people published in the *Medical Journal of Australia* in 2018, which concluded that overall "Aboriginal and Torres Strait Islander people are at high cardiovascular risk" (Schultz 2018a). On rigorous examination, the data does not support this statement, as the median age of Aboriginal and Torres Strait Islander people is 23 years (Australian Bureau of Statistics 2016b); and among the 18 to 24 year old age group 1.1% are at high cardiovascular risk. While based on older age groups or comparison with non-Indigenous Australians the statement is true, it conveniently conforms to a stereotype of Aboriginal and Torres Strait Islander people as inherently at risk of disease (Bond 2005).

10.3.2 Published letter: Absolute cardiovascular disease risk and lipid-lowering therapy among Aboriginal and Torres Strait Islander Australians

Calabria et al report that overall 9.8% of Aboriginal and Torres Strait Islander adults are at high absolute cardiovascular disease (CVD) risk (Calabria et al. 2018) reflecting how poorly Australia supports the social and cultural determinants of health for the First Australians. However this is a different nuance from their statement "Absolute CVD risk is high among Aboriginal and Torres Strait Islander people" (Calabria et al. 2018). Aboriginal and Torres Strait Islander people have median age of 23 years (Australian Bureau of Statistics 2017) and only 1.1% of those in the 18 to 24 age group are high risk, so most people are not at high risk.

Calabria et al note under-treatment with lipid-lowering therapies of Aboriginal and Torres Strait Islander people at high CVD risk; many who would benefit are not offered best-practice care. However 13% of people at low CVD risk are on lipid-lowering medication, (Calabria et al. 2018) which may be unnecessary treatment, with costs and side-effects.

As health professionals we need to beware of tendencies to emphasise pathology and risk among Aboriginal people (Bond 2005). According to Bond, many health professionals hold ideas of

> "passivity, dependency and non-compliant nature of [Aboriginal] mob…The perception of Aboriginality as … a health risk and predictor of unhealthy behaviours reinforces stereotypical ideas of Aboriginality… and disconnects Aboriginal people from their own identities … and stories of strength and survival." (Bond 2005).

There is a tension between our desires to prescribe behaviours to reduce risk, and enabling and empowering people to make decisions for themselves. Well-intentioned efforts to manage Aboriginal and Torres Strait Islander people may have iatrogenic side-effects. For example, health professionals may develop assumptions about people's behaviour and worthiness to receive treatment, (Ewen and Hollinsworth 2016) while Aboriginal and Torres Strait Islander people themselves may be disconnected from their sense of self-efficacy, and community and cultural strengths and identity, contributing to disengagement from health care (Bond 2005).

Like other procedures in health care, absolute CVD risk assessment has costs as well as benefits. Educating community members about absolute CVD risk would promote health literacy and enable people to give informed consent to assessment of this statistic. Numbers hold both face and cultural values, so it is important that Aboriginal and Torres Strait Islander people have control of their statistics (Walter 2016).

10.3.3 Conclusion

This letter draws attention to the importance of wellbeing in addressing Aboriginal health, the need for a broad awareness of Aboriginal people's livelihoods in effective health care services, and the importance of a holistic approach to service provision, addressing both research propositions. While health care providers must aim to provide the highest standards of care, viewing Aboriginal people as inherently unhealthy contributes to negative stereotypes. This can undermine health care providers' capacity to see and enhance the aspects of Aboriginal people's lives that are important to them, thereby reducing their ability to contribute to reducing the burden of disease (Ewen and Hollinsworth 2016). As a clinician one sees people who are sick and from this perspective it is easy to overlook the fact that

most people are not sick, particularly when clinical work is done on a visiting basis to remote communities, with little time spent in the community sharing company with well people.

Improving the health services provided to Aboriginal people will require new approaches (Houston 2016).

Improving service provision is urgently needed. Our inadequate approach to addressing the burden of disease facing Aboriginal people is likely to adversely affect future health status of Aboriginal people and others. The next letter addresses the growing burden of antimicrobial resistance attributable to inadequate health care in Aboriginal communities.

10.4 Aboriginal Australians and the global problem of antimicrobial resistance

10.4.1 Background

This letter responded to a 2017 *Medical Journal of Australia* publication about antimicrobial resistance, a growing threat to global health that demands integrated approaches to all aspects of antimicrobial use (Schultz 2018c).

10.4.2 Published letter: Tackling antimicrobial resistance globally

Your publication of a review of global approaches to antimicrobial resistance is timely (Kelly and Davies 2017). We especially note that antibiotic resistant pathogens are not limited by borders, have greater impact on disadvantaged communities, and will require coordinated, high level government commitment to minimise their threat (Kelly and Davies 2017).

In Australia, Aboriginal communities bear disproportionate burdens of infectious disease. This arises on a background of overcrowding, poorly built and maintained water and sanitation infrastructure, and colonisation of companion animals by human pathogens. The delivery of biomedically orientated health services leads to frequent use of broad-spectrum antibiotics, promoting the development of multi-resistant pathogens (Tong et al. 2008).

The prominent multi-resistant pathogen, Methicillin-Resistant *Staphylococcus Aureus* (MRSA), first emerged in hospitals, but in Australia was soon identified in remote Aboriginal communities (Tong et al. 2008). Health services have been unable to control its development and spread. Consequently Community Acquired-MRSA is now the dominant strain of *S. aureus* in central Australia, where Aboriginal people are one quarter of the population but bear three quarters of the *S. aureus* disease burden in Alice Springs Hospital (MacMorran et al. 2017).

Primary health care is founded on full community participation, and an intersectoral approach, incorporating education, housing and other sectors to complement health services

(World Health Organisation 1978b). Housing for Aboriginal communities remains inadequate, and government responses deficient, particularly in remote regions (McDonald 2011). As a result, even high-quality health services can have limited impact on Aboriginal people's health and wellbeing. Safe, secure, functioning housing that is appropriate for its occupants is a foundation to addressing other areas of Aboriginal disadvantage (McDonald 2011). The deficit in appropriate housing contributes to bacterial colonisation, infection and development of antimicrobial resistance among Aboriginal Australians (Tong et al. 2008).

"Illness is a weapon" was intended as a metaphor for the resistance of Aboriginal people to their ongoing colonisation (Saethre 2013). However, the threat of antibiotic resistance evolving through the neglected conditions in which some communities find themselves could make this metaphor more real than was likely intended.

The spread of antibiotic resistant pathogens from disadvantaged people in Aboriginal communities and elsewhere is a global threat. This highlights the need to transform services for Aboriginal people, using approaches driven by communities and focussed on their strengths.

This letter highlights the need for transformational change in how Aboriginal health issues are addressed, and the urgency of such change. Current biomedical approaches to Aboriginal health are contributing to development of antimicrobial resistance. Here the importance of Aboriginal health extends beyond Australia both morally and medically. Australia's inability to ensure equity in health care for Aboriginal people means that the poor status of Aboriginal health contributes to global health threats, with the potential for spread of antimicrobial resistant pathogens. This is especially so when high standards of biomedical health care are provided without attending to underlying determinants of health. Attention to these determinants requires understanding the wellbeing needs of Aboriginal people, and addressing power differentials that deny Aboriginal people opportunities to meet basic needs.

The final letter in this Chapter also addresses wellbeing beyond Aboriginal people in Australia, and draws attention to the global population of people with lower incomes and power, whose wellbeing will ultimately impact on the wellbeing of all people.

10.5 Implementation of policies to protect planetary health

10.5.1 Background

The letter here responds to an editorial in *Lancet Planetary Health*, a journal established in 2017 to publish research on the "political, economic, social, and environmental determinants of healthy human civilisations and the natural systems on which they depend" (Lancet

Planetary Health 2019; Schultz 2018b). The editorial discussed the need to use evidence from high-income settings in low and middle-income settings to address critical challenges of planetary health (Pattanayak and Haines 2017). There was no mention of evidence from low and middle-income settings, suggesting that evidence from these settings, where the majority of the world population lives (United Nations 2018), may not have a role in addressing health challenges. As researchers overlook the knowledge and potential contributions of Aboriginal Australians, so the editorial to which I respond overlooks the contributions to research and knowledge of people outside high-income settings.

10.5.2 Published letter: Re: Implementation of policies to protect planetary health

This important editorial outlines the inadequacy of progress towards planetary health, and notes the opportunity provided by the Sustainable Development Goals to confront challenges to planetary health (Pattanayak and Haines 2017). The authors argue that evidence from high-income settings cannot be directly transposed to low-income or middle-income settings, and this contributes to inadequate progress towards implementation of planetary health policies.

Missing was consideration of transferring evidence from low- and middle- income to high-income settings in efforts to attain sustainable development. Action by all countries is needed to reach Sustainable Development Goals, and some low and middle income countries are leading in promoting sustainable development. Examples are Bhutan, Costa Rica, Maldives and Tuvalu in their progress towards being carbon neutral, and Ecuador whose new constitution includes the rights of nature, and fostering of a good life with harmony between people and nature (Department of Economic and Social Affairs 2013). The need to transfer evidence from low- and middle- income to high-income settings is an important omission from the editorial (Pattanayak and Haines 2017). Without this consideration the opportunities for development towards planetary health are limited.

Within the health sector the notion of “reverse innovation” from low- and middle- income countries is emerging, and challenging the discourse that high-income countries lead innovation (Ahmed et al. 2017).

10.5.3 Conclusion

This letter responds to my research proposition that holistic approaches to services will optimise wellbeing, here addressing both Aboriginal people and people in low- and middle-income countries. Both global and Australian development policies will be more effective if implemented with awareness of broader aspects of people’s livelihoods. Indigenous people

in Australia and worldwide have knowledge about livelihoods that can assist in addressing their own and planetary health (Magni 2017).

More broadly my letter draws attention to the importance of considering all forms of knowledge and understanding in addressing the challenges facing humanity (Taiaiake 2015). With current global development patterns leading humanity outside a safe operating environment (Steffen et al. 2015), new approaches are needed. The knowledge and experience of Indigenous peoples and others from low- and middle- income settings should not be overlooked in development policy (Magni 2017).

10.6 Chapter summary

The chapter draws together critical responses to research publications that may be rigorous and correct, but are limited in their scope and potentially negative in their impact. My own research, invested in seeking alternative approaches to service development for Aboriginal Australians opened my eyes to this perspective.

Key issues are:

- the importance of Aboriginal approaches to health to complement biomedical approaches
- recognising strengths and identity of Aboriginal people
- the urgency of addressing Aboriginal wellbeing because of the inter-connectedness of all people and
- the need to recognise knowledge and research from all sources.

These issues are brought together with findings of the Interplay project in the final chapter, which provides an overview of the findings and recommendations from my research.

Chapter 11: Findings overview and recommendations

11.1 Chapter outline

This chapter distils and elaborates key findings from the Interplay research reported in the thesis and uses these to make recommendations. Recommendations are addressed to all users of the research, including governments, health professionals and other service providers. However, people in the position of service providers and researchers in Aboriginal communities in remote Australia are the foremost target. Service providers and researchers working directly with Aboriginal communities can implement these recommendations in order to fulfil their own aspirations for justice for Aboriginal people rather than expect governments or senior management to lead. The recommendations return us to the title and main message of the thesis, that Aboriginal people are the backbone not the backseat in policy and services affecting their communities in remote Australia.

Two research propositions provided structure for the research: understanding and addressing wellbeing for Aboriginal people in remote communities can contribute to government priorities of education, employment and health; and effective strategies that address education, employment and health in ways that address Aboriginal people's needs will increase their wellbeing. Thus, the wellbeing framework works in both directions. Beyond these propositions, this chapter describes more specific findings.

Based on the research undertaking, the findings are in two categories:

1. Methodological findings from the research process, here presented in the order of the research process.
2. Empirical findings which emerged from analysis of the data, presented through the priorities of the Interplay wellbeing framework.

Each set of findings is followed by associated recommendations, to provide direct impact of the Interplay research and practice as part of our commitment that research with Aboriginal people drives changes in policy and practice for the wellbeing of Aboriginal people (Australian Institute of Aboriginal and Torres Strait Islander Studies and Lowitja Institute 2017). Reflecting the basis of this chapter in the Interplay research which was conducted in Aboriginal communities, the word "Aboriginal" is used.

11.2 Methodological findings

11.2.1 Research with Aboriginal people

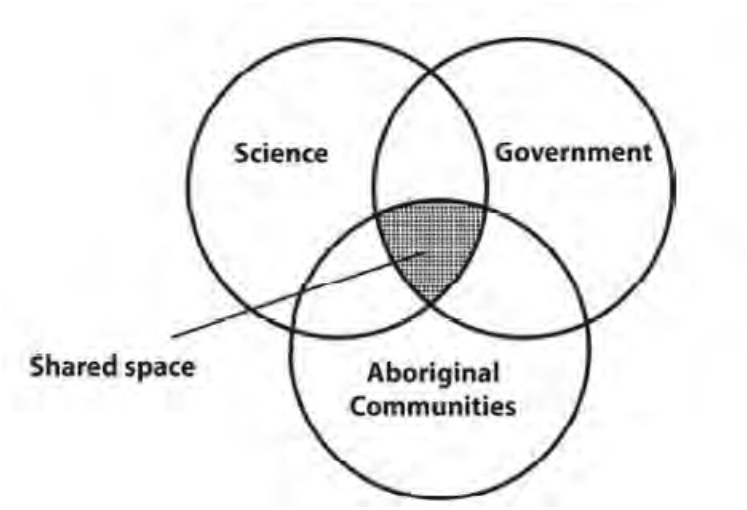
The Interplay project achieved its aims of contributing to understanding wellbeing for Aboriginal people in remote regions. On-going relationships between Aboriginal and non-

Aboriginal researchers, further use and development of the framework and academic publications are evidence of success (Cairney 2019). Aboriginal leadership in the governance, management, undertaking and evaluation of the research was a commitment of all researchers.

The diverse challenges and need to expect unanticipated delays when undertaking research with Aboriginal people are well-known (Jamieson et al. 2012). Although interruptions and pressures on research can appear burdensome, Aboriginal and non-Aboriginal researchers sharing challenges can contribute towards mutual understanding, and more informed research. Musharbash, an anthropologist in the NT Aboriginal community of Yuendumu described how factors that superficially appear to be nuisances that lead to delays in projects with Aboriginal people can have important social roles. These include the development and strengthening of community relationships, and ensuring that activities have the necessary approvals by community leaders (Musharbash 2008: 131). The Interplay project was led by experienced Aboriginal and non-Aboriginal researchers who were aware of the need to plan for delays, so the project was based on an extended time frame. Unanticipated changes to the planning and scheduling of the Interplay research included the impact of Cyclone Lam which displaced residents of the study communities during the period of data collection, leading to evacuations to Darwin (Terzon 2015). This demanded agility and flexibility from the research team, which moved quickly to include an additional community within the same language group and achieved the sample size despite the cyclone.

Sharing experiences and working together over seven years enabled the development of trusting relationships. The Interplay's shared space model of researchers, government and Aboriginal community members working together, reproduced in Figure 11.1, is both part of the process and an outcome of the extended period of the project. Sharing understandings of the research process between Aboriginal community members, government representatives as research users, and expert researchers was a feature of the research.

Figure 11.1: Shared space model of working together



Aboriginal Community Researchers noted in research development that the experience of participating in research from its inception was unusual, and empowering (Cairney and Abbott 2014). The initial project time-scale was seven years, well beyond the enrolment for a standard PhD research project, demonstrating the need for collaboration, team work, and building on the work of others in research rather than isolated individuals carrying out research.

Mutual understanding needs common language, and Aboriginal people speak Aboriginal English and other Aboriginal languages (Eades 2013). Many do not understand standard English well or at all and do not speak English at home, particularly people in remote communities (Australian Bureau of Statistics 2011). Challenges in effectively translating concepts across languages and cultures were raised in development of the research. Aboriginal Community Researchers played a key role in translating across cultures and languages. Language barriers to participation were overcome through the Aboriginal community researchers who were fluent in local languages and English translating and interpreting both linguistically and culturally (Cairney and Abbott 2014).

11.2.1.1 Recommendations: research leadership, commitment and planning

1. To meet the needs of Aboriginal people it is recommended that research be led by Aboriginal people. This can respond to the interests and questions of Aboriginal people, change research power structures and increase the scope and relevance of the research.

2. It is recommended that researchers anticipate and plan for changes in scheduling to ensure that these do not prevent milestones being met. Regarding delays and other challenges as contributors to the quality of the research provides a strengths-based perspective on this aspect of research involving Aboriginal people.

3. Collaboration between people and organisations in Aboriginal health research is recommended, allowing time-frames long enough to build interpersonal relationships. This can ensure that Aboriginal people benefit throughout the research development and implementation, and from implementation of the research findings.

4. Employment of Aboriginal Community Researchers is recommended for their in-depth and experiential knowledge and expertise, including language and Aboriginal research processes and design contributions.

11.2.2 Wellbeing and strengths based approaches to for Aboriginal people in remote regions

Research, government and industry partners of the CRC-REP all recognised cross-cutting benefits of understanding wellbeing for Aboriginal people. Wellbeing as a subjective goal engaged people throughout the CRC partnership and Aboriginal communities, and this facilitated the research.

Wellbeing resonates intrinsically with indigenous people globally, as a holistic way of understanding the world (Indigenous Peoples' International Centre for Policy Research and Education 2008). For the Interplay survey, Aboriginal Community Researchers were readily able to recruit enough participants for the large sample sizes required for structural equation modelling. In contrast, research focused on the interests of researchers and government can lead to difficulties in recruiting Aboriginal participants, to such an extent that it has generated research publications (Sibthorpe et al. 2002).

Wellbeing as a concept seemed well-understood among Aboriginal community members, who did not demand a specific and consistent definition, and the approach to research based on building strengths rather than highlighting and quantifying weaknesses and deficits may have attracted people to be involved. Research and practice that recognize and build on Aboriginal people's strengths is being used in diverse fields, including Aboriginal education, (Sarra 2014), languages (First Languages Australia 2019), scientific expertise (Fogarty 2012) and health (Fogarty, Lovell, et al. 2018).

In contrast to wellbeing, remoteness and tradition were two concepts where non-Aboriginal and Aboriginal researchers brought contrasting understandings and approaches.

Aboriginal people, selected for the research on the basis of their residence in remote regions did not consider themselves remote, consistent with the concept that remoteness is culturally meaningless for Aboriginal people (Birch 2016). On the contrary, many research participants were at home in the centre of their worlds on their lands (Cairney and Abbott 2014). In my writing I have tried to avoid phrases such as "remote community." since the community may

be on people's homeland, the centre of their existence. Instead I aimed to refer to *regions of Australia* as remote, based on geographical access definitions that were defined by government criteria (Australian Bureau of Statistics 2014a).

The concept of tradition was used by Aboriginal research participants in the Interplay project to acknowledge their expertise from ancestral presence on the lands and livelihoods in their Country (Williams, Guenther, and Arnott 2011). However, all societies change through time, adopting new skills and practices. This can make it difficult to define how much change means that a practice is no longer considered traditional (Berkes 1993). Definitions of tradition are important with respect to art and knowledge of land management, both of which contribute to the livelihoods of Aboriginal people in remote Australia and are under pressure from economic and other forces (Cooperative Research Centre for Remote Economic Participation 2017). In using the word "tradition" on-going cultural continuity is recognised.

11.2.2.1 Recommendation: research foci and language

It is recommended that in research with Aboriginal people the foci and language of the research reflect Aboriginal people's worldviews and lifeways, and build on strengths and expertise.

11.2.3 Benefits to Aboriginal communities from participation in research

The Aboriginal leadership embedded in the governance of the CRC-REP ensured that Aboriginal people contributed to and benefited from research of the CRC. The diagram of the shared space model (shown above in Figure 11.1) depicts this deep knowledge-sharing. Direct and indirect benefits from participation in the Interplay research include education and training, employment, and experience, strengthening of interpersonal networks, career advancement, co-authorship and contribution of ideas to the published knowledge base and presenting at conferences (Cairney, Abbott, and Yamaguchi 2015; Grey et al. 2018). Empowerment, as a direct research outcome, with indirect benefits in health, education and employment, is another outcome of research participation (Wallerstein and Duran 2010; 'Empowered Communities: Empowered Peoples Design Report' 2015).

11.2.3.1 Recommendation: sharing of benefits of research

It is recommended that researchers ensure benefits of research are shared with participants of the research.

11.2.4 Cultural integrity in research methods

Aboriginal people are the focus of increasing numbers of statistical data collections (Walter 2010), and efforts to reduce Aboriginal disadvantage have focused on statistical representation of Aboriginal people and the difference from other Australians (Altman 2009).

However, there is concern about the low level of involvement of Aboriginal people in deciding what data are collected about them, and the processes of collecting, analyzing and interpreting their data (Walter 2010). The Interplay project aimed to involve Aboriginal people and their concepts in research design, data collection and analysis.

Aboriginal researchers and participants conceptualised wellbeing as a holistic system of interplaying priorities, and we used Structural Equation Modelling (SEM) to quantify relationships in the framework. SEM is a set of statistical techniques combining exploratory factor analysis and multiple regression and can be represented in pathway diagrams of interrelationships between variables. SEM enables quantification of both measured and unmeasured constructs, and their relationships to be explored, providing a systems approach (Schreiber et al. 2006).

11.2.4.1 Recommendation: research methods

To provide meaningful findings and outcomes for Aboriginal researchers and research participants, it is recommended that Aboriginal people lead the design of research methods.

11.2.5 Cultural integrity in data collection, analysis and reporting

The Interplay project aimed to show that research with Aboriginal people in leadership roles will improve wellbeing and enhance the lives of Aboriginal people. Aboriginal leadership included genuine roles in research governance, design, implementation and analysis. The data collection methods enabled participants to provide information through their own stories, as this is more likely to obtain useful data than structured questioning (D'Antoine et al. 2019), even though the data were less organised and complete. We used grounded analysis, which reflects themes that arise from the research as it develops. This recognised the importance of Aboriginal participants in the research, which can contribute to a decolonised process (D'Antoine et al. 2019).

In the Interplay project focus groups and interviews, research participants spoke readily and openly about interpersonal violence and imprisonment, as discussed in detail in Chapter 4 and *Injury prevention through employment as a priority for wellbeing among Aboriginal people in remote Australia* (Schultz et al. 2018b). This was a surprising finding as interpersonal violence can be a source of shame and embarrassment among many Australians, leading to it remaining hidden, contributing to lack of understanding and response (Australian Institute of Health and Welfare 2018a). Interplay research participants' choice to discuss interpersonal violence and imprisonment in research about wellbeing may reflect the prominence and normalisation of these issues in their lives, and different cultural norms of shame. Open discussion of these issues provides opportunities to understand and address critical wellbeing issues.

In the quantitative analysis we chose to use SEM for its holistic representations of data. Although SEM is widely recognised and used (Taylor & Francis Online 2019), errors in its use are commonly seen in peer-reviewed publications (Goodboy and Kline 2017). Attention to details of SEM and unfamiliarity amongst researchers in the field of indigenous wellbeing may have contributed to long delays in review of publications involving SEM from the Interplay project. For example the article currently under review at BMC Health Services Research (Chapter 7) has been reviewed by two journals for four and nine months respectively before being rejected. Bringing together specialised research techniques with localised research issues may have contributed to journals' difficulties in identifying reviewers for the research. However we anticipated delays in all aspects of the research.

From the structural models, we created online data visualisation materials that can be used to interact with the data. These include video stories that translate the numbers back to stories, completing the cycle from stories to numbers to stories (Ninti One 2017b). This is an example of implementing the shared space model: the community's holistic view of wellbeing informs the research that leads to a wellbeing framework which is readily understood by both research participants and government partners. The resultant design and data therefore sits in the shared space between the three key groups and makes sense to each group involved.

11.2.5.1 Recommendation: Research communication

1. Research methods that enable people to tell their own stories are recommended for the important insights held in personal experiences.

2. It is recommended that effective research communication tools for each group of stakeholders be developed. These tools contribute to a model of sharing research understandings, processes and findings, and can provide greater understanding, collaboration and impact.

11.2.6 Interpretation of inconsistent qualitative and quantitative findings

Knowledge for Aboriginal people is often held by and communicated through stories (Bessarab and Ng'andu 2010), while non-Aboriginal scientific knowledge and government reporting favour and often depend on numerical indicators (Walter 2010). The idea of bringing stories and numbers together to provide a comprehensive understanding of wellbeing was important in the Interplay project (Cairney et al. 2017).

When statistical modelling was consistent with qualitative data, such as substance misuse being negatively related to wellbeing, then the procedure, analysis and reporting were unproblematic. However, when statistical analysis appeared to contradict the qualitative data, such as cultural practice having a negative relationship with wellbeing, then the

interpretation and response were more complicated. Identifying mediating relationships through other variables provided an opportunity to better understand and quantify complex relationships (Cairney et al. 2017). For example, empowerment and Aboriginal language literacy have strong relationships with both cultural practice and wellbeing, and mediate the negative direct relationship, described in Chapter 7 (Schultz, Quinn, Abbott, et al. 2019). Great care was taken in describing the negative direct relationship between cultural practice and wellbeing because of the implications of publishing this finding, even when the qualitative data were clear, and countervailing mediating variables were identified. Throughout the research we respected the experiences and stories of researchers and participants. Where the statistical analysis did not support our understandings of people's experiences then the stories were considered to be correct, and there was complexity in the statistical analysis which required further investigation.

11.2.6.1 Recommendation: Research feedback from participants

It is recommended that genuine respect of all research findings for research participants and their aspirations be ensured.

11.3 Empirical findings

The Interplay project achieved important original research outcomes, and each of the research publications in this thesis provides significant findings for policy and practice. This section summarises key findings which are the basis of recommendations for policy and practice. The interplay wellbeing framework shown in figure 11.2 is used to structure the findings.

Figure 11.2: Interplay wellbeing framework

11.3.1 Health and wellbeing

Aboriginal health is a key government priority, often mentioned first in discussion of the strategy of closing the gap (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018). However, rather than the narrow conceptions of health measured through life expectancy, mortality or disease risk, Aboriginal people hold much wider conceptualisations of health. These include spirituality, mutual support, social and emotional wellbeing and interconnectedness with family, community and beyond (Cairney and Abbott 2014).

Many Aboriginal people identify themselves and their health with their land and the health of their Country. This may be reflected in the poor measures of the health of both Australia's environment and Aboriginal people (Cresswell and Murphy 2016; Anderson et al. 2016). Comprehensive primary health care for Aboriginal people must reflect their distinctive health needs, which include their communities and Country. The Interplay research found that Aboriginal land management consolidates key aspects of comprehensive primary health care. It provides important clinical benefits through access to bush foods, physical activity, respite from community conflict and access to alcohol. Aboriginal land management programs also provide opportunities for education and transmission of cultural knowledge and language; and can assist in prevention of interpersonal violence, described in Chapters 4 and 5 (Schultz et al. 2018b, 2018a). These programs can also be a focus for service

collaboration where current services may be both restricted in scope and competing for limited funds, described in Chapter 4 (Schultz et al. 2018a).

Aboriginal health disadvantage is frequently linked to the social determinants of health ('Beyond Bandaids: Exploring the Underlying Social Determinants of Aboriginal Health Papers from the Social Determinants of Aboriginal Health Workshop, Adelaide, July 2004' 2007). Inequity was highlighted by participants in Interplay focus groups who noted the high salaries paid to service providers in their communities. Since inequity contributes to health disadvantage, beyond poverty, the stark difference in incomes between Aboriginal community members and their service providers may have direct negative health impacts (Ottersen et al. 2014).

Within Aboriginal communities in remote Australia, the perceived need for services provides great challenges to governments and agencies to attract service providers. This leads to high salaries paid to workers, and gross disparity between the incomes of service providers and local Aboriginal people. Over 53% of Aboriginal people in remote communities live in income poverty, and there are huge and increasing differences between the incomes of Aboriginal and non-Aboriginal people in remote communities (Markham and Biddle 2018). Since both poverty and inequality contribute directly to poor health (Chokshi 2018), this arrangement may reflects a lack of genuine commitment to equity of service providers to Aboriginal communities, described in Chapter 4 (Schultz et al. 2018c). Re-imagining of education and other services to greater recognise the expertise of Aboriginal people may provide alternative approaches that better meet Aboriginal people’s needs. Empowering communities to determine their own service needs and how to best meet them with locally available resources may enhance wellbeing and other outcomes.

Aboriginal participants know their strengths and areas of expertise, including addressing health issues. In the area of hearing disease, where mainstream health services feel near overwhelmed by the burden of disease (Morris et al. 2015), the approaches of Aboriginal people have been overlooked. In particular, languages are an asset of Aboriginal people in remote communities (Karidakis and Kelly 2017). Aboriginal languages include hand signing language, which is a long-standing medium of communication for people with hearing impairment (Centre for Australian Languages and Linguistics). Unlike clinical approaches to communication for children with hearing loss, this requires no biomedical intervention and builds on Aboriginal people’s expertise. Education through sign language could provide opportunities to overcome profound disadvantage of children and communities where hearing impairment is widespread.

11.3.2.1 Recommendations: Health and wellbeing

1. It is recommended that policy makers and service providers increase Aboriginal people's opportunities to be involved in Indigenous Land Management and caring for Country, as there is now strong evidence of direct and indirect health benefits of caring for Country.

2. It is recommended that health interventions recognise and build on Aboriginal people's strengths. An example is promoting the use of Aboriginal sign languages. These offer an over-looked opportunity for children and communities where ear disease and hearing impairment are common.

3. Models for funding in Aboriginal communities that promote equity are recommended. The current emphasis on entitlements for service providers to facilitate recruitment and retention contributes to social inequality and health disparity, with little evidence of improvements in staffing. Service providers committed to improved wellbeing for Aboriginal people are recommended to acknowledge the role of social inequity in Aboriginal disadvantage and reflect on their entitlements.

4. It is recommended that health services prioritise interventions for mental health of Aboriginal people as a means to increase wellbeing.

11.3.2 Empowerment and wellbeing

Empowerment means individuals and communities gaining mastery over their lives. This includes personal development through changing understanding and behaviour, and structural change, overcoming social and political barriers to better lives (Wallerstein 2006).

Opportunities and programs that promote empowerment can lead to broad-reaching benefits in health, wellbeing, education and employment (Wallerstein 2006). However, interventions to enhance wellbeing are more effective when they are developed locally within the communities where they are to be implemented to ensure they address specific cultural and gender contexts (Wallerstein 2006).

Programs that empower Aboriginal Australians have been demonstrated to be effective in communities across Australia. The key for their implementation is Aboriginal leadership, while barriers to implementing programs that empower Aboriginal people are largely political (McCalman et al. 2018). Thus the same underlying power imbalances that lead to discrimination and continued colonisation create barriers to programs that could empower Aboriginal people. Responsibility lies within the wider Australian community to enable Aboriginal people to take leadership. Until accountability is shifted from those receiving to those delivering services, power imbalances that underlie ongoing racism and colonisation will remain.

The importance of having control of our lives and environment may be the explanation for why empowerment seems so effective in improving the wellbeing of Aboriginal people. The National Aboriginal Health Strategy highlighted the importance of control for wellbeing, and empowerment may contribute to control (National Aboriginal Health Strategy Working Group 1989; Carey 2013).

Factors that contributed to the statistical construct of empowerment in the Interplay project were resilience, self-efficacy and identity (Cairney et al. 2017). In the Interplay project, empowerment emerged in both qualitative and quantitative analyses as a direct and indirect contributor to wellbeing. Statistically, there were strong relationships between empowerment and practicing culture, education, employment and Aboriginal literacy, and this is explored in Chapter 7 (Wilson et al. 2018; Schultz, Quinn, Abbott, et al. 2019). Both empowerment and Aboriginal language literacy are strongly statistically related to wellbeing, and they have strong interrelationships. This suggests that these are critical opportunities for interventions with wide-ranging benefits for Aboriginal people, and the qualitative analysis in Chapter 4 supported this opportunity (Schultz et al. 2018c).

One of the unexpected findings of the Interplay quantitative research was that wellbeing was negatively associated with cultural practice for women and had no relationship for men. Empowerment as a mediating variable provided a competing indirect positive relationship between cultural practice and wellbeing described in Chapter 7 (Schultz, Quinn, Abbott, et al. 2019). Although differences in gender relationships to empowerment and wellbeing for Aboriginal Australians have been noted, there is little published research exploring gender differences (Fredericks et al. 2017; Whiteside, Tsey, and Earles 2010).

11.3.2.1 Recommendations: Empowerment and wellbeing

1. It is recommended that policy makers and service providers implement interventions that empower Aboriginal people. This can improve outcomes across all wellbeing priorities, including health, education and employment. For example, the Family Wellbeing Program has been demonstrated to empower Aboriginal people and enhance wellbeing in a range of settings (Whiteside, Tsey, and Earles 2010).

2. It is recommended that service providers pay attention to Aboriginal people with respect to issues of gender. Both research and practice should be aware that the importance and implications of gender for Aboriginal people may be different from those for other Australians.

11.3.3 Work, employment and wellbeing

Stark differences between employment and work for Aboriginal people emerged in the development of the Interplay research. For Aboriginal research participants, work includes paid and volunteer work, cultural and family work, and draws attention to culture at work, motivations for work, work/life balance and value and meaning of work (Cairney et al. 2017). Meanwhile, government strategies for Aboriginal people have focused on employment in the formal labour market because of its contribution to financial independence, training and future opportunities (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018). With no progress over 10 years towards closing the gap in employment outcomes it appears that aligning understandings of work and employment between Aboriginal people and government will be needed in order to use the expertise of Aboriginal people to provide the labour contribution desired by government (McRae-Williams and Gerritsen 2010).

Aboriginal expertise in land management and residence in remote regions provide opportunities to employ Aboriginal people in land management projects with cross-cutting benefits. This finding from the Interplay project supports other research and observations including those of Altman from the time of his first engagement with Aboriginal people at Maningrida in 1979 (Altman 2001). Among the multiple benefits of employment in land management is the prospect of reducing interpersonal violence and the injury and criminal complications which currently undermine Aboriginal communities, described in Chapter 5 (Schultz et al. 2018b).

11.3.3.1 Recommendation: Work, employment and wellbeing

1. It is recommended that policy makers and service providers be aware of distinctions between work and employment for Aboriginal people.

2. Wider implementation of Aboriginal land management programs is recommended to provide employment opportunities for Aboriginal people. Expected positive impacts include recognising cultural strengths, promoting education of children and young people, direct health benefits, preventing interpersonal violence and criminal justice consequences.

11.3.4 Culture and wellbeing

Culture is a broad-ranging concept. Measurable aspects of culture in the Interplay research project included language, kinship, law, ceremony, land and education (Cairney, Abbott, and Yamaguchi 2015; Schultz et al. 2018c). Despite the importance of culture in the research development, in the statistical analysis, the construct for cultural practice had a negative relationship with wellbeing. Statistical mediation through empowerment and Aboriginal language literacy provided one possible explanation for this unexpected finding, and this was

supported by Aboriginal community researchers and the literature (Schultz, Quinn, Abbott, et al. 2019). Other research has shown how non-Aboriginal control and bureaucracy can undermine the contribution of cultural practice to wellbeing (Fache 2014).

Aboriginal language literacy emerged as the strong indicator of culture, with direct positive relationship with wellbeing (Cairney et al. 2017; Schultz, Quinn, Abbott, et al. 2019). Aboriginal literacy contributes directly and indirectly to wellbeing. It also supports the development of English literacy which underlies improved education and employment outcomes (Wilson et al. 2017). Thus, people who are literate in Aboriginal languages have cultural and social resources in both Aboriginal and non-Aboriginal societies.

The disadvantage of Aboriginal people is recognised globally as evidence of government failure (Tauli-Corpuz 2017), while the deterioration of our natural environment is also of international concern (Cresswell and Murphy 2016). However, recognising the importance of Aboriginal cultural practices provides opportunities for changes in trajectory in both Aboriginal wellbeing and Australia's environment. The Interplay research showed how language knowledge is associated with people's belief that their land is cared for, which may be a marker of the health of the environment (Schultz, Abbott, et al. 2019).

Appropriate services to address wellbeing for Aboriginal people may not form divisions between health, education, employment and other services, which are based on sectors defined by non-Aboriginal people. Interplay research findings showed that services may be more effective if they are integrated, recognising common goals between different service providers and different services. Relationships between services based on cooperation and partnerships rather than competition, would better reflect cultural values and relationships between people in Aboriginal communities (Schultz et al. 2018c).

Spirituality is an important part of culture for Aboriginal people. Research with Aboriginal people in NSW found people used the words spirituality and culture interchangeably. The relationship between spirituality and wellbeing included dimensions of protection, energy, confidence and pride (McLennan and Freidoon 2004) In the Interplay project these dimensions were sub-domains of different priorities, namely health, community and empowerment. Alternative classifications of aspects of wellbeing in different research reflect the holistic vision of wellbeing, and its interplaying components.

11.3.4.1 Recommendations: Culture and wellbeing

1. Further research, led by Aboriginal people is needed to explore relationships between culture and wellbeing, and enhance wellbeing and associated outcomes.

2. It is recommended that cultural indicators of wellbeing be used in policy and service monitoring and evaluation to complement other indicators. This will increase focus on wellbeing as an outcome.

3. Aboriginal languages are key to Aboriginal wellbeing, and it is recommended that policy makers and service providers recognise the importance of language and promote the use of Aboriginal languages under the guidance of Aboriginal people.

11.3.5 Education and wellbeing

The breadth of meanings of education for Aboriginal people has been limited by the use of education as part of the colonisation of Australia and its people, with schools established as institutions of assimilation and educational success measured through values of the market (Altman and Fogarty 2010). Aboriginal knowledge, including its context, substance, and form remain outside Australia's education system whose original goals included civilization of Aboriginal children away from Aboriginal customs and land (Beresford 2012), and current goals include participation in the market economy and promoting individual responsibility (Altman and Fogarty 2010).

Education for Aboriginal people is much more than school, and the focus on coercing Aboriginal families to send children to school has not contributed to improvements in educational or school outcomes (Commonwealth of Australia: Department of Prime Minister and Cabinet 2018; Cairney and Abbott 2014).

Education of Aboriginal children through transmission of traditional ecological knowledge will be essential for Australia to reach its conservation commitments because these depend on land under Aboriginal management (Cresswell and Murphy 2016). The Interplay project demonstrated that such education provides clear pathways to employment that is valued by Aboriginal people (Schultz et al. 2018c). Individual examples where the expertise of Aboriginal communities leads formal education processes have been described (Fogarty 2012), but the challenge is to transform the education system more widely.

The idea of re-imagining Australia's education policy and practices to bring the perspectives of Aboriginal Australia into focus emerged in the analysis of the focus groups considering education as a social determinant of health (Shepherd, Li, and Zubrick 2012; Schultz et al. 2018c). Such a re-imagination could improve educational and wellbeing outcomes and ensure that up-coming generations of Australian children understand aspects of Australian culture, history and ecology that Aboriginal people are best-paced to teach. Re-imagining Aboriginal education offers opportunities both for overcoming Aboriginal disadvantage and

for Australia to reach its commitments to conservation and sustainable development goals, described in Chapter 4 (Schultz et al. 2018c).

Aboriginal languages are unique: unrelated to other languages; attached spiritually to Country; and used with high levels of multilingualism (Vaughan and Singer 2018). Their importance is under-recognised in Australia, where monolingualism is the standard for non-Indigenous people (Clyne 2008). Interplay research confirmed relationships between languages, literacy, wellbeing, educational and employment outcomes, and conservation outcomes through connections between people and Country (Wilson et al. 2017; Schultz, Abbott, et al. 2019).

11.3.5.1 Recommendations: Education and wellbeing

1. It is recommended that Aboriginal knowledge and expertise be more widely recognised in educational curricula.

2. It is recommended that policy makers be aware of pathways from education to desired employment and livelihoods for Aboriginal people. This will engage children in education, both in and out of school.

3. Educational assessment based on Aboriginal people's strengths and cultural values is recommended to provide meaningful measures of educational progress.

4. Increased investment in Aboriginal language literacy in schools is recommended. Aboriginal language literacy empowers Aboriginal people, strengthens Aboriginal identity and facilitates English language literacy which is pivotal in educational achievement in contemporary society.

5. It is recommended to increase investment in Aboriginal languages, beyond school and other formal educational institutions. Aboriginal languages are vital to Aboriginal educational outcomes, providing communication, connection to community and Country, and knowledge of land management practices.

11.3.6 Community and wellbeing

Community, like culture, was an interplaying variable in the research, which people linked to empowerment, safety and overall levels and quality of service provision (Cairney and Abbott 2014). Communities provide the basis for representation of Aboriginal people to the wider Aboriginal community, governments and service providers, and services often engage with Aboriginal people through communities rather than individuals. This can contribute to lack of recognition of community diversity, and a top-down approach to service provision driven by government priorities rather than community needs. Interplay project analysis showed how community development should be based on local priorities, and the need to build local

capacity, through on-going engagement with government and service providers (McRae-Williams et al. 2018).

11.3.6.1 Recommendation: Community and wellbeing

It is recommended that services within Aboriginal communities be better integrated. This can overcome negative impacts of competition between services. Land management programs provide an ideal focus for service integration because of their contribution to each priority of the wellbeing priority framework.

11.4 Conclusion

Aboriginal people as the backbone of service provision and policy development would demand a change in power structures. Current relegation to the backseat position leaves Aboriginal people powerless in the face of policy driven by non-Aboriginal worldviews and priorities.

Empowerment, culture and community are wellbeing priorities for service delivery for Aboriginal people in remote Australia. Improving wellbeing will contribute to outcomes in other areas, including education, employment and health; while ensuring that both Aboriginal community and government needs are addressed.

Chapter 12: References

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Appendix 1: Glossary and terminology

Appendix outline and coverage

- This appendix includes words and phrases that are important in understanding Aboriginal and Torres Strait Islander people and their wellbeing. Definitions have been selected that supported my own understanding in undertaking this research.

Aboriginal and Torres Strait Islander knowledge

Refers to the totality of cultural heritage of Aboriginal and Torres Strait Islander people, as this is defined by Aboriginal and Torres Strait Islander people. This is an inclusive and dynamic body of practices and traditions, encompassing both tangible and intangible elements. It allows for a diversity of situations, uses and meanings. It is based on collective rights and interests, is passed on through generations, and is closely linked to land and identity (Ninti One).

Aboriginal people

The preferred term of Aboriginal people speaking of themselves as a mixed group. When language groups can be identified these are preferred (Cultural Diversity and Inclusivity Practice 2015). Canadian Aboriginal Peoples use Aboriginal Peoples as a collective name for all of the original peoples of Canada and their descendants, consistent with the Canadian Constitution that identifies three distinct groups, Indian (First Nations), Inuit and Métis. (International Journal of Indigenous Health n.d.).

Antimicrobial resistance

Changes in microorganisms such as bacteria, viruses, fungi and parasites, that render the medications used to cure the infections they cause ineffective.

Antiracism

1. The policy or practice of opposing racism and promoting racial tolerance (Oxford English Dictionary 2019a)
2. Action that reduces power differentials (Kowal, Franklin, and Paradies 2013).

Both ways

1. Common ground where Indigenous knowledge and Western knowledge and systems interact.
2. Philosophy of education that brings together Indigenous Australian traditions of knowledge and Western academic disciplinary positions and cultural contexts, and embraces values of respect, tolerance and diversity
3. Reciprocity and obligation, involving curriculum, knowledge, policies and power;

4. Re-establishing a healthy relationship between the younger and older generations, through transmission of traditional knowledge with younger people bringing home new knowledge learnt at school with the old people educating younger people both within the school and at home (Ober and Bat 2007).

Caring for country

Synonymous with Indigenous land management (Hill et al. 2013)

Colonisation

From colonize:

1. To form or establish a colony or colonies in.
2. To migrate to and settle in; occupy as a colony.
3. To resettle or confine (persons) in or as if in a colony.
4. To subjugate (a population) to or as if to a colonial government (American Heritage Medical Dictionary 5th Edition 2007a).

While colonisation describes the impact of non-Aboriginal people on Aboriginal people, invasion is also correct.

Colonialism

Multigenerational and multifaceted process of forced dispossession and attempted acculturation – a disconnection from land, culture, and community, resulting in political chaos and social discord, and the collective dependency of indigenous peoples upon the state (Tuck and Yang 2012)

Country

1. Land as a living being with meaning, personality, will, a temper and ancient reciprocal relationships with its people (Gleeson-White 2019).
2. Multidimensional and non-temporal concept, consisting of people, animals, plants, Dreamings, underground, earth, soils, minerals and waters, surface water, and air; includes sea country and land country; in some areas people talk about sky country. Country had origins and a future; it exists both in and through time. Humans were created for each country, and human groups hold the view that they are an extremely important part of the life of their country. … All living things are held to have an interest in the life of the country because their own life is dependent on the life of the country. This interdependence leads to another fundamental proposition: those who destroy their country destroy themselves (Rose 2004)

3. In Aboriginal English, a person's land, sea, sky, rivers, sites, seasons, plants and animals; place of heritage, belonging and spirituality; is called 'Country' (Australian Museum website 2017).
4. A living entity with a yesterday, today and tomorrow, with a consciousness, and a will towards life; ….country is home, and peace; nourishment for body mind and spirit; hearts ease…Country is not a generalised or undifferentiated type of place, such as one might indicate with terms like 'spending a day in the country' (Rose 1996).

Cultural awareness
Sensitivity to the similarities and differences that exist between two different cultures, and the use of this sensitivity in effective communication with members of another cultural group (Thomson 2005).

Cultural competence
A set of behaviours and attitudes and a culture within business or operation of a system that respects and accounts for the person's cultural background, cultural beliefs, and their values and incorporates them in the way health care is delivered to that individual (Thomson 2005)

Cultural practice
Participation in caring for Country, a key source of Aboriginal identity, authority, social control, intellectual traditions, spirituality, systems of resource ownership and exchange (Burgess et al. 2008).

Cultural respect
Recognition, protection and continued advancement of the inherent rights, cultures and traditions of Aboriginal and Torres Strait Islander peoples (Thomson 2005)

Cultural safety
Where consumers of services have the power to feedback their observations and experiences to contribute to the achievement of service outcomes. Cultural safety is defined by receivers or users of services, and extends beyond cultural awareness and cultural sensitivity (Thomson 2005).

Cultural security
Commitment to the principle that the construct and provision of services will not compromise the legitimate cultural rights, values and expectations of Aboriginal people (Thomson 2005).

Cultural sensitivity
Used synonymously with cultural awareness (Thomson 2005).

Culture
An ill-defined set of assumptions and values, orientations to life, beliefs, policies, procedures and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member's behaviour and his/her interpretations of the 'meaning' of other people's behaviour (Spencer-Oatey 2012).

Custody
1. The protective care or guardianship of someone or something.
    a. Responsibility for the care, maintenance, and upbringing of a child or children
2. Imprisonment (Oxford English Dictionary 2019b).

Decolonize
To free a colony from dependent status (American Heritage Medical Dictionary 5th Edition 2018).

Decolonisation
The transformative project of overcoming colonisation, reimagining and rearticulating power, change and knowledge; focussing on reclaiming the humanity of colonized peoples; and reflecting Indigenous sovereignty over land and sea, ideas and epistemology (Sium, Desai, and Rirskes 2012).

Deep colonisation
A condition in which the process of conquest remains embedded within institutions and practices aimed at reversing the effects of colonisation, where aspects of Indigenous people's lifeworlds are defined by the settler state (Kearney 2019)

Deficit
Deficiency in amount or quality; a falling short; lack (Wikimedia Foundation Governance Wiki contributors).

Deficiency
Uncountable inadequacy or incompleteness (Wikimedia Foundation Governance Wiki contributors).

Empirical
Based on, concerned with, or verifiable by observation or experience rather than theory or pure logic

Extinguishment
1. Utter destruction

2. Law. An often formal act of putting an end to, abolishment, abolition, abrogation, annihilation, annulment, cancellation, defeasance, invalidation, negation, nullification, voidance (American Heritage Dictionary 5th Edition 2011a).

First nations people

Alternative term for indigenous people, preferred by some people in referring generically to indigenous people, particularly where “indigenous” has negative connotations (United Nations Permanent Forum on Indigenous Issues 2007).

Hypothesis

1. A supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation.
2. A proposition made as a basis for reasoning, without any assumption of its truth (Oxford English Dictionary 2019c).

Inalienable

1. Unable to be transferred or sold, as in Native Title freehold rights
2. Many Indigenous Australians hold the view that they are the country, it is not in some sense external to them, and therefore the land is inherently inalienable from them (Glaskin 2003)

Indigenist research

Centring Aboriginal ways of knowing, ways of being, and ways of doing, in alignment with aspects of western qualitative research frameworks (Taylor 2017).

Indigenous Australians

Refers to both Aboriginal and Torres Strait Islander Australians. People identify less with this word than with Aboriginal but it can avoid clumsiness of repeated references to Aboriginal and Torres Strait Islander Australians (Cultural Diversity and Inclusivity Practice 2015). For brevity and consistency with other publications particularly when written for international audiences, I have used the terminology “Indigenous” Australians.

Indigenous knowledge

1. Knowledge of indigenous peoples, distinguishable from other forms knowledge on three grounds:

    - substantive or content differences, because of differences in the subject matter and characteristics of indigenous and Western knowledge;
    - methodological and epistemological differences, arising because different forms of knowledge employ different methods to investigate reality;

- contextual differences, where indigenous knowledge is more deeply rooted in its environment, and pertains to the place where it was generated and which is described in the knowledge (Agrawal 1995).

2. The knowledge representation of generations of creative thought and action within each individual community, as it struggles with an ever-changing set of conditions and problems (Magni 2017)

Indigenous land management

A wide range of environmental, natural resource and cultural heritage management activities undertaken by Aboriginal and Torres Strait Islander individuals, groups and organisations across Australia for customary, community, conservation and commercial reasons (Hill et al. 2013).

Indigenous people

Not authoritatively defined in international law or policy. Key feature is self-identification in addition to criteria which may include:

- Historical continuity with pre-invasion and/or pre-colonial societies that developed on their territories;
- A determination to preserve, develop and transmit to future generations their ancestral territories and identity as peoples in accordance with their own cultural patterns, social institutions and legal system.
- A strong link to territories and surrounding natural resources;
- Non-dominance;
- Distinct social, economic or political systems;
- Distinct language, culture and beliefs (United Nations Office of the High Commissioner for Human Rights 2013).

Institution

A custom, practice, relationship, or behavioural pattern of importance in the life of a community or society (American Heritage Dictionary 5th Edition 2011b).

Institutional racism

Societal systems or patterns that have the net effect of imposing oppressive or otherwise negative conditions against identifiable groups based on race or ethnicity (Durey, Thompson, and Wood 2011).

Invasion

1. The act of invading, especially the entrance of an armed force into a territory to conquer.

2. The entry into bodily tissue and subsequent proliferation of an injurious entity, such as a pathogen or tumour.
3. An intrusion or encroachment (American Heritage Medical Dictionary 5th Edition 2007b)
4. A political structure not an historical event (Wolfe 2006)

Knowledge
Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject (Oxford English Dictionary 2019d).

Methodology
Frames the research questions, determines the set of instruments and methods employed, and shapes the analysis (Smith 2012).

Methods
Means and procedures through which the central problems of the research are addressed (Smith 2012).

Native title
Recognition in common law that traditional customs observed by the indigenous inhabitants of a territory entail rights to the land. In Australia, Mabo's claim to parts of Murray Island in the Torres Strait in 1993 was the first time that Australian court system had recognised native title, and that previous failure amounted to racial discrimination based on the differential recognition of land rights based on different forms of claim to the land.

Native title can provide indigenous people with limited specific rights on their lands. However, the Native Title Act of 1993, and its amendments over time attempt to codify unwritten native title rights into laws written into a non-Indigenous legal system.

Native Title claims require people to demonstrate to the non-Indigenous legal system that their traditional law and customs continue to apply, and that they have remained associated with an area of Country through the invasion and colonisation of the area (Australian Law Reform Commission 2015).

Planetary health
1. The achievement of the highest attainable standard of health, wellbeing, and equity worldwide through judicious attention to the human systems—political, economic, and social—that shape the future of humanity and the Earth's natural systems that define the safe environmental limits within which humanity can flourish.
2. The health of human civilisation and the state of the natural systems on which it depends (Whitmee et al. 2015).

Proposition

A statement or assertion that expresses a judgement or opinion (Oxford English Dictionary 2019e)

Remote

1. Australian statistical measure of road distance from population centres of service provision, used in considering accessibility to government services (Australian Bureau of Statistics 2014)
2. For people in regions defined as remote, there are three distinct meanings:
    a. A place made useless and unliveable
    b. Government representatives made too distant by domination to hear what is being shown and said
    c. Place left behind in appropriating what is theirs (Sider 2014)
3. Very restricted accessibility of goods, services and opportunities for social interaction (Commonwealth Department of Health and Aged Care 2001) .
4. Remote has no cultural meaning in an Indigenous sense (Birch 2016).

Research

The creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings. This could include synthesis and analysis of previous research to the extent that it leads to new and creative outcomes (Western Sydney University).

Spirituality

A dynamic, evolving, contemporary expression of Indigeneity, which emphasises people's relationships with each other, and with living and non-living (mating season, tides, wind and mythology) life forces premised by an understanding people's place of origin (Poroch et al. 2009).

Traditional

Refers to distinctive indigenous cultures that have roots in historical customs, practices and experiences. However cultures evolve over time and traditional practices may be far removed from actual customs and practices of people's ancestors (Colquhoun and Dockery 2012) .

Traditional usually refers to cultural continuity transmitted in the form of social attitudes, beliefs, principles and conventions of behaviour and practice derived from historical experience. However, societies change through time, constantly adopting new practices and technologies, and making it difficult to define just how much and what kind of change would affect the labelling of a practice as traditional (Berkes 1993).

Traditional ecological knowledge (TEK)

1. TEK is mainly qualitative (as opposed to quantitative);
2. TEK has an intuitive component (as opposed to being purely rational);
3. TEK is holistic (as opposed to reductionist)
4. In TEK, mind and matter are considered together (as opposed to a separation of mind and matter);
5. TEK is moral (as opposed to supposedly value-free);
6. TEK is spiritual (as opposed to mechanistic);
7. TEK is based on empirical observations and accumulation of facts by trial-and-error (as opposed to experimentation and systematic, deliberate accumulation of fact);
8. TEK is based on data generated by resource users themselves (as opposed to that by a specialized cadre of researchers);
9. TEK is based on diachronic data, i.e., long time-series on information on one locality (as opposed to synchronic data, i.e., short time-series over a large area) (Berkes 1993).

Traditional knowledge

Know-how, skills, innovations, practices and learning that form part of traditional knowledge systems, and knowledge that is embodied in the traditional lifestyle of a community or people, or is contained in codified knowledge systems passed between generations (Williams, Guenther, and Arnott 2011).

Two-way learning

1. Researchers learn from participants and incorporate participant knowledge into their research development: an equal two-way exchange of information (Loppie 2007).
2. Combined use of Indigenous and non-Indigenous knowledge, skills and technology to achieve shared and separate but aligned land management goals (Ens 2012).

Validity

How well a scientific test or piece of research actually measures what it sets out to, or how well it reflects the reality it claims to represent (Association for Qualitative Research).

Wellbeing

Feeling and thinking that one's life is desirable regardless of how others see it (Diener 2009).

Yarning

An Australian Indigenous cultural form of conversation, shown to be a rigorous and credible research method when gathering data from Indigenous people, involving an informal and relaxed discussion though which both the researcher and the participant journey together visiting places and topics of interest relevant to the research (Wain et al. 2016).

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Appendix 2: Abbreviations

ABS: Australian Bureau of Statistics

ACCHO: Aboriginal Community Controlled Health Organisation

ACI: Akaike's Information Criteria

AGFI: Adjusted Goodness of Fit Index

ANCOVA: analysis of covariance, a statistical technique used to compare several means, while adjusting for the effect of one or more other variables (Field 2009)

CFA: Confirmatory Factor Analysis

CFI: Comparative Fit Index, a measure of model fit.

CO_2e: Carbon dioxide equivalent, the global warming potential of different greenhouse gases expressed in terms of molecules of carbon dioxide over 100 year time period (Brander 2012)

CRC- REP: Cooperative Research Centre for Remote Economic Participation (Cooperative Research Centre for Remote Economic Participation 2017)

EFA: exploratory factor analysis, a statistical tool used in the development of tests and measures (Williams, Brown, and Onsman 2010)

GDP: Gross Domestic Product, the aggregate value of economic production in a given year and in a given country. GDP focuses on the commodities produced rather than on the attributes of individuals and communities that shape the enjoyment and 'utility' that people derive from consumption (Boarini and Mira d'Ercole 2013)

GFI: Goodness of Fit Index, an absolute measure of model fit.

IUCN: International Union for the Conservation of Nature

NATSISS: National Aboriginal and Torres Strait Islander Social Survey (Australian Bureau of Statistics 2016)

NNFI: Non-normed Fit Index, an index of relative fit compared to an independence model

NSW: New South Wales

NT: Northern Territory

OECD: Organisation for Economic Cooperation and Development

PNFI: Parsimonious normed fit index, a measure of model fit that adjusts for degrees of freedom or sample size, so a simpler model achieves higher fit

RMSEA: Root Mean Square Error of Approximation, a measure of model fit

SDG: Sustainable Development Goal (United Nations 2018)

SD: Standard Deviation

SEM: Structural Equation Modelling, a set of statistical techniques combining exploratory factor analysis and multiple regression (Schreiber et al. 2006)

TLI: Tucker Lewis Index, an index of relative fit compared to an independence model

SRMR: Standardised Root Mean Square Residual, a measure of model fit

WA: Western Australia

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Appendix 3: Ethics applications and approvals

Ethics committee approvals are listed in chronological order, and included as separate documents.

10 January 2013

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Ms Colleen Atkinson
Chair
Human Research Ethics Committee
of Northern Territory Department of Health
and Menzies School of Health Research

File Reference Number: HREC-20.3-2125

NHMRC Registration No. EC00153

Project Title: Interplay between Education, Employment, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas Project *(Interplay Project)*

Dear Ms Atkinson,

Thank you for considering the above project at your meeting on 04/12/2013. The issues raised in the response letter have been addressed below and the accompanying application form altered accordingly.

Due to the quick turn around for us to resubmit this application in January, we have been unable to get the signature from Professor John Wakerman as he is on leave until 20th January. We have included all other signatures and will forward through all original signatures including that of Prof Wakerman prior to the meeting in February. We hope this will suffice.

Please do not hesitate to contact me if you have any further questions about the project. We look forward to hearing the outcomes of the next meeting.

Warm Regards,

Associate Professor Sheree Cairney
Principle Research Leader
Interplay Project
Sheree.Cairney@flinders.edu.au
0438 121 473

1) ***5.2.1 Research Plan. The Committee felt this was a contextual literature review and not a research plan. Please describe the research aims, research questions, design and methodology and expected outcomes for this research study- in particular, how data and information from this study will be used to improve policy and practice. (Section 1.1 of the National Statement on Ethical Conduct in Human Research).***

We apologise that we had not included any methodology in Section 5.2.1 as we had not read that as a requirement in the wording of the question. We have now altered both Sections 1.2.1 and 5.2.1 to include the information as requested above, and also added a detailed study design as Appendix 1 and the project's published literature review as Appendix 2.

2) The HREC felt that the participant recruitment numbers were overly ambitious given the populations of the communities involved.

More detail is provided on sample size selection on page 5 of Appendix A. This describes that these are calculated based on population estimates and are statistically conservative estimates to allow >20% attrition rate for follow up. In the 15-34 year age range, proposed sample sizes comprise 54% (357/665) of the population for Galiwin'ku being a larger community and 86% (96/111) of the population for Wiluna, being a smaller community. While this is appears ambitious for Wiluna, community support and research capacity is strong with four community based researchers that will work on the Interplay project having just conducted surveys with 100 community members completed in 10 days. Being a smaller community, it is necessary to oversample compared with a larger community, and based on the support, relationships and research capacity in Wiluna, we feel confident this is possible. Since the previous HREC application, the research has withdrawn from Amata and we are currently seeking an alterative location. The HREC will be notified accordingly.

3) P. 24 - Identifies that children and young people will be the primary intent of the research. No evidence of Ochre cards has been provided. (Section 187 of the Care and Protection of Children Act).

Our team is currently applying for Ochre cards for all researchers who will collect data and these will be forwarded to the HREC once received.

4) P. 23 - It is mentioned that video and photos will be used for reporting purposes. No consent form has been provided for the taking of, and use of video or photographic images (Refer National Statement on Ethical Conduct in the Human Research Section 2.2.6 & 3.2.12).

These have now been included as Appendix 8 (for individuals) and Appendix 9 (for group photos).

5) The questions that will be asked are extremely sensitive. What risk control strategies are in place? (Refer National statement on Ethical Conduct in the Human Research Section 3.1.12-3.1.13).

Sections 3.1.12 and 3.1.13 of the document above relate to qualitative research. Our individual

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participant survey is entirely quantitative.

The most sensitive questions in the survey that focus on social and emotional wellbeing and substance use have all been validated previously for use with Aboriginal people including those from the Negative Life Events Scale, Strong Souls, The Growth and Empowerment Measure, Strong Souls, Indigenous Risk Impact Screen, Measure of Indigenous Racism Experience and Kessler Psychological Distress Scale (see Dingwall & Cairney, 2010 for a review of validated surveys). New items that have been developed for use in the current survey are on less sensitive issues and use the same format as the above tools for consistency and to facilitate their validation.

While previous validation of the survey items does not ensure participants protection from harm, their use previously in many research and government surveys does provide strong evidence that they provide valuable information at minimal risk. Researchers will be trained to recognize any stress experienced by participants and either refrain from continuing the survey and/or assist them in accessing appropriate support services where necessary. This information has now been added to Section 5.3.5 of the application form.

6) The questionairre is lengthy. Please justify (Refer National Statement on Ethical Conduct in the Human Research Section 1.4 (c))

As outlined in the previous application, the draft survey provided was to undergo several further stages of refinement and pilot testing. As a consequence, it has since been reduced from 120 to 68 questions and may be culled further. The final survey will be forwarded to the committee prior to initiating the research. The survey provided with the current application is yet to be pilot tested, and if the community based researchers feel the length is appropriate, they can opt to administer the survey in two separate sittings within a few days if possible.

7) Signatures need to be provided.

We apologise these were not received prior to the meeting. As our research team is located in several locations nationally, this can be difficult to coordinate. However, we had anticipated they were sent with enough time to be received prior to the meeting. Due to the quick turn around time of this resubmit and that many of our team are on leave in January, we are sending the signatures as quickly as possible and if they are not received by the submission date, we hope them to be received by the meeting date. We hope this will suffice.

8) The Participant Information Sheet:

i) Should provide more information on what is involved.

ii) Should display " This is for you to keep" at the top of the sheet in a bold font.

iii) Letterhead and contact details need to be more clear at the beginning.

iv) Please add the HREC contact details.

The information sheet has now been updated to incorporate all of the above points.

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National Ethics Application Form

Version 2008 - V2.0

Proposal title: **Interplay between Employment, Education, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas Project**

For submission to:

Department of Health WA Human Research Ethics Committee (EC00422)

Human Research Ethics Committee of Northern Territory Department of Health and Menzies School of Hea (EC00153)

Western Australian Aboriginal Health Ethics Committee (EC00292)

Name: **A/Prof Sheree Cairney**

Address: **23 Edwin Street**
Preston VIC 3072

Contact: (Bus) **0438 121 473**
(AH) **-**
(Mob) **-**
(Fax) **-**

Proposal status: **Complete**

Proposal description:

INTERPLAY PROJECT

The Interplay project will use a novel wellbeing framework designed in collaboration with Aboriginal community researchers to measure the interplay between education, employment, health and wellbeing in remote Aboriginal communities, and use this framework to evaluate the impact of interventions and inform policy in these areas.

The Interplay Wellbeing Framework includes the following six domains: culture, community, empowerment, education, employment and health.

Each domain is defined by a set of indicators derived from individual and community level surveys and secondary government, health and education data. The indicators will contribute to an index score for each domain that will then contribute to an overarching measure of wellbeing.

This project recognizes that areas such as health, education and employment do not function in isolation. It considers the drivers and impacts of these interrelationships on wellbeing as a measure of quality of life for individuals and communities.

Key challenges of this project include measuring less tangible constructs such as culture and empowerment in such a way that accurately reflect community perspectives and priorities, in order to demonstrate their roles and importance objectively to policy and business.

The key research questions are:

1. What are the relationships between health and wellbeing outcomes and education and employment for individuals and communities living in remote Australia?
2. How effective are targeted interventions in this field?
3. How can policy and practice be better informed by this knowledge to maximise desired health and wellbeing outcomes?

A prospective cohort design will be used to conduct individual and community level surveys in approximately 500 young adults aged 15-34 years from 2 remote communities; Wiluna (WA) and Galiwin'ku (NT). Sample sizes are calculated based on population estimates and statistical power requirements.

Baseline data will be collected in 2014 (wave 1) with follow up data collected from the same communities and individuals 18 months later in 2015 (wave 2). Cross-sectional analysis after wave 1, and longitudinal analysis after wave 2 will be applied to assess changes across all domains over time, and their relative influence on each other and wellbeing.

This information will be mapped against the range of social and environmental factors to identify key areas or life-course transitions whereby intervention may be targeted most effectively. Each community will be treated as a case-study in the analysis to pilot the framework and methodology for potential role out more broadly in the future.

Previously submitted to:

Aboriginal Health Research Ethics Committee (EC00185)

Central Australian Human Research Ethics Committee (EC00155)

Human Research Ethics Committee of Northern Territory Department of Health and Menzies School of Hea (EC00153)

SA Department of Health Human Research Ethics Committee (EC00304)

Social and Behavioural Research Ethics Committee (EC00194)

Administrative Section

1. TITLE AND SUMMARY OF PROJECT

1.1. Title

1.1.1 What is the formal title of this research proposal?

Interplay between Employment, Education, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas Project

1.1.2 What is the short title / acronym of this research proposal (if applicable)?

The Interplay Project

1.2. Description of the project in plain language

1.2.1 Give a concise and simple description (not more than 400 words), in plain language, of the aims of this project, the proposal research design and the methods to be used to achieve those aims.

INTERPLAY PROJECT

The Interplay project will use a novel wellbeing framework designed in collaboration with Aboriginal community researchers to measure the interplay between education, employment, health and wellbeing in remote Aboriginal communities, and use this framework to evaluate the impact of interventions and inform policy in these areas.

The Interplay Wellbeing Framework includes the following six domains: culture, community, empowerment, education, employment and health.

Each domain is defined by a set of indicators derived from individual and community level surveys and secondary government, health and education data. The indicators will contribute to an index score for each domain that will then contribute to an overarching measure of wellbeing.

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Baseline data will be collected in 2014 (wave 1) with follow up data collected from the same communities and individuals 18 months later in 2015 (wave 2). Cross-sectional analysis after wave 1, and longitudinal analysis after wave 2 will be applied to assess changes across all domains over time, and their relative influence on each other and wellbeing.

This information will be mapped against the range of social and environmental factors to identify key areas or life-course transitions whereby intervention may be targeted most effectively. Each community will be treated as a case-study in the analysis to pilot the framework and methodology for potential role out more broadly in the future.

2. RESEARCHERS / INVESTIGATORS

2.2. Principal researcher(s) / investigator(s)

2.2.0 How many principal researchers / investigators are there? 6

2.2.1. Principal researcher / investigator 1

2.2.1. Name and contact details

Name: A/Prof Sheree Cairney

Address: 23 Edwin Street
Preston VIC 3072

Organisation: Flinders University

Area: Centre for Remote Health

Position: Principal Research Leader

Contact (Bus) 0438 121 473 (AH) -
(Mob) - (Fax) -

Email: sheree.cairney@flinders.edu.au

2.2.2... Summary of qualifications and relevant expertise NS 4.8.7 NS 4.8.15

A/Prof Cairney, BAppSc(Hons), PhD, Diploma Project Management, is a cognitive neuroscientist who has been coordinating research projects in Aboriginal communities across the NT for 13 years. She has focused on the brain-behavioural and wellbeing consequences of substance abuse and mental health problems and the development of strategies to overcome these. Her research has involved developing and validating assessments of cognition and social and emotional wellbeing that have both scientific and cultural validity and using these to show neuropsychological changes in longitudinal studies related to substance use, particularly petrol sniffing and alcohol. She has focused considerable effort in knowledge exchange strategies, developing the Brain Stories suite of resources (www.menzies.edu.au/brainstories), and the No Smokes multimedia anti-smoking initiative (www.nosmokes.com.au).

2.2.2... Please declare any general competing interests

There are no competing interests.

2.2.2... Name the site(s) for which this principal researcher / investigator is responsible.

A/Prof Cairney will be responsible for all of the sites involved in the project.

2.2.3 Describe the role of the principal researcher / investigator in this project.

A/Prof Cairney is currently the Principal Research Leader on the Interplay between Health, Wellbeing, Education and Employment Project, that is part of the Cooperative Research Centre for Remote Economic Participation (CRC-REP). She works with the Centre for Remote Health in Alice Springs as part of Flinders University.

2.2.4 Is the principal researcher / investigator a student? No

2.2.1. Principal researcher / investigator 2

2.2.1. Name and contact details

Name: Prof John Wakerman

Address: PO BOX 4066
Alice Springs NT 0871

Organisation: Centre for Remote Health

Area: -

Position: Director

Contact (Bus) 08 8951 4799 (AH) -
(Mob) - (Fax) 08 8951 4777

Email: john.wakerman@flinders.edu.au

2.2.2... Summary of qualifications and relevant expertise NS 4.8.7 NS 4.8.15

Professor John Wakerman is the Inaugural Director of the Centre for Remote Health. He is a Public Health Medicine specialist and general practitioner, with a long background in remote primary health care services as a medical practitioner, senior manager, researcher and active advocate for rural and remote health issues. He has specific academic interests in remote health services research and health management education.

2.2.2... Please declare any general competing interests
There are no competing interests

2.2.2... Name the site(s) for which this principal researcher / investigator is responsible.
This principal research will not be responsible for a site.

2.2.3 Describe the role of the principal researcher / investigator in this project.
Professor John Wakerman is Director of the Centre for Remote Health, one of the organisation involved in the project.

2.2.4 Is the principal researcher / investigator a student? No

2.2.1. Principal researcher / investigator 3

2.2.1. Name and contact details

Name:	Ms Kay Nevill	
Address:	PO Box 3971 Alice Springs NT 0871	
Organisation:	Ninti One Ltd	
Area:	Business Development Unit	
Position:	Research Coordinator	
Contact	(Bus) 08 89596000 (Mob) -	(AH) - (Fax) -
Email:	Kay.Nevill@nintione.com.au	

2.2.2... Summary of qualifications and relevant expertise NS 4.8.7 NS 4.8.15
With postgraduate studies in Public Health and Primary Health Care, Kay has over 20 years experience in community engagement, program management and quality improvement. She uses participatory approaches and enjoys mentoring. Kay has established networks and mechanisms to strengthen meaningful involvement by people who may be the subjects of research or recipients of services yet excluded from the process.
Kay has worked in government, non-government and community based organisations. For the last few years, she has worked in remote communities in Arnhem Land, developing public health initiatives with Aboriginal Community Workers.

2.2.2... Please declare any general competing interests
There are no competing interests.

2.2.2... Name the site(s) for which this principal researcher / investigator is responsible.
This principal researcher will not be responsible for a site.

2.2.3 Describe the role of the principal researcher / investigator in this project.
Kay Nevill is the Remote Communities Research Coordinator at Ninti One and is based in Alice Springs. She oversees a growing network of Aboriginal Community Researchers based in remote communities around the country.

2.2.4 Is the principal researcher / investigator a student? No

2.2.1. Principal researcher / investigator 4

2.2.1. Name and contact details

Name:	Ms Tammy Abbott
Address:	PO Box 3971 Alice Springs NT 0871
Organisation:	Ninti One Ltd
Area:	Business Development Unit

Position:	Senior Researcher		
Contact	(Bus) 08 89596000 (Mob) -	(AH) - (Fax) -	
Email:	Tammy.Abbott@nintione.com.au		

2.2.2... Summary of qualifications and relevant expertise NS 4.8.7 NS 4.8.15
Aboriginal cultural knowledge, high level of community engagement expertise and considering experience working on community as a Senior Research Officer with Ninti One Ltd.

2.2.2... Please declare any general competing interests
There are no competing interests.

2.2.2... Name the site(s) for which this principal researcher / investigator is responsible.
This principal investigator is not responsible for any site.

2.2.3 Describe the role of the principal researcher / investigator in this project.
Tammy Abbott is a senior research officer at Ninti One and is based in Alice Springs. Tammy's role includes administration work regarding community relations.

2.2.4 Is the principal researcher / investigator a student? No

2.2.1. Principal researcher / investigator 5

2.2.1. Name and contact details

Name:	Mr Byron Wilson		
Address:	4/140 Ryland Rd Rapid Creek NT 0810		
Organisation:	Menzies School of Health Research		
Area:	-		
Position:	Masters Student		
Contact	(Bus) (08) 8946 7065 (Mob) -	(AH) - (Fax) -	
Email:	byron.wilson2@menzies.edu.au		

2.2.2... Summary of qualifications and relevant expertise NS 4.8.7 NS 4.8.15
Bachelor of Science and Diploma of Education

2.2.2... Please declare any general competing interests
There are no competing interests

2.2.2... Name the site(s) for which this principal researcher / investigator is responsible.
This researcher is not responsible for a site.

2.2.3 Describe the role of the principal researcher / investigator in this project.
Masters student.

2.2.4 Is the principal researcher / investigator a student? Yes

2.2.4...What is the educational organisation, faculty and degree course of the student?

Organisation	Charles Darwin University / Menzies
Faculty	Masters by Research
Degree course	Masters

2.2.4... Is this research project part of the assessment of the student? Yes

2.2.4... Is the student's involvement in this project elective or compulsory? Compulsory

2.2.4... What training or experience does the student have in the relevant research methodology?
Byron has previously worked on another research project and as part of his candidature is undergoing additional training in research methods.

2.2.4... What training has the student received in the ethics of research?
Attended a short-course at Charles Darwin University and Menzies.

2.2.4... Describe the supervision to be provided to the student. NS 4.8.8
As the student's primary supervisor, the project leader, Dr Cairney holds weekly supervisory meetings with

the student.

2.2.4... How many supervisors does the student have? 1

2.2.4...Supervisor 1

2.2.4...Provide the name, qualifications, and expertise, relevant to this research, of the students' supervisor

Title	A/Prof
First Name	Sheree
Surname	Cairney
Summary of qualifications and relevant expertise	A/Prof Cairney, BAppSc(Hons), PhD, Diploma Project Management, is a cognitive neuroscientist who has been coordinating research projects in Aboriginal communities across the NT for 13 years. She has focused on the brain-behavioural and wellbeing consequences of substance abuse and mental health problems and the development of strategies to overcome these. Her research has involved developing and validating assessments of cognition and social and emotional wellbeing that have both scientific and cultural validity and using these to show neuropsychological changes in longitudinal studies related to substance use, particularly petrol sniffing and alcohol. She has focused considerable effort in knowledge exchange strategies, developing the Brain Stories suite of resources (www.menzies.edu.au/brainstories), and the No Smokes multimedia anti-smoking initiative (www.nosmokes.com.au).

2.2.1. Principal researcher / investigator 6

2.2.1. Name and contact details

Name:	Dr Stephen Quinn
Address:	Flinders Clinical Effectiveness c/- Flinders University GPO Box 2100 Bedford Park SA 5042
Organisation:	Flinders University
Area:	Flinders Clinical Effectiveness
Position:	Senior Biostatistician
Contact	(Bus) +61 8•8275 2859 (AH) - (Mob) - (Fax) -
Email:	stephen.quinn@health.sa.gov.au

2.2.2... Summary of qualifications and relevant expertise NS 4.8.7 NS 4.8.15

I worked as an applied biostatistician at the MRIT for 7 years where I led the analysis in many observational studies, predominantly with longitudinal data, as well as several other miscellaneous projects.

Currently, I am involved in the analysis of several randomised clinical trials and validation studies. I have extensive experience in the design and analysis of randomised clinical trial in a variety of disciplines, and observational studies, mostly in the field of musculoskeletal studies respiratory, neurological and primary health area. I also have experience in studies involving diagnostic accuracy and structural equation modelling. I have been a CI on seven several successful NHMRC grants over the last 5 years, and many more smaller grants and attracted funds of over $4 500 000 in collaboration with other researchers, and have over 60 peer reviewed journal publications. I am happy to collaborate in any projects particularly within the Flinders Clinical Effective Cluster and in the Faculty of Health Science.

2.2.2... Please declare any general competing interests

None to declare

2.2.2... Name the site(s) for which this principal researcher / investigator is responsible.

This researcher is not responsible for a site.

2.2.3 Describe the role of the principal researcher / investigator in this project.

Dr Quinn will have input into the design of the framework and surveys, conduct all data analysis and contribute to report writing.

2.2.4 Is the principal researcher / investigator a student? No

2.3. Associate researcher(s) / investigator(s)

2.3.1 How many known associate researchers are there? (You will be asked to give contact details for these associate researchers / investigators at question 2.3.1.1) 0

2.3.2 Do you intend to employ other associate researchers / investigators? Yes

2.4. Contact

Provide the following information for the person making this application to the HREC.

2.4.1. Name and contact details

Name:	A/Prof Sheree Cairney
Address:	23 Edwin Street Preston VIC 3072
Organisation:	Flinders University
Area:	Centre for Remote Health
Position:	Principal Research Leader
Contact	(Bus) 0438 121 473 (AH) - (Mob) - (Fax) -
Email:	sheree.cairney@flinders.edu.au

2.5. Other personnel relevant to the research project

2.5.1 How many known other people will play a specified role in the conduct of this research project? 3

2.5.1... Describe the role, and expertise where relevant (e.g. counsellor), of these other personnel.

Iona Matthews is the Administration officer for the project. Iona comes from a background in Administration. She has worked for several Chief Executive Officers of Alice Springs based organisations. She also worked as an Anthropology Research Officer for Central Land Council. Her passion is to help those further themselves through Education and Wellbeing.

Dr Kylie Dingwall is a research fellow at Menzies School of Health research in Alice Springs. She has lived and worked in Alice Springs for five years in various roles including child protection and Indigenous health research. Kylie's doctorate research involved monitoring cognitive and psychological changes from petrol sniffing and alcohol abuse among Indigenous Australians in the Northern Territory. It also involved validating appropriate tools for culturally valid neuropsychological assessment in this population. She has a strong interest in using the knowledge gained from this research to inform the development of appropriate protocols for the detection and management of comorbid cognitive and psychological problems that can be used in primary health care practice including in rehabilitation and prison settings. She has recently been awarded an NHMRC funded postdoctoral research fellowship to continue this work.

Associate Professor Melissa Lindeman is based at the Centre for Remote Health in Alice Springs where she is the Head of Research at Flinders University. She has a background in social welfare, public policy, research and education, in areas such as child protection, aged and disability care, community programs and health and human services more broadly. Her research interests are aged and community care; Indigenous dementia care; primary health care service systems (particularly in rural and remote/Indigenous communities); workforce development, knowledge translation and community capacity building; qualitative and participatory methodologies.

2.5.2 Is it intended that other people, not yet known, will play a specified role in the conduct of this research project? Yes

2.6. Certification of researchers / investigators

2.6.1 Are there any relevant certification, accreditation or credentialing requirements relevant to the conduct of this research? No

2.7. Training of researchers / investigators

2.7.1 Do the researchers / investigators or others involved in any aspect of this research project require any additional training in order to undertake this research?	No

3. RESOURCES

3.1. Project Funding / Support

3.1.1. Indicate how the project will be funded

3.1.1... Type of funding.
[Please note that all fields in any selected funding detail column (with the exception of the code) will need to be completed.]

	Internal Competitive Grant
Name of Grant / Sponsor	Cooperative Research Centre for Remote Economic Pariticipation (CRC-REP)
Amount of funding	$2.6M
Confirmed / Sought	Confirmed
Detail in kind support	As part of the CRC-REP, the current project accesses a rich network of support and resources from the 68 partners of the CRC including academic, government and community group.
Indicate the extent to which the scope of this HREC application and grant are aligned	The project outlined in this application is part of the basis for funding for the CRC.

3.1.1... How will you manage a funding shortfall (if any)?

While the project is fully costed and adequate funds are available to conduct the research as proposed, there are strategies in place to ensure the project is adequately funded to meet its research goals. These strategies that may be considered are:

1. The project can draw on additional in-kind support from CRC Essential Partners;
2. Synergies with other CRC-REP projects will also allow for increased sharing of resources (where required);
3. Research activities can be adjusted within the site to match available resources; and/or
4. Additional funding can be sought to extend the scope of the project if considered worthwhile.

3.1.2 Will the project be supported in other ways eg. in-kind support/equipment by an external party eg. sponsor No

3.2. Duality of Interest

3.2.1 Describe any commercialisation or intellectual property implications of the funding/support arrangement.

All CRC-REP intellectual property is beneficially owned by the parties conducting the relevant projects, including Ninti One as tenants-in-common in accordance with their contributions. The legal ownership of CRC-REP intellectual property vests in Ninti One Ltd to be held on trust for the beneficial owners.

All publications involving IP related to Ninti One Ltd activities must be approved by the Board (delegated to the Managing Director). Permission can be withheld by the Managing Director or alterations requested, particularly in relation to IP of commercial value or confidential sensitivity, or which impacts on Aboriginal and Torres Strait Islander IP.

Ownership and cultural copyrights over original information remains with the traditional Aboriginal custodians who provide it. Public disclosure of information gathered from the Aboriginal community will be strictly subject to their express prior approval.

3.2.2 Does the funding/support provider(s) have a financial interest in the outcome of the research? No

3.2.3 Does any member of the research team have any affiliation with the provider(s) of funding/support, or a financial interest in the outcome of the research? Yes

3.2.3... Describe affiliation(s) and/or interest(s).

The project is funded under Cooperative Research Centre for Remote Economic Participation (CRC-REP), managed by Ninti One Ltd. There is a general goal for CRCs to work towards becoming self-sufficient and in this case, for Ninti One to sustainably conduct research that has a public good goal in reducing social and economic disadvantage for remote Australia. It is therefore possible that commercial opportunities will be explored for research outcomes from the CRC-REP projects.

3.2.3... Do you consider the relationship between the research team and the funding/support provider constitutes:

[X] no ethical issue

3.2.3... Provide an explanation.

The research team is conducting research according to research priorities identified by the Commonwealth Government, as the funding source.

3.2.4 Does any other individual or organisation have an interest in the outcome of this research No

3.2.5 Are there any restrictions on the publication of results from this research? Yes

3.2.5... Describe these restrictions.

It is a condition of Ninti One Ltd, that all publications must be approved by the Board (delegated to the Managing Director) of the Ninti One Ltd and CRC-REP. Permission can be withheld by the Managing Director or alterations requested, particularly in relation to intellectual property of commercial value or confidential sensitivity.

4. PRIOR REVIEWS

4.1. Ethical review

4.1.0. Duration and location

4.1.0... In how many Australian sites, or site types, will the research be conducted? 2

4.1.0... In how many overseas sites, or site types, will the research be conducted? 0

Provide the following information for each site or site type (Australian and overseas, if applicable) at which the research is to be conducted

4.1.0...Site / Site Type 1

4.1.0... Site / Site Type Name
Galiwin'ku

4.1.0... Site / Site Type Location

Galiwin’ku, located on Elcho Island, is 150 km north-west of Nhulunbuy and 550 km north-west of Darwin. The island is part of the Wessel Island group, located at it’s southern end. Galiwin’ku is the only town on Elcho Island.

In 2011, the population of Galiwin’ku was approximately 2,124 with an Indigneous population of 89 per cent. In 2011, 44 per cent of Galiwin’ku’s population was younger than 20 years of age.

4.1.0...Site / Site Type 2

4.1.0... Site / Site Type Name
Wiluna

4.1.0... Site / Site Type Location
Wiluna is located in the Mid West region of Western Australia. It is found on the edge of the Western Desert.

4.1.0...Provide the start and finish dates for the whole of the study including data analysis

Anticipated start date	01/02/2014
Anticipated finish date	31/12/2017
4.1.0... Are there any time-critical aspects of the research project of which an HREC should be aware?	Yes

4.1.0... Describe the time-critical aspects.
There will need to be a 'gap' of at least 12 months between the two waves of data collection, to allow for any changes to occur in the fields of interest (education, employment, health, wellbeing, community interventions). Contractual requirements with the funding provider (Commonwealth Government) also outline milestones for project deliverables during the project lifecycle. The research design has allowed for considerable flexibility in timing for these deliverables due to the uncertainty of conditions related to remote field work.

4.1.1 To how many Australian HRECs (representing site organisations or the researcher’s / investigator's organisation) is it intended that this research proposal be submitted?	3

4.1.1...HREC 1

4.1.1... Name of HREC	Human Research Ethics Committee of Northern Territory Department of Health and Menzies School of Hea (EC00153)

4.1.1...Provide the start and finish dates for the research for which this HREC is providing ethical review.

Anticipated start date or date range	01/02/2014
Anticipated finish date or date range	31/12/2017
4.1.1... For how many sites at which the research is to be conducted will this HREC provide ethical review?	1

4.1.1...Site 1

4.1.1... Name of site	Galiwin'ku

4.1.1... Which of the researchers / investigators involved in this project will conduct the research at this site?

Principal Researcher(s)	Associate Researcher(s)
A/Prof Sheree Cairney	
Prof John Wakerman	
Ms Kay Nevill	
Ms Tammy Abbott	
Mr Byron Wilson	
Dr Stephen Quinn	

4.1.1...HREC 2

4.1.1... Name of HREC Department of Health WA Human Research Ethics Committee (EC00422)

4.1.1...Provide the start and finish dates for the research for which this HREC is providing ethical review.

Anticipated start date or date range	01/02/2014
Anticipated finish date or date range	31/12/2017
4.1.1... For how many sites at which the research is to be conducted will this HREC provide ethical review?	1

4.1.1...Site 1

4.1.1... Name of site Wiluna

4.1.1... Which of the researchers / investigators involved in this project will conduct the research at this site?

Principal Researcher(s)	Associate Researcher(s)
A/Prof Sheree Cairney	
Prof John Wakerman	
Ms Kay Nevill	
Ms Tammy Abbott	
Mr Byron Wilson	
Dr Stephen Quinn	

4.1.1...HREC 3

4.1.1... Name of HREC Western Australian Aboriginal Health Ethics Committee (EC00292)

4.1.1...Provide the start and finish dates for the research for which this HREC is providing ethical review.

Anticipated start date or date range	01/02/2014
Anticipated finish date or date range	31/12/2017
4.1.1... For how many sites at which the research is to be conducted will this HREC provide ethical review?	1

4.1.1...Site 1

4.1.1... Name of site Wiluna

4.1.1... Which of the researchers / investigators involved in this project will conduct the research at this site?

Principal Researcher(s)	Associate Researcher(s)
A/Prof Sheree Cairney	
Prof John Wakerman	
Ms Kay Nevill	
Ms Tammy Abbott	
Mr Byron Wilson	
Dr Stephen Quinn	

4.1.2 Have you previously submitted an application, whether in NEAF of otherwise, for ethical review of this research project to any other HRECs? Yes

4.1.2... To how many other HRECs have you submitted a proposal relating to this research project. 6

4.1.2...HREC 1

4.1.2... Name of HREC Central Australian Human Research Ethics Committee (EC00155)

4.1.2... Status of this review Approved

4.1.2... Explain why an application for ethical review was submitted to the HREC/s identified in answer to question 4.1.2.1, eg. it may be for another phase of the research project which has very different characteristics. Describe the wider project context, where appropriate.

This research project has been split into two phases. Phase 1 involved a participatory action process of community engagement and collecting qualitative information to inform the longitudinal survey design and pilot testing the survey tools. At this stage, the research communities had not been finalised. An application was submitted to this ethics committee for Phase 1 which is complete.

Phase 2 - to which the current application relates - is a detailed longitudinal survey that will involve primarily collecting objective quantitative data. The methodology of Phase 2 has been informed by the data collected in Phase 1.

As no communities in the Central Australia (NT) region have been included in the next phase of the research and the initial phase is now complete, the application to this ethics committee will now be closed off through a final report.

Approval has been attached as Appendix 7.

Please provide a copy of the approval letter as an attachment to this application.

4.1.2...HREC 2

4.1.2... Name of HREC Human Research Ethics Committee of Northern Territory Department of Health and Menzies School of Hea (EC00153)

4.1.2... Status of this review Submitted

4.1.2... Explain why an application for ethical review was submitted to the HREC/s identified in answer to question 4.1.2.1, eg. it may be for another phase of the research project which has very different characteristics. Describe the wider project context, where appropriate.

This research project has been split into two phases. Phase 1 involved a participatory action process of community engagement and collecting qualitative information to inform the longitudinal survey design and pilot testing the survey tools. At this stage, the research communities had not been finalised. An application was submitted to this ethics committee for Phase 1 which is complete.

Phase 2 - to which the current application relates - is a detailed longitudinal survey that will involve primarily collecting objective quantitative data. The methodology of Phase 2 has been informed by the data collected in Phase 1.

This committee concluded that Phase 1 did not constitute research and approval was therefore not required. It was therefore neither approved nor rejected. Subsequently the current application is now being submitted to this ethics committee for the main part of the research (baseline and follow up data collection).

4.1.2...HREC 3

4.1.2... Name of HREC Social and Behavioural Research Ethics Committee (EC00194)

4.1.2... Status of this review Approved

4.1.2... Explain why an application for ethical review was submitted to the HREC/s identified in answer to question 4.1.2.1, eg. it may be for another phase of the research project which has very different characteristics. Describe the wider project context, where appropriate.

This research project has been split into two phases. Phase 1 involved a participatory action process of community engagement and collecting qualitative information to inform the longitudinal survey design and pilot testing the survey tools. At this stage, the research communities had not been finalised. An application was submitted to this ethics committee for Phase 1 which is complete.

Phase 2 - to which the current application relates - is a detailed longitudinal survey that will involve primarily collecting objective quantitative data. The methodology of Phase 2 has been informed by the data collected

in Phase 1.

Approval has been attached as Appendix 8.

Please provide a copy of the approval letter as an attachment to this application.

4.1.2...HREC 4

4.1.2... Name of HREC Human Research Ethics Committee of Northern Territory Department of Health and Menzies School of Hea (EC00153)

4.1.2... Status of this review Rejected

4.1.2... Please explain why this proposal was rejected.

Phone feedback indicated that the application was rejected primarily because the methodology of the project was not clear in the application. The current application to the same committee is a resubmit, addressing this and other concerns raised by the committee.

4.1.2... Explain why an application for ethical review was submitted to the HREC/s identified in answer to question 4.1.2.1, eg. it may be for another phase of the research project which has very different characteristics. Describe the wider project context, where appropriate.

This is for the same project and is a resubmit of the application rejected at the previous meeting in December 2013.

4.1.2...HREC 5

4.1.2... Name of HREC SA Department of Health Human Research Ethics Committee (EC00304)

4.1.2... Status of this review Approved

4.1.2... Explain why an application for ethical review was submitted to the HREC/s identified in answer to question 4.1.2.1, eg. it may be for another phase of the research project which has very different characteristics. Describe the wider project context, where appropriate.

Initially, one of the study communities included Amata in SA and the project was therefore submitted to this committee where it was approved. However, the research has since withdrawn from Amata and this clearance will therefore not be required.

Please provide a copy of the approval letter as an attachment to this application.

4.1.2...HREC 6

4.1.2... Name of HREC Aboriginal Health Research Ethics Committee (EC00185)

4.1.2... Status of this review Submitted

4.1.2... Explain why an application for ethical review was submitted to the HREC/s identified in answer to question 4.1.2.1, eg. it may be for another phase of the research project which has very different characteristics. Describe the wider project context, where appropriate.

Initially, one of the study communities included Amata in SA and the project was therefore submitted to this committee who requested further information to be considered at their next meeting on 6/2/14. However, the research has since withdrawn from Amata and this clearance will therefore not be required.

4.3. Peer review

4.3.1 Has the research proposal, including design, methodology and evaluation undergone, or will it undergo, a peer review process? NS 1.2 Yes

4.3.1... Provide details of the review and the outcome. A copy of the letter / notification, where available, should be attached to this application.

The proposal has been reviewed extensively through:

- The CRC application process whereby a proposal for the Interplay Project was reviewed by the Commonwealth and funding approved for the research to be conducted
- A detailed proposal was submitted to the Ninti One board prior to commencement of the research. The board approval was required prior to the commencement of the research.
- A detailed literature review was conducted to inform the methodology and this underwent external peer-review and published as a CRC working paper (http://www.nintione.com.au/news/literature-review-working-towards-aboriginal-and-torres-islander-wellbeing-

Ethical Review Section

Summary

Applicant / Principal Researcher(s)

A/Prof Sheree Cairney

A/Prof Cairney, BAppSc(Hons), PhD, Diploma Project Management, is a cognitive neuroscientist who has been coordinating research projects in Aboriginal communities across the NT for 13 years. She has focused on the brain-behavioural and wellbeing consequences of substance abuse and mental health problems and the development of strategies to overcome these. Her research has involved developing and validating assessments of cognition and social and emotional wellbeing that have both scientific and cultural validity and using these to show neuropsychological changes in longitudinal studies related to substance use, particularly petrol sniffing and alcohol. She has focused considerable effort in knowledge exchange strategies, developing the Brain Stories suite of resources (www.menzies.edu.au/brainstories), and the No Smokes multimedia anti-smoking initiative (www.nosmokes.com.au).

Potential conflicts of interest

There are no competing interests.

Prof John Wakerman

Professor John Wakerman is the Inaugural Director of the Centre for Remote Health. He is a Public Health Medicine specialist and general practitioner, with a long background in remote primary health care services as a medical practitioner, senior manager, researcher and active advocate for rural and remote health issues. He has specific academic interests in remote health services research and health management education.

Potential conflicts of interest

There are no competing interests

Ms Kay Nevill

With postgraduate studies in Public Health and Primary Health Care, Kay has over 20 years experience in community engagement, program management and quality improvement. She uses participatory approaches and enjoys mentoring. Kay has established networks and mechanisms to strengthen meaningful involvement by people who may be the subjects of research or recipients of services yet excluded from the process.
Kay has worked in government, non-government and community based organisations. For the last few years, she has worked in remote communities in Arnhem Land, developing public health initiatives with Aboriginal Community Workers.

Potential conflicts of interest

There are no competing interests.

Ms Tammy Abbott

Aboriginal cultural knowledge, high level of community engagement expertise and considering experience working on community as a Senior Research Officer with Ninti One Ltd.

Potential conflicts of interest

There are no competing interests.

Mr Byron Wilson

Bachelor of Science and Diploma of Education

Potential conflicts of interest

There are no competing interests

Dr Stephen Quinn

I worked as an applied biostatistician at the MRIT for 7 years where I led the analysis in many observational studies, predominantly with longitudinal data, as well as several other miscellaneous projects.

Currently, I am involved in the analysis of several randomised clinical trials and validation studies. I have extensive experience in the design and analysis of randomised clinical trial in a variety of disciplines, and observational studies, mostly in the field of musculoskeletal studies respiratory, neurological and primary health area. I also have

experience in studies involving diagnostic accuracy and structural equation modelling. I have been a CI on seven several successful NHMRC grants over the last 5 years, and many more smaller grants and attracted funds of over $4 500 000 in collaboration with other researchers, and have over 60 peer reviewed journal publications. I am happy to collaborate in any projects particularly within the Flinders Clinical Effective Cluster and in the Faculty of Health Science.

Potential conflicts of interest

None to declare

Other Relevant Personnel

A/Prof Sheree Cairney

A/Prof Cairney, BAppSc(Hons), PhD, Diploma Project Management, is a cognitive neuroscientist who has been coordinating research projects in Aboriginal communities across the NT for 13 years. She has focused on the brain-behavioural and wellbeing consequences of substance abuse and mental health problems and the development of strategies to overcome these. Her research has involved developing and validating assessments of cognition and social and emotional wellbeing that have both scientific and cultural validity and using these to show neuropsychological changes in longitudinal studies related to substance use, particularly petrol sniffing and alcohol. She has focused considerable effort in knowledge exchange strategies, developing the Brain Stories suite of resources (www.menzies.edu.au/brainstories), and the No Smokes multimedia anti-smoking initiative (www.nosmokes.com.au).

5. PROJECT

5.1. Type of Research

5.1.1 Tick as many of the following 'types of research' as apply to this project. Your answers will assist HRECs in considering your proposal. A tick in some of these boxes will generate additional questions relevant to your proposal (mainly because the National Statement requires additional ethical matters to be considered), which will appear in Section 9 of NEAF.

This project involves:

[X] Research using qualitative methods NS 3.1

[X] Research using quantitative methods, population level data or databanks, e.g survey research, epidemiological research NS 3.2

5.1.2 Does the research involve limited disclosure to participants? NS 2.3 No

5.1.3 Are the applicants asking the HREC / review body to waive the requirement of consent? NS 2.3.5 No

5.2. Research plan

5.2.1 Describe the theoretical, empirical and/or conceptual basis, and background evidence, for the research proposal, eg. previous studies, anecdotal evidence, review of literature, prior observation, laboratory or animal studies (4000 character limit). NS 1.1

NOTE: A detailed study design is attached as Appendix 1 and a full literature review published to inform the Interplay Project has been attached as Appendix 2.

Evidence of the social impacts on health and wellbeing for Aboriginal and Torres Strait Islander people is gradually mounting [1] with the link between poor health status and low education and economic status for remote Australia acknowledged recently by the Productivity Commission [2]. Despite the policy focus, the role of social factors for health is not well understood and the critical need for good data particularly on the link between education and health and wellbeing for Aboriginal and Torres Strait Islander people has been noted [1]. Exceptions are the Western Australian Aboriginal Child Health Survey and the Longitudinal Study of Indigenous Children. No comparable longitudinal studies have focused on health and wellbeing outcomes for Aboriginal and Torres Strait Islander adults and an evidence base to inform policy is lacking. Research to date has largely identified unilateral or simple bilateral relationships between specific indicators in some circumstances however the relative importance of different variables and their interrelationships are poorly understood [1,3]. Further, little research has focused primarily on remote communities where social and health circumstances differ substantially to urban examples.

Standard government reporting indicators that are used to guide policy are generally developed based on government priorities taking a ‘top down’ approach. Constructs that are important in remote communities such as culture, empowerment and more holistic approaches to health, education and livelihoods are not represented in government frameworks and therefore community values and priorities are therefore not advocated in policy. Further, recognition of the importance of these constructs is limited by the fact they cannot be measured quantitatively.

Through collaboration between Aboriginal Community Researchers and statisticians, this project therefore aims to develop and validate objective and comparative measures that better represent constructs that are valuable to Aboriginal and Torres Strait Islander people and culture, in order to represent their importance at a policy level.

The Interplay project has developed a novel wellbeing framework tailored to the remote context, and related survey assessment tools, to monitor and understand the interplay between the core domains of culture, community, empowerment, education, employment and health, and their relative influence on wellbeing.

For this research, the framework will be applied through a prospective cohort study whereby approximately 500 young adults from 2 remote communities will complete the survey on two occasions separated by 18 months (2014 and 2015; see Appendix 2).

Data will be used to identify the most influential components (indicators) of each domain, and of each domain on wellbeing, interrelationships between core domains, and the impact of local interventions and activities on wellbeing over time.

Project output includes a reporting framework and evidence base that can inform and measure objectively the impact of a range of policies and programs.

Once the framework and methodology is validated through the current research, opportunities will be sought to extend the research to more communities nationally.

REFERENCES

1. Carson, B., T. Dunbar, et al., Eds. (2007). Social Determinants of Indigenous Health. NSW, Allen & Unwin.

2. SCRGSP (Steering Committee for the Review of Government Service Provision). 2009. Overcoming Indigenous Disadvantage: Key Indicators 2009. Productivity Commission, Canberra.

3. Nguyen OK and Cairney S. 2013. Literature review of the interplay between education, employment, health and wellbeing for Aboriginal and Torres Strait Islander people in remote areas: working towards an Aboriginal and Torres Strait Islander wellbeing framework. CRC-REP Working Paper CW013. Ninti One Limited, Alice Springs.

5.2.2 State the aims of the research and the research question and/or hypotheses, where appropriate.

KEY RESEARCH QUESTIONS

1) What are the relationships between health and wellbeing outcomes and education and employment for individuals and communities living in remote Australia?
2) How effective are targeted interventions in this field?
3) How can policy and practice be better informed by this knowledge to maximise desired health and wellbeing outcomes?

5.2.3 Has this project been undertaken previously? No

5.3. Benefits/Risks

5.3.0 Does the research involve a practice or intervention which is an alternative to a standard practice or intervention? No

5.3.1 Describe how the research demonstrates an understanding of and respect for and engages with the knowledge systems, cultural practices, heritage, beliefs, experiences and values of Aboriginal or Torres Strait Islander individuals and communities. Include, as appropriate:
- how the proposal responds to the diversity between communities eg. Different languages, cultures, histories, decision-making and perspectives (refer to Chapter 4.7 of the National Statement, Values and Ethics: Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research, and the AIATSIS Guidelines for Ethical Research in Indigenous Studies),
- how the proposal contributes to and does not erode social and cultural bonds among Aboriginal and Torres Strait Islander participants and communities,
- how the research respects the values based expectations and identity and protects and promotes cultural distinctiveness of Aboriginal and Torres Strait Islander people participants,

The Interplay Project is multi-disciplinary and investigates social, economic and health aspects of the lives of the Australian Aboriginal and Torres Strait Islander people in remote areas. The project is hosted by Ninti One Ltd and all employees of Ninti One - including all researchers employed on this project - as a contractual requirement must align with the Ninti One values that emphasise the respect of cultural diversity and cultural authority of Aboriginal and Torres Strait Islander people (see Appendix 4).

All CRC-REP and Ninti One Ltd research is conducted under the 'Desert Knowledge CRC Protocol for Aboriginal Knowledge and Intellectual Property', which includes reference to such international standards as the 'UN Declaration on the Rights of Indigenous Peoples', the 'International Society of Ethnobiology Code of Ethics', and the 'Bonn Guidelines on Access to Genetic Resources and Benefit Sharing'. The DKCRC Protocol is also consistent with the 'Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Guidelines for Ethical Research in Indigenous Studies' (2000) and the 'National Statement on Ethical Conduct in Human Research' (2007).

There are six core values that have been identified as being important to all Aboriginal and Torres Strait Islander societies. Therefore, we address the value and benefits of the project for each core value.

Reciprocity

The Interplay project aims to collect timely and comprehensive data specific to remote Aboriginal and Torres Strait Islander communities, in particular, data relevant to Aboriginal and Torres Strait Islander notions of health and wellbeing. This enables evidence-based research that contributes to understanding and addressing related disadvantage in a meaningful way. For communities involved in the research, reciprocity

will be achieved through empowering them with genuine intellectual involvement with the research, using the process to identify what is important to them and facilitate processes whereby they can measure and report these values to government and wider societies. Data feedback from this project will enable participants to maximise desired health and wellbeing outcomes via political lobby or community actions. This project will bring employment opportunities to the senior Aboriginal researchers who will have more of a coordination role on data collection in their region and the community based Aboriginal researchers who will conduct the surveys.

Respect

Steps at different levels have been taken to acknowledge Aboriginal and Torres Strait Islander values, norms and aspirations and protect cultural integrity. First, the board of Ninti One Ltd (with substantial Aboriginal and Torres Strait Islander membership) has outlined a statement of values that particularly respect the cultural diversity and cultural authority of Aboriginal and Torres Strait Islander people, and that all CRC-REP researchers and projects must honour (see Appendix 4). Second, the CRC-REP builds from the priorities, knowledge and relationships established in the Desert Knowledge CRC that grew out of an Aboriginal desert community movement. Third, Aboriginal leaders and researchers are represented on the Interplay Project Advisory Committee that advises project methods, community engagement and communication of the findings to Aboriginal people and communities. Fourth, the local Aboriginal Community Researchers will be employed to conduct the research and provide cultural guidance. And finally, project findings will be provided to Aboriginal and Torres Strait Islander communities in such a way that they can use the information as required including for local decision making or advocating their needs to government.

Equality

The ultimate goal of the project is to improve in inequality in Australia, through identifying strategies that lead to improved outcomes for Aboriginal and Torres Strait islander people in education, employment, health and wellbeing, and using this information to inform and drive political change. Aboriginal and Torres Strait Islander people and values are represented strongly in this project through governance, employment, project goals and methods.

Responsibility

Policies, procedures and systems are in place to ensure the research activities involved in this project will pose no risk to Aboriginal and Torres Strait Islander peoples who will participate voluntarily, and the project team will ensure their cultural safety and that their involvement includes empowerment strategies and community capacity building. For example, as a project of the CRC-REP, this research will be conducted under the ‘Desert Knowledge CRC Protocol for Aboriginal Knowledge and Intellectual Property’, which is consistent with international and other Australian ethics guidelines on Aboriginal and human research. Project team members have extensive experience in Aboriginal community research and understand, acknowledge and honour the appropriate processes and relationships to work with in each participating community. Confidentiality measures will be taken to avoid identification of individuals who participate.

Survival & Protection

Involvement of all parties in this research is voluntary. At no time does this research diminish the right of Aboriginal and Torres Strait Islander people to assert or embrace their cultural distinctiveness. On the contrary, this project recognises the cultural diversity of Aboriginal people and aims to facilitate evidence-based policy making, which will lead to culturally relevant interventions that improve the wellbeing of Aboriginal and Torres strait Islander people. All researchers employed on the project must sign up to the Ninti One Statement of Values (Appendix 4) of which one value is to: “Respect for cultural diversity and the cultural authority of Aboriginal and Torres Strait Islander people”. At its foundation, this project aims to represent Aboriginal and Torres Strait Islander authority to government, and thus aims to achieve long term cultural protection and survival.

Spirit & Integrity

The project aims to develop a wellbeing framework that incorporates Aboriginal and Torres Strait Islander concepts and knowledge of health and wellbeing, and ideas and aspirations in relation to education or employment. Empowering Aboriginal and Torres Strait Islander people to represent their cultural values and priorities in a reporting framework that speaks directly to policy, is a core and innovative component of this research that endorses cultural integrity and spirit.

5.3.2 What expected benefits (if any) will this research have for the wider community?

Upon successful uptake of research findings, end-users may utilise research outcomes to improve the quality of life (i.e., wellbeing) for Aboriginal and Torres Strait Islander people in remote communities by providing support for strategies in education and economic participation that have been shown by the

research to be strongly related to positive health and wellbeing outcomes.

Aboriginal and Torres Strait Islander people and policy makers will be provided valuable insight into the combination of factors across health, wellbeing, education and economic participation at individual and community levels that underlie optimal quality of life outcomes, and provide examples of how these can best be achieved. The impact of the research will be that communities and policy makers have access to meaningful data and knowledge sharing tools upon which effective strategies and policies can be based, precipitating transformative change.

5.3.3 What expected benefits (if any) will this research have for participants? NS 2.1

Aboriginal and Torres Strait Islander participants have a forum to tell their story through the survey that - if the questions are relevant and delivered in a culturally safe manner - can provide an opportunity to reflect and evaluate on their life stage. Through selection of appropriate constructs to include in the survey that empower Aboriginal and Torres Strait Islander people, together with its administration by local Aboriginal researchers, can mean that involvement in the survey potentially may feel more relevant and empowering to participants. Participants may benefit from changes in the community or through policy that are influenced by the research and their involvement. However, these benefits are less tangible and difficult to convey to participants who can perceive little benefit from involvement other than the opportunity to share knowledge and priorities.

5.3.4 Are there any risks to participants as a result of participation in this research project? NS 2.1 Yes

5.3.5 Explain how the likely benefit of the research justifies the risks of harm or discomfort to participants. NS 1.6

The major potential ethical issues in this project are related to cultural integrity and the sensitivity of information collected.

Policies, procedures and systems are in place to ensure the research activities involved in this project will promote cultural safety and integrity, and that participation is completely informed and voluntary, using appropriate communication strategies and that all research processes are tailored to promote community empowerment and capacity building.
The most sensitive questions in the survey that focus on social and emotional wellbeing and substance use have all been validated previously for use with Aboriginal people including those from the Negative Life Events Scale, Strong Souls, The Growth and Empowerment Measure, Strong Souls, Indigenous Risk Impact Screen, Measure of Indigenous Racism Experience and Kessler Psychological Distress Scale (see Dingwall & Cairney, 2010 for a review of validated surveys). New items that have been developed for use in the current survey are on less sensitive issues and use the same format as the above tools for consistency and to facilitate their validation.

While previous validation of the survey items does not ensure participants protection from harm, their use previously in many research and government surveys does provide strong evidence that they provide valuable information at minimal risk. Researchers will be trained to recognize any stress experienced by participants and either refrain from continuing the survey and/or assist them in accessing appropriate support services where necessary.

In the project information sheet, the contact details of the project leader, Aboriginal lead researcher and the relevant ethics committee are provided. The participants are encouraged to report any negative experience and concerns they may have. The research team can assist in linking participants up with appropriate local support services if requested by participants.

There is low risk to participation in the research, however the potential benefits are substantial including driving policy towards better interventions that empower Aboriginal and Torres Strait Islander people's values and priorities through objective measures and their representation to government and industry.

5.3.8 Are there any other risks involved in this research? eg. to the research team, the organisation, others No

5.3.9 Is it anticipated that the research will lead to commercial benefit for the investigator(s) and or the research sponsor(s)? No

5.3.11 Is there a risk that the dissemination of results could cause harm of any kind to individual participants - whether their physical, psychological, spiritual, emotional, social or financial well-being, or to their employability or professional relationships - or to their communities? Yes

5.3.11... Describe the risk and explain how it will be managed.

All disseminated results will be deidentified and therefore pose low risk to participants. The following protocols will be followed to protect cultural integrity for communities involved:

1. All CRC-REP and Ninti One Ltd research is conducted under the 'Desert Knowledge CRC Protocol for Aboriginal Knowledge and Intellectual Property', which includes reference to such international standards as the 'UN Declaration on the Rights of Indigenous Peoples', the 'International Society of Ethnobiology Code of Ethics', and the 'Bonn Guidelines on Access to Genetic Resources and Benefit Sharing'. The DKCRC Protocol is also consistent with the 'Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Guidelines for Ethical Research in Indigenous Studies' (2000) and the 'National Statement on Ethical Conduct in Human Research' (2007).

2. The research team has considerable expertise working and living in Aboriginal communities. The Principal Research Leader ensures that team members are aware that the integrity of the CRC and its valuable work hinges on all staff and associates exhibiting irreproachable ethical and culturally acceptable conduct at all times.

3. The project is overseen by the Ninti One Ltd board, and the Interplay project's advisory committee, with both groups predominantly consisting of Aboriginal and/or Torres Strait Islander members.

4. Aboriginal Community Researchers employed by Ninti One Ltd working as interviewers in this project speak the relevant local languages and have familial ties within the research communities.

5. In the project information sheet, the contact details of the project leader, Aboriginal lead researcher and the relevant ethics committee are provided. The participants are encouraged to report any negative experience and concerns they may have. The research team can assist in linking participants up with appropriate local support services if requested by participants.

5.4. Monitoring

Refer to NS 3.3.19 - 3.3.25

5.4.1 What mechanisms do the researchers / investigators intend to implement to monitor the conduct and progress of the research project? NS 5.5

Research progress is reported to the funders against a set of agreed milestones defined prior to commencement of the research.

At the level of the CRC-REP, the Project leader for the Interplay Project provides quarterly reports to the Ninti One board that evaluate the project progress and deliverables against milestones and assess any changes required.

At the research design level, project progress is assessed by the national advisory group at biannual meetings.

A detailed communications plan has been developed that outlines all the different ways that the findings will be reported (video, flipbook, photos, reports, journal papers, policy briefs, fact sheets and web-info), when they will be reported, and to which stakeholders (government, community, research and industry). Ninti One's communications division will provide support to the research team and the Aboriginal community researchers to work together to develop these communication tools and to deliver them to each of the stakeholder groups.

A project management team comprising the project leader (Dr Cairney), chief investigator (Prof Wakerman), General Manager for Business Development at Ninti One (Lyn Allen) and Research Administration Officer (Iona Matthews) meet fortnightly to monitor project activities against a detailed workplan.

At the community level, a community steering committee is overseeing the research in each community, and meet with the project team at significant time points in the project to review progress and decide the next step. In Galiwn'ku, Yalu Marnggithinyaraw Indigenous Corporation (Yalu) board members and researchers form this group. In Amata it is the Health Advisory Council and in Wiluna it is the Prescribed Body Corporate of the Wiluna Native Title group. These time points include to introduce the research, formulate the design, before and after each data collection, and to inform the knowledge translation.

6. PARTICIPANTS

6.1. Research participants

6.1.1 The National Statement identifies the need to pay additional attention to ethical issues associated with research involving certain specific populations.

This question aims to assist you and the HREC to identify and address ethical issues that are likely to arise in your research, if its design will include one or more of these populations. Further, the National Statement recognizes the cultural diversity of Australia's population and the importance of respect for that diversity in the recruitment and involvement of participants. Your answer to this question will guide you to additional questions (if any) relevant to the participants in your study.

6.1.1 Tick as many of the following 'types of research participants' who will be included because of the project design, or their inclusion is probable, given the diversity of Australia's population. If none apply, please indicate this below.

	a) Primary intent of research	b) Probable coincidental recruitment
People whose primary language is other than English (LOTE)	[ ]	[X]
Women who are pregnant and the human foetus NS 4.1	[ ]	[X]
Children and/or young people (ie. <18 years) NS 4.2	[X]	[ ]
People with a cognitive impairment, an intellectual disability or a mental illness NS 4.5	[ ]	[X]
Aboriginal and/or Torres Strait Islander peoples NS 4.7	[X]	[ ]
People who may be involved in illegal activity	[ ]	[X]

You have indicated that it is probable that

- People whose primary language is other than English (LOTE)

- Women who are pregnant and the human foetus

- People with a cognitive impairment, an intellectual disability or a mental illness

- People who may be involved in illegal activity

may be coincidentally recruited into this project. The National Statement identifies specific ethical considerations for these groups(s).

6.1.3... Please explain how you will address these considerations in your proposed research.

The project may involve individuals for whom English is not their first language. The planning of this project has adequately taken this situation into consideration. First, survey questions will be produced in translatable English via consultation with Aboriginal Community Researchers. In a workshop with the Aboriginal Community Researchers from study communities in May, it was decided best for the survey to be written in English to maintain its consistency given it is a national project, and where necessary, translated on the spot. Second, the Aboriginal Community Researchers who are speakers of the local languages will either conduct translations when necessary between others in the research team and local people, or where necessary will employ trained interpreters. Third, the Aboriginal Community Researchers will also provide cultural guidance and mitigate any chances of misinterpretation during consultation. They will be supported by the Ninti One Ltd's Senior Research Officers who have extensive experience working in inter-cultural contexts and in some cases, speak local Aboriginal languages.

The recruitment process will not screen for pregnancy, illegal activities, cognitive impairment, intellectual disability or mental illness. Participants with these circumstances may participate in the research which will poses no risk to their circumstances as the data collection methods are non invasive.

Researchers will be informed of the appropriate referral process for each community should any participant express concern about their general or mental health.

6.2. Participant description

6.2.1 How many participant groups are involved in this research project? 2

6.2.2 What is the expected total number of participants in this project at all sites?

600

6.2.3. Group 1

6.2.3... Group name for participants in this group
Galiwin'ku

6.2.3... Expected number of participants in this group
400

6.2.3... Age range
15-34

6.2.3... Other relevant characteristics of this participant group
This group will be recruited as Yolngu people who live Galiwin'ku on Elcho Island.

6.2.3... Why are these characteristics relevant to the aims of the project?
This comprises one sub-cohort of the study whose data will be collated together with the other groups for data analysis, and specifically to answer the first research question. However, this group will also serve as a 'case study' for latter analyses of the impact of local activities on health and wellbeing relevant only to this group. The latter analyses will be used to answer the 2nd research question.

6.2.3. Group 2

6.2.3... Group name for participants in this group
Wiluna

6.2.3... Expected number of participants in this group
100

6.2.3... Age range
15-34

6.2.3... Other relevant characteristics of this participant group
This group will be recruited as Martu people who live in Wiluna.

6.2.3... Why are these characteristics relevant to the aims of the project?
This comprises one sub-cohort of the study whose data will be collated together with the other groups for data analysis, and specifically to answer the first research question. However, this group will also serve as a 'case study' for latter analyses of the impact of local activities on health and wellbeing relevant only to this group. The latter analyses will be used to answer the 2nd research question.

6.3. Participation experience

6.3.1 Provide a concise detailed description, in not more than 200 words, in terms which are easily understood by the lay reader of what the participation will involve.
In each community, information that is relevant to the whole community will be collected through a focus group with community representatives. They will be asked to answer semi-structured and qualitative questions on priorities, programs and local information about education, employment, health and wellbeing.

To understand what is important for people, individuals from each community will be asked to undertake a survey of approximately 1 hour that will involve answering questions about culture, empowerment, community, education, employment, health and wellbeing and how all of these factors interrelate.

6.4. Relationship of researchers / investigators to participants

6.4.1 Specify the nature of any existing relationship or one likely to rise during the research, between the potential participants and any member of the research team or an organisation involved in the research.
Aboriginal researchers who conduct the surveys will be either from the community or will be more senior researchers employed by Ninti One who have relationships with the community and a strong understanding of local customs. Community based researchers will have existing relationships with participants that will need to be considered in data collection.

6.4.2 Describe what steps, if any, will be taken to ensure that the relationship does not impair participants' free and voluntary consent and participation in the project.
Where necessary, researchers and participants will be the same gender and from similar age ranges. For example, younger researchers in some communities have expressed they are not comfortable to conduct surveys with older family or community members. In all cases, researchers will be asked who they are comfortable to interview, and participants will be asked who they would like to be interviewed by. In some cases, participants may prefer to be interviewed by a community researcher and in others, they may prefer an Aboriginal researcher from another community employed by Ninti One.

All participants will have the opportunity to opt not to take part in the research or to withdraw at any time and

this will be made clear during informed consent.

6.4.3 Describe what steps, if any, will be taken to ensure that decisions about participation in the research do not impair any existing or foreseeable future relationship between participants and researcher / investigator or organisations.

Researchers will be trained about the voluntary nature of participation and that community members have the choice to decline participation in the research without consequence.

Researchers will have no consequence to their employment or payment based on the number of participants they recruit and will therefore have no basis to impair relationships with community members based on their participation or otherwise.

This will be communicated clearly to researchers through their training and to people approached to participate through the informed consent process.

6.4.4 Will the research impact upon, or change, an existing relationship between participants and researcher / investigator or organisations.? No

6.4.5 Is it intended that the interview transcript will be shown or made available to participants? 3.1.15 No

6.5. Recruitment

6.5.1 What processes will be used to identify potential participants?

The age group and sample size for the cohort is based on population estimates and statistical power requirements to ensure there is sufficient data to answer the research question.

6.5.2 Is it proposed to 'screen' or assess the suitability of the potential participants for the study? No

6.5.3 Describe how initial contact will be made with potential participants.

Community steering groups are promoting the research in each community prior to data collection through their leadership endorsement. Prior to the data collection, posters introducing the research will be posted in public places in local languages. Community-based researchers will approach potential participants and invite their participation in the research. Researchers have nominated strategies such as holding a bbq or setting up some other gathering to promote and recruit participants into the research. Different strategies will be adopted in each community as advised by local researchers.

6.5.3... Do you intend to include both males and females in this study? Yes

6.5.3... What is the expected ratio of males to females that will be recruited into this study and does this ratio accurately reflect the distribution of the disease, issue or condition within the general community?

Ratio will be approximately 50/50 based on population estimates.

6.5.4 Is an advertisement, e-mail, website, letter or telephone call proposed as the form of initial contact with potential participants? No

6.5.5 If it became known that a person was recruited to, participated in, or was excluded from the research, would that knowledge expose the person to any disadvantage or risk? No

6.6. Consent process

6.6.1 Will consent for participation in this research be sought from all participants? Yes

6.6.1... Will there be participants who have capacity to give consent for themselves? Yes

6.6.1... What mechanisms/assessments/tools are to be used, if any, to determine each of these participant's capacity to decide whether or not to participate?

In remote communities, Aboriginal people know each other intimately and over the duration of their lifetime through kinship relationships. They therefore have undisputed insight into the capacity, maturity and vulnerabilities of their fellow community members. Researchers are selected and trained based on their own maturity and responsibility particularly in relation to cultural safety and discernment. The researchers therefore are well-placed to judge the relative capacity of potential participants in their communities to give informed consent to participate in the research. Community based researchers will therefore make this assessment.

Potential participants will be advised verbally and delivered an information sheet explaining the research and outlining the voluntary nature of participation and what participation involves, and written consent will be given prior to participation.

6.6.1... Are any of the participants children or young people? Yes

6.6.1... Explain how will the children or young people's vulnerability and capacity to consent be judged.
Participants aged 15-34 years will be recruited and give informed consent to participate. Participants aged 15-17 will give consent and also their guardian will provide informed consent for their participation.

The same strategies that are outlined in the previous question (6.6.1.2.1.1) will be used to judge the vulnerability and capacity of each young person (aged 15 and over) to participate in the research, and the process of their guardian also consenting will provide further endorsement.

6.6.1... Are there any children not of sufficient maturity to consent to participation? Yes

6.6.1... Is the research likely to advance knowledge about the health or welfare or other matters relevant to children or young people? Yes

6.6.1... Explain how this research is intended to advance knowledge.
The research outcomes are likely to improve opportunities in education and employment for young Aboriginal people through identifying and signifying investment in the activites that lead to optimal health and wellbeing.

6.6.1... Will there be participants who do not have capacity to give consent for themselves? Yes

6.6.1... Specify why these participants do not have capacity to give consent for themselves.
A blanket rule will be used in this project, whereby consent from young participants (15-17 years) will need to be accompanied by consent from their guardian. It is possible that under the mature minor rule, some of the participants may be able to provide consent for themselves, however, in order to ensure consistency, we prefer to follow the same protocol for all participants.

6.6.1... By whom will consent for these participants be given?
Parents or guardian.

6.6.1... On what basis is it believed that these people have legal authority to give consent for these participants?
Community researchers have intimate knowledge of the family relationships within the community and will therefore ensure that the appropriate parent or guardian is approached for consent.

6.6.1... Describe the consent process, ie how participants or those deciding for them will be informed about, and choose whether or not to participate in, the project.
A plain language script describing the aims and methods of the research will be delivered to the participant or those deciding for them. Depending on the preference decided by Aboriginal community researchers from each participating community, this may be read from a page, or given to the person to read, in either English or local language. Irrespective of mode of delivery, the script will remain the same and in all cases, an information hand out sheet outlining the details of the project will be given to the participant. This is provided in Appendix 5.

6.6.1... If a participant or person on behalf of a participant chooses not to participate, are there specific consequences of which they should be made aware, prior to making this decision? 4.6.6 - 4.6.7
There are no consequences of individual participants not participating; moreover, it is explicit in the informed consent form that participants retain the right to cease participation and remove consent at any time.

6.6.1... Might individual participants be identifiable by other members of their group, and if so could this identification expose them to risks?
The results will be de-identified and therefore this is not a foreseeable risk.

6.6.1... If a participant or person on behalf of a participant chooses to withdraw from the research, are there specific consequences of which they should be made aware, prior to giving consent?
There are no consequences of individual participants withdrawing; moreover, it is explicit in the informed consent form that participants retain the right to cease participation and remove consent at any time.

6.6.1... Specify the nature and value of any proposed incentive/payment (eg. movie tickets, food vouchers) or reimbursement (eg travel expenses) to participants.
No reimbursement will be given to participants. Food and drinks may be provided to participants.

6.6.1... Explain why this offer will not impair the voluntary nature of the consent, whether by participants' or persons deciding for their behalf. NS 2.2.10 - 2.2.11
Not applicable.

6.6.3 Do you propose to obtain consent from individual participants for your use of their stored data/samples for this research project? Yes

7. PARTICIPANTS SPECIFIC

7.2. Children or young people

7.2.1 Why is participation of children or young people indispensable to this research?

How has this study been designed to be appropriate for children or young people? NS 4.2.1

The research will involve mature minors aged 15 years and over. This is relevant because the research focuses on the transition from education through to economic participation or other livelihood and related health and wellbeing outcomes.

The research uses a survey format and questions that are either generic for surveys across age groups, or in the case of more sensitive issues on social and emotional wellbeing, the survey uses questions that have been validated for use with young Aboriginal people (ie, Strong Souls).

Participation involves no other activity that poses any threat to the young person participating.

7.2.2 Explain why there is no reason to believe that the research participation is not contrary to the best interests of the children or young people. NS 4.2.13 NS 4.3

Participation in the research by young people will provide insight into the education and employment pathways that lead to optimal health and wellbeing for Aboriginal people in remote communities. No negative consequences of participation or refusal to participate in the research have been identified for any person.

7.2.4... Explain why the consent of the parent/guardian will not be sought.

Consent of the parent/guardian will be sought for all participants aged below 18 years.

8. CONFIDENTIALITY/PRIVACY

8.1. Do privacy guidelines need to be applied in the ethical review of this proposal?

8.1.1 Indicate whether the source of the information about participants which will be used in this research project will involve:

[X] collection directly from the participant
[X] use or disclosure of information by an agency, authority or organization other than your organisation

8.1.1... Information which will be collected for this research project directly from the participant

8.1.1... Describe the information that will be collected directly from participants. Be specific where appropriate.

The participants will fill out a survey. De-identified data from the survey will be used in analysis in further parts of the study.
Participants in the community survey will be involved in a focus group and de-identified discussion notes will be taken by researchers.

In both of these forums, the questions will focus on education, economic participation, culture, community, health and wellbeing at the individual and community levels respectively.

8.1.1... The information collected by the research team about participants will be in the following form(s). Tick more than one box if applicable.

[X] re-identifiable

8.1.1... Give reasons why it is necessary to collect information in individually identifiable or re-identifiable form.

The Interplay project is a longitudinal cohort study whereby individual participants will be followed up on a later occasion to complete a survey and their data will be linked longitudinally.

8.1.1... Indicate the number of databases, from which you will be collecting information, held by any of these categories of agencies.

8.1.1...Indicate the number and identity of agencies, authorities or organisations, which will be using or disclosing information, the names of the databases (where applicable), the data items and their degree of identifiability and, where applicable, the reasons for using identifiable or re-identifiable data.

Commonwealth	0
State/Territory	4
Private Sector	2

8.1.1... Organisation Database

Agency Type	Name of agency / organisation	Name/description of the database	Describe the information that will be collected. List all data items	The information collected by the research team about participants will be in the following form(s). NS 3.2	Give reasons why it is necessary to collect information in identified or potentially identifiable (coded) form.
State/Territory 1	Department of Education and Children's Services, Northern Territory	NAPLAN, School Attendance	Attendance, enrolment, retention, completion rates, VET or equivalent enrolments and completions, for each year available. Where available, information will also be collected on first language spoken at home and English as a second language (ESL) status. NAPLAN scores will be collected including reading, writing, language conventions and numeracy results for each year available.	[X] individually identifiable	Data will only be collected for participants whom have given specific consent to access. Once it is collected, the data will need to be matched to those participants and will therefore need to be individually identifiable. Once it has been matched, all of the data will be transformed into a re-identifiable form.
State/Territory 2	Department of Health, Northern Territory	Hospital Separations	Information regarding diagnoses of cardiovascular disease, renal disease, diabetes and liver disease will be collected. This data will only be collected for those participants who have explicitly given consent to access secondary data sources.	[X] individually identifiable	Data will only be collected for participants whom have given specific consent to access. Once it is collected, the data will need to be matched to those participants and will therefore need to be individually identifiable. Once it has been matched, all of the data will be transformed into a re-identifiable form.
State/Territory 3	WA Department of Health	Hospital Separations	Information regarding diagnoses of cardiovascular disease, renal disease, diabetes and liver disease will be collected. This data will only be collected for those participants who have explicitly given consent to	[X] individually identifiable	Data will only be collected for participants whom have given specific consent to access. Once it is collected, the data will need to be matched to those participants and will therefore need to be individually

			access secondary data sources.		identifiable. Once it has been matched, all of the data will be transformed into a re-identifiable form.
State/Territory 4	WA Department of Education	NAPLAN, School Attendance	Attendance, enrolment, retention, completion rates, VET or equivalent enrolments and completions, for each year available. Where available, information will also be collected on first language spoken at home and English as a second language (ESL) status. NAPLAN scores will be collected including reading, writing, language conventions and numeracy results for each year available.	[X] individually identifiable	Data will only be collected for participants whom have given specific consent to access. Once it is collected, the data will need to be matched to those participants and will therefore need to be individually identifiable. Once it has been matched, all of the data will be transformed into a re-identifiable form.
Private Sector 1	Ngalkunbuy Health Centre, Galiwin'ku	Health files recorded at the Ngalkunbuy Health Centre, as managed by Miwatj Health.	Diagnoses of cardiovascular disease, renal disease, diabetes and liver disease will be sought. Pathology reports from the health files will also be used.	[X] individually identifiable	Data will only be collected for participants whom have given specific consent to access. Once it is collected, the data will need to be matched to those participants and will therefore need to be individually identifiable. Once it has been matched, all of the data will be transformed into a re-identifiable form.
Private Sector 2	Nganagganawili Health Centre, Wiluna	Health files recorded in Wiluna by the Nganagganawili Aboriginal Health Service (NAHS).	Diagnoses of cardiovascular disease, renal disease, diabetes and liver disease will be sought. Pathology reports from the health files will also be used.	[X] individually identifiable	Data will only be collected for participants whom have given specific consent to access. Once it is collected, the data will need to be matched to those participants and will therefore need to be individually identifiable. Once it has been matched, all of the data will

					be transformed into a re-identifiable form.

8.2. Using information from participants

8.2.1 Describe how information collected about participants will be used in this project.

Data collected from participants will be collated and analysed on two levels; one on a whole of study level across all 2 communites and two, at the level of each community. Individual data will not be represented on its own, only as part of a de-identified cohort.

8.2.2 Will any of the information used by the research team be in identified or re-identifiable (coded) form? Yes

8.2.2... Indicate whichever of the following applies to this project:

[X] Information collected for, used in, or generated by, this project will/may be used for another purpose by the researcher for which ethical approval will be sought.
[X] Information collected for, used in, or generated by, this project is intended to be used for establishing a database/data collection/register for future use by the researcher for which ethical approval will be sought.
[X] Information collected for, used in, or generated by, this project will/may be made available to a third party for a subsequent use for which ethical approval will be sought.

8.2.4 List ALL research personnel and others who, for the purposes of this research, will have authority to use or have access to the information and describe the nature of the use or access. Examples of others are: student supervisors, research monitors, pharmaceutical company monitors .

At present, the data will only be available and used by researchers listed in this application and their collaborators.

However, in the future, this study may extend and/or expand and data from this study may therefore form a database upon which to compare conditions across remote communities in Australia. Any use of the current data for this potential future expansion/extension will not occur without ethical approval through an additional application.

To accommodate this possibility, the consent form contains an option for the participant to select yes or no on "My de-identified information can be added to a database for use in future research on Aboriginal and Torres Strait Islander wellbeing".

8.3. Storage of information about participants during and after completion of the project

8.3.1 In what formats will the information be stored during and after the research project? (eg. paper copy, computer file on floppy disk or CD, audio tape, videotape, film)

Collected data will be stored on paper copy, computer file, memory stick and audio file (dependent upon participant consent to storage, and public nature of content being stored). Information generated during research activity will be stored in digital form, in compliance with Ninti One Ltd. policy on safe storage, privacy and raw data management.

8.3.2 Specify the measures to be taken to ensure the security of information from misuse, loss, or unauthorised access while stored during and after the research project? (eg. will identifiers be removed and at what stage? Will the information be physically stored in a locked cabinet?)

Paper copies, memory sticks, computer files and audio tapes will be held by the Project leader at Ninti One premises and kept in a secure format and locked up in a filing cabinet in a secure, locked office. Access to raw data is restricted. Identifier information is stored separately from raw data. Hard data is kept in locked filing cabinets and digital data will be password protected.

8.3.5 The information which will be stored at the completion of this project is of the following type(s). Tick more than one box if applicable.

[X] re-identifiable

8.3.5... Give reasons why it is necessary to store information in identifiable or potentially identifiable (coded) form.

The research is a longitudinal cohort study whereby data collected at a later date must be linked to earlier data collection.

8.3.5... If the data can be re-identified using a code, specify the security arrangements and access for the code.

Participant identifiers will be stored in a separate location that is password protected and availablle only to the project leader, reseach administration officer and operations manager of Ninti One Ltd.

8.3.6 For how long will the information be stored after the completion of the project and why has this period been chosen?

If the project is not extended and funded further after 2017, then data will be kept for 7 years following the most recent wave of data collection. However, if funding is received to continue the research, then data will be kept for longer and continue in storage for 7 years after the study is no longer continuing. At this point, electronic data will be deleted from all servers.

8.3.7 What arrangements are in place with regard to the storage of the information collected for, used in, or generated by this project in the event that the principal researcher / investigator ceases to be engaged at the current organisation?

Data will be stored on the organisations server, with access codes where necessary known by the project leader, research admin officer and research coordinator for Ninti One Ltd. Should either team member cease to be involved, security codes will be updated and shared with new team members, through the operations manager of Ninti One Ltd.

8.4. Ownership of the information collected during the research project and resulting from the research project

8.4.1 Describe how the research will respect and acknowledge the contribution of Aboriginal or Torres Strait Islander peoples to the research.
Include, as appropriate:
- acknowledgement of cultural property rights in relation to knowledge, ideas, cultural expressions and cultural materials,
- acknowledgement of the sources of information and those who have contributed to the research
- a description of any agreement (preferably written) between the researchers / investigators and the community regarding research intentions, methods and potential results.

Ninti One Limited has developed an 'Aboriginal Research Engagement Protocol' which includes a statement of 'Aboriginal Cultural and Intellectual Property Rights'. Section 5.1 states that 'projects must demonstrate a commitment to respect and uphold the rights of Aboriginal people under Traditional Law to full ownership and control over Aboriginal cultural and intellectual property that is in existence prior to conduct of the project'. All publications involving Intellectual Property related to Ninti One Ltd activities must be approved by the Board.

Ownership and cultural copyrights over original information remains with the traditional Aboriginal custodians who provide it. Public disclosure of information gathered from the Aboriginal community will be strictly subject to their express prior approval. In accordance with the CRC-REP Intellectual Property Trust Deed, information from the communities will be held by Ninti One Ltd for Centre for Remote Health and other 'Essential Participants' for use in benefiting Aboriginal and Torres Strait Islander people.

8.4.2 Who is understood to own the information resulting from the research, eg. the final report or published form of the results?

Ownership and cultural copyrights over original information remains with the traditional Aboriginal custodians who provide it. The information resulting from the research is owned by Flinders University and Ninti One Ltd.

8.4.3 Does the owner of the information or any other party have any right to impose limitations or conditions on the publication of the results of this project? Yes

8.4.3... Specify any limitations on publication.

All publications involving Intellectual Property related to Ninti One Ltd activities must be approved by the Board.

8.5. Disposal of the information

8.5.1 Will the information collected for, used in, or generated by this project be disposed of at some stage? Yes

8.5.1... At what stage will the information be disposed?

If the project is not extended and funded further after 2017, then data will be kept for 7 years following the most recent wave of data collection. However, if funding is received to continue the research, then data will be kept for longer and continue in storage for 7 years after the study is no longer continuing. At this point, electronic data will be deleted from all servers.

8.5.1... How will information, in all forms, be disposed?

Digitial data will be permanently removed from hard-drives and hardcopies will be shredded.

8.6. Reporting individual results to participants and others

8.6.1 Is it intended that results of the research that relate to a specific participant be reported to that participant? No

8.6.1... Explain/justify why results will not be reported to participants.

The results will be de-identified and it will therefore not be possible to report a specific participants results back to that participant.

Further, the results are only relevant when data is considered as a group/cohort and individual data is therefore not relevant to the research questions when considered alone.

8.6.2 Is the research likely to produce information of personal significance to No

individual participants?

8.6.3 Will individual participant's results be recorded with their personal records? No

8.6.4 Is it intended that results that relate to a specific participant be reported to anyone other than that participant? No

8.6.5 Is the research likely to reveal a significant risk to the health or well being of persons other than the participant, eg family members, colleagues No

8.6.6 Is there a risk that the dissemination of results could cause harm of any kind to individual participants - whether their physical, psychological, spiritual, emotional, social or financial well-being, or to their employability or professional relationships - or to their communities? No

8.6.7 How is it intended to disseminate the results of the research? eg report, publication, thesis

A detailed communications plan has been developed that outlines all the different ways that the findings will be reported (video, flipbook, photos, reports, journal papers, policy briefs, fact sheets and web-info), when they will be reported, and to which stakeholders (government, community, research and industry). Ninti One's communications division will provide support to the research team and the Aboriginal community researchers to work together to develop these communication tools and to deliver them to each of the stakeholder groups. Communication tools to disseminate research findings to participating communities will be developed in partnership with the local Aboriginal community researchers who work on the project, in conjunction with other nominated community members with skills in culturally relevant communication.

8.6.8 Will the confidentiality of participants and their data be protected in the dissemination of research results? Yes

8.6.8... Explain how confidentiality of participants and their data will be protected in the dissemination of research results

Research outcomes will only be disseminated for group/cohort data. Individual data is not relevant or informative in this research design and therefore identifiable individual data will never be reported.

9. PROJECT SPECIFIC

9.7. Research Involving Aboriginal and Torres Strait Islander Peoples

You have indicated that the research involves Aboriginal and/or Torres Strait Islander peoples. You should refer to relevant guidelines as appropriate eg. .Values and Ethics: Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research http://www.nhmrc.gov.au/publications/synopses/e52syn.htm,
National Statement Chapter 4.7 and AIATSIS Guidelines for Ethical Research in Indigenous Studies.

9.7.1 What is the estimated proportion of Aboriginal and Torres Strait Islanders peoples in the population from which participants will be recruited?

The research project is intended to consist entirely of Aboriginal and Torres Strait Islander peoples.

9.7.2 Will the Aboriginal or Torres Strait Islander status of participants be recorded? Yes

9.7.2... Explain why the Aboriginal or Torres Strait Islander status of participants will be recorded

The role of cultural responsibilities in relation to education, employment, health and wellbeing is an important part of the research and as part of understanding cultural identity, participants will be asked about their cultural heritage including traditional lands and languages.

9.7.3 Will there be or has there been a process of consultation and negotiation between Aboriginal or Torres Strait Islander peoples and the researchers / investigators regarding the proposed research? Yes

9.7.2... Describe this process of consultation and negotiation. Include, as appropriate:
-how the consultation process and the research proposal demonstrates the integrity of the researcher
- negotiation of the aims, anticipated outcomes and priorities of the research,
- consultation regarding community and individual consent to participation in the research,
- the process for negotiating ongoing advice as the research progresses, to monitor ethical standards and minimise unintended consequences,
- how the processes show engagement with the values and processes of participating communities, and
- the process of negotiating access to, and /or control of the results of the research.

In order to answer this question, each community will be discussed seperately.

In Galiwin'ku, the Interplay project has partnered with the Yalu Marnggithinyaraw Indigenous Corporation and Charles Darwin University. Trevor Gurriwiwi from the Interplay Project Advisory Group is the Community Development Officer for Marthakal Homelands Resource Centre.
Two workshops have been held with the Interplay and Yalu research teams in Galiwin'ku in October 2012 and March 2013. The main priorities identified by the process that Yalu want to achieve through their involvement in the Interplay research project are to: (1) promote community based empowerment and (2) learn two-ways through the research so that Yalu researchers increase their knowledge and capacity of scientific research through their involvement in the Interplay project. Yolngu researchers from Galiwin'ku have attended a research planning and design workshop with other Interplay community researches in Alice Springs in May 2013.

In Wiluna, partnerships have been established with the Central Desert Native Title Services, Newmont and Curtin University who are linked through the Regional Partnership Agreement to support local initiatives including the Martu Ranger Programs. Health care is provided to the community by the Ngangganawili Aboriginal Health Service (NAHS). The Wiluna Native Title group who were granted native title in July 2013 and the Muntjiltjarra Wurrgumu Group (MWG) will work in partnership with the Interplay project team to undertake the research. The MWG is representative of the main family groups in the Wiluna region and will ensure that Martu people steer the work and direction of the Wiluna Regional Partnership Agreement (RPA) alongside the steering committee and industry partner's group. The group will focus on employment, training and setting up small-scale enterprise outcomes. The Mungarlu Ngurruankatja Rirraunkatja PBC will also be involved who are largely based in Wiluna and are the Martu native title holders for Birriliburu, north from Wiluna. This research location will provide a case study of social, health and wellbeing outcomes of recent changes in land tenure and management for Martu people, particularly the subsequent expansion of the Martu ranger employment programs.

9.7.4 Has there been a role for Aboriginal or Torres Strait Islander peoples in the development of the research and or will there be a role for Aboriginal or Torres Strait Islander peoples in the implementation of the research proposal. NS 4.7 Yes

9.7.4... Describe the role of Aboriginal or Torres Strait Islander peoples in the development and or implementation of the research.
Include, as appropriate:
- whether any or all of the researchers / investigators are Aboriginal or Torres Strait Islander people,
- how Aboriginal or Torres Strait Islander peoples from the community involved in, or affected by, the

research have collaborated in the development of the research,
- whether the participating communities have expressed satisfaction with the research agreement, potential benefits and their distribution,
- the extent to which reciprocal obligations, responsibilities and benefits is demonstrated between the researchers / investigators and the community

The project has a strong emphasis on involvement and ownership for Aboriginal and Torres Strait Islander people at all stages of the research. The project is managed by Ninti One Ltd and overseen by an advisory committee. Both of these groups are chaired by Aboriginal people and made up of approximately half Aboriginal and Torres Strait Islander members. Local community driven processes have informed the framework and research methodology of the project.

Each community in the study has be expressed support for the project. Researchers from each community have been hired and attended workshops in Alice Springs as well as consultations in their community with members of the rest of the research team. The community-based researchers met in May 2013 to decide on the research approach and methods. The same Aboriginal community researchers will do all of the data collection and will be strongly involved in interpreting the data and translation of research outcomes into practice.

9.7.7 Describe how the research will provide benefits to the Aboriginal and Torres Strait Islander peoples. Include, as appropriate:
- a description of how the research relates to the health priorities and needs of participant communities,
- a description of benefits for participants and the communities, including establishment and/or enhancement of capacities, opportunities and outcomes beyond the project,
- a description of how the research shows an intent to contribute to the advancement of the health and well being of participants and their communities

The short term benefits are the engagement of community members in the development of the research goals, methods and partners. This will increase the research capacity of the community and also provide a platform whereby their priorities are represented in a framework that will have advocacy in government. Giving Aboriginal and Torres Strait Islander peoples the opportunity to speak and listening to learn of their conceptual thinking, knowledge and understanding, and responding to their priorities and ideas, is a crucial part of this research and will create new directions for policy to improve outcomes across education, employment, health and wellbeing.

Upon successful uptake of research findings, end-users may utilise research outcomes to improve the quality of life (i.e., wellbeing) for Aboriginal and Torres Strait Islander people in remote communities by providing support for strategies in education and economic participation that have been shown by the research to be strongly related to positive health and wellbeing outcomes. Therefore long term impacts are the improve health and wellbeing.

A literature review has been published for the project that evaluated and documented the likely benefits of the research, titled: Working towards an Aboriginal and Torres Strait Islander wellbeing framework (see: http://us5.campaign-archive2.com/?u=db0c44a0a4db4cce9a3dccec0&id=864830d461&e=76f710e084).

A research output-to-usage-to-impact plan has also been developed to outline how the information from the research will be used to create genuine change for communities.

The project will build the capacity of Aboriginal researchers in the community and at national levels. Aboriginal and Torres Strait Islander people and policy makers will be provided valuable insight into the combination of factors across health, wellbeing, education and economic participation at individual and community levels that underlie optimal quality of life outcomes, and provide examples of how these can best be achieved. The impact of the research will be that communities and policy makers have access to meaningful data and information upon which effective strategies and policies can be based, precipitating transformative change. This will also build the capacity of education, health and employment services in the community and particularly for local priorities to be advocated through the research.

Aboriginal community based researchers have been recruited and trained to contribute to the research design, to collect and interpret the data and to work with the community. This is an example of employment opportunities for Aboriginal people as a result of the project.

10. DECLARATIONS AND SIGNATURES

10.1 Project Title

Interplay between Employment, Education, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas Project

10.2 Human Research Ethics Committee to which this application is made

Aboriginal Health Research Ethics Committee (EC00185)

Central Australian Human Research Ethics Committee (EC00155)

Department of Health WA Human Research Ethics Committee (EC00422)

Human Research Ethics Committee of Northern Territory Department of Health and Menzies School of Hea (EC00153)

SA Department of Health Human Research Ethics Committee (EC00304)

Social and Behavioural Research Ethics Committee (EC00194)

Western Australian Aboriginal Health Ethics Committee (EC00292)

10.3 Signatures and undertakings

Applicant / Principal Researchers (including students where permitted)

I/we certify that:

- All information is truthful and as complete as possible.
- I/we have had access to and read the National Statement on Ethical Conduct in Research Involving Humans.
- the research will be conducted in accordance with the National Statement.
- the research will be conducted in accordance with the ethical and research arrangements of the organisations involved.
- I/we have consulted any relevant legislation and regulations, and the research will be conducted in accordance with these.
- I/we will immediately report to the HREC anything which might warrant review of the ethical approval of the proposal NS 5.5.3 including:
  - serious or unexpected adverse effects on participants;
  - proposed changes in the protocol; and
  - unforseen events that might affect continued ethical acceptability of the project.
- I/we will inform the HREC, giving reasons, if the research project is discontinued before the expected date of completion NS 5.5.6 see NS 5.5.8(b);
- I/we will adhere to the conditions of approval stipulated by the HREC and will cooperate with HREC monitoring requirements. At a minimum annual progress reports and a final report will be provided to the HREC.

Applicant / Chief Researcher(s) / Principal Researcher(s)

A/Prof Sheree Cairney Flinders University	Signature	Date 5/1/14
Prof John Wakerman Centre for Remote Health	Signature	Date / /
Ms Kay Nevill Ninti One Ltd	Signature	Date 10/1/14
Ms Tammy Abbott Ninti One Ltd	Signature	Date 10/1/14
Mr Byron Wilson Menzies School of Health Research	Signature	Date 10/1/14
Dr Stephen Quinn Flinders University	Signature	Date / /

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Applicant / Chief Researcher(s) / Principal Researcher(s)

A/Prof Sheree Cairney Flinders University	Signature	8 / 1 / 14 Date
Prof John Wakerman Centre for Remote Health	Signature	/ / Date
Ms Kay Nevill Ninti One Ltd	Signature	/ / Date
Ms Tammy Abbott Ninti One Ltd	Signature	/ / Date
Mr Byron Wilson Menzies School of Health Research	Signature	/ / Date
Dr Stephen Quinn Flinders University	Signature	9 / 1 / 14 Date

Contents of Appendices – Interplay Project

NOTE: Appendices listed as 'pending' above will be forwarded to the HREC when they are received.

Interplay Project
Conceptual Framework and Research Design

Sheree Cairney - Principal Research Leader
Centre for Remote Health, joint centre for Flinders University and Charles Darwin University

Statement of the Context

The Cooperative Research Centre for Remote Economic Participation (CRC-REP) is managed by Ninti One Ltd and has been funded by the Commonwealth Government to address social and economic disadvantage in remote Australia through research and innovation (www.crc-rep.com).

An objective of the CRC-REP is to contribute to the Commonwealth Government's 'Closing the Gap' agenda of reducing socioeconomic inequality between Aboriginal and Torres Strait Islander and other Australians. The CRC-REP is therefore undertaking a prospective cohort study of the interrelationships or 'interplay' between health, wellbeing, employment and education in remote Aboriginal communities (*the Interplay project*). The Interplay project recognises that a unique set of cultural and social factors are relevant to Aboriginal and Torres Strait Islander people living in remote Australia that are not easily represented in existing models of government service delivery. The Interplay project also addresses deficiencies in the evidence currently available to inform policy decisions.

Purpose of the study

The Interplay project examines changes in health and wellbeing and related education and employment outcomes over time for Aboriginal and Torres Strait Islander people with initial focus on two remote communities across Australia.

This project aims to establish an evidence base that will provide policy makers and business objective measures of the complex interrelationships or 'interplay' between, health, wellbeing, education and economic participation.

Key Research Questions

1) What are the relationships between health and wellbeing outcomes and education and employment for individuals and communities living in remote Australia?
2) How effective are targeted interventions in this field?
3) How can policy and practice be better informed by this knowledge to maximise desired health and wellbeing outcomes?

BACKGROUND

An identified gap in outcomes across health and education for Aboriginal and Torres Strait Islander people compared with other Australians has led to the Australian Governments 'Closing the Gap' reform agenda. Underlying this approach is the globally endorsed social

determinants of health model that recognises the substantial impact of socioeconomic factors including educational opportunities and achievements on health and wellbeing outcomes. Limitations of this approach include that it provides a deficit model of life status for Aboriginal and Torres Strait Islander people that emphasises disadvantage and hopelessness.

A holistic approach that better aligns with Aboriginal and Torres Strait Islander views on health and wellbeing is provided by the emerging global movement to focus on wellbeing rather than economic indicators as markers of societal progress. A major challenge is to represent Aboriginal and Torres Strait Islander worldviews in a framework that aligns with government and scientific worldviews. The importance of representing community perspectives at government levels is addressed by the international growth of community indicator projects and networks, whose aims are to facilitate a truly democratic process of citizen engagement in defining, monitoring and altering progress. Community indicators provide statistical tools to inform communities and governments about the wellbeing of communities.

Framed in concepts from social determinants of health, wellbeing frameworks and community indicator models, the Interplay project has facilitated partnerships, collaboration and input from Aboriginal and Torres Strait Islander people on multiple levels to develop a framework. While the framework focuses on the role of education and economic participation for health and wellbeing, it also highlights additional indicators relevant to culture and community. Importantly, the development of novel objective indicators that accurately represent Aboriginal and Torres Strait Islander values and priorities will enable their importance across education, employment, health and wellbeing to be advocated and validated by communities, researchers, governments and industry.

INTERPLAY FRAMEWORK

Formative input to the Interplay framework design has included a literature review (Nguyen and Cairney, 2013), establishing a National Advisory Group meeting biannually, employment of Senior Aboriginal Researchers and Aboriginal Community Researchers to work on the project, and conducting a series of workshops with the research team, partners and with Aboriginal organisations in each participating community.

Wellbeing is defined both subjectively, in terms of how people feel about their quality of life, and objectively, in terms of the combined status of the various components that are important in one's life (ie, social, economic, environmental). The Interplay framework therefore represents wellbeing as being central or holistically representative of the other domains of health, education and economic participation. Formative work has emphasised the importance of culture, empowerment and community and these constructs have therefore been included as equivalent domains in the Interplay framework.

The ***Interplay framework*** therefore consists of the six core domains of culture, community, control, education, employment and health interconnected through an overarching concept of wellbeing as represented in Figure 1.

Figure 1 – *Visual representation of the core domains of the Interplay framework*

Key themes within each domain are represented by relevant indicators used to calculate overarching domain and wellbeing scores consecutively. Indicators will be derived from *primary data* including individual and community level surveys and *secondary data* including health, education and other administrative linked data. Figure 2 shows the key themes for each domain and how they will be derived from individual or community level surveys.

Figure 2 – *Data collection plan showing the core domains, their underpinning themes and whether they will be sourced from individual or community level surveys.*

The Interplay framework can be treated as a relatively dynamic construct. Core data components will need to be collected at each site and over time to enable comparison, with flexible components that can be modified, added or removed at the request of participating communities or as part of an ongoing refinement process.

METHODS

Study Design

The Interplay project is a *prospective cohort design* where data will be collected from the same communities and individuals longitudinally to observe any change over time. While the project has the potential to unfold as a life-course study, it is important to ensure that meaningful outcomes are delivered within the current funded project life-span to 2017. The cohort has therefore been selected based on the age range of individuals undergoing, or close to, the life-course transition following engagement in formal education.

Approximately 500 people aged 15-34 years from two participating communities (Galiwinku, NT and Wiluna, WA) will complete the individual surveys. As shown in Figure 3, baseline data will be collected for individuals in 2014 (wave 1) with follow up data collected from the same communities and individuals 18 months later in 2015 (wave 2). Longitudinal analysis will be applied to the primary data from the individual and community level surveys and secondary data from health and education records to assess changes in health and wellbeing, education and employment. This information will be mapped against the range of social and environmental factors (represented at the community level in Figure 2) to understand the interrelationships and identify key areas or life-course transitions whereby intervention may be targeted. Detailed case studies will be conducted for each of three communities to describe and qualitatively assess the impact of local programs, policies and interventions.

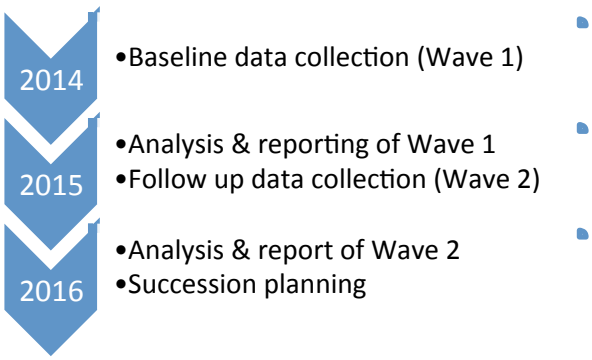


Figure 3 – *Project schedule for data collection and reporting*

Research Locations

In order to obtain meaningful results in the timeframe and budget for the project, priority has been given to conducting in depth consultations with two communities, using a case study approach. This will enable a deeper understanding of their strengths, issues and challenges to be gained, and should enable specific interventions in each community to be

assessed with respect to local cultural and contextual information collected qualitatively as part of the community level survey. As the framework and survey tools will be consistent, data can also be collapsed across communities to enable broader conclusions to be drawn for remote communities generally. This approach can strengthen the novelty, robustness and potential impact of the framework that consequently extends its potential for future use in other sites or applications.

Community selection was based on a combination of representing cultural and geographic diversity, established relationships with partner organisations within communities, and community self-selection whereby the research aligns with community identified needs.

The communities selected to participate in the Interplay research project are Galiwin'ku (NT) and Wiluna (WA). These communities represent diversity across population size, culture, language groups, ecology (coastal and desert), land tenure, governance and state/territory representation. Case study questions will be developed for each community based on community priorities identified through the initial community level survey and based on the unique qualities and activities of each community. Through preliminary consultation each participating community has identified a key focus area governing their interest to be involved in the Interplay project. For example, key research focus areas are: empowerment and two-way learning for Galiwin'ku; and widespread impacts of recent native title rights and related Caring for Country programs for Wiluna.

Cohort

Two discrete age (sub)-cohorts will be selected: youth aged 15-24 years; and young adults aged 25-34 years. While the three communities have broadly similar age structures, their populations differ in size, meaning that the minimum samples required for each age cohort will differ. The table below shows the **minimum** sample sizes needed to draw statistically valid conclusions (confidence level of 95% and a confidence interval of +/-5%). Table 1 shows population counts (N) and minimum sample sizes (n) needed for each cohort. Each cohort has been treated as a discrete population in its own right. This is a conservative approach that produces larger minimum sample sizes than what would typically be required to produce valid estimates, but allows for substantial loss to follow-up (>20%).

Table 1*: Suggested sample sizes for age cohorts*

Community	15-24 years	25-34 years
Galiwin'ku (NT)	179 (335)	178 (330)
Wiluna (WA)	46 (53)	50 (58)

Based on ILOC by INGP Indigenous Status and AGEP, 2011; Source: ABS unpublished data; N=population count; n=minimum sample sizes for each cohort.

Individual Survey

Individual level information will be collected using a survey that has been informed by qualitative information but will generate quantitative information, to ensure the data has sufficient validity and reliability to be used for longitudinal and comparative analysis. A review was conducted of standardised assessments that are statistically validated as

culturally relevant for use with Aboriginal and Torres Strait Islander people, and these were incorporated into the survey instrument where possible. Where existing validated items do not exist, additional survey items were developed through cultural and statistical consultation and based on the literature, and modelled with the 5-point likert scale of response options that is common amongst the validated surveys. Primarily related to culture, these new survey items were also informed by other CRC-REP projects that relate to remote education, mobility and art and cultural enterprises.

The survey is designed to generate valid, reliable and quantifiable responses that will serve as indicators to represent domains in the Interplay framework. The survey will be administered by Aboriginal community researchers using hand held tablets loaded with the *isurvey* software, and will take approximately one hour to complete. If necessary, it will be completed over two half-hour sessions on different days.

Community survey

Community level information including qualitative and quantitative data will be collected through focus groups with key representatives in order to understand the contextually relevant factors unique to each community. Methods for collecting community level data may vary slightly across communities, as informed by community-based host organisations and Aboriginal community researchers in each location. This process will enable communities to identify local priorities and data sources that allow the research framework to be tailored for each community, while retaining the core elements necessary to support the project's national focus.

Secondary data

Individual survey data will be linked with secondary data accessed from health centres and data linkage programs including educational outcomes and incidences of chronic disease including mental health problems. Community level secondary data on morbidity, mortality, accessibility to health services (including utilisation and health expenditure), infrastructure, safety, governance, educational systems, educational outcomes and economic participation will be collected from government and community administrative data.

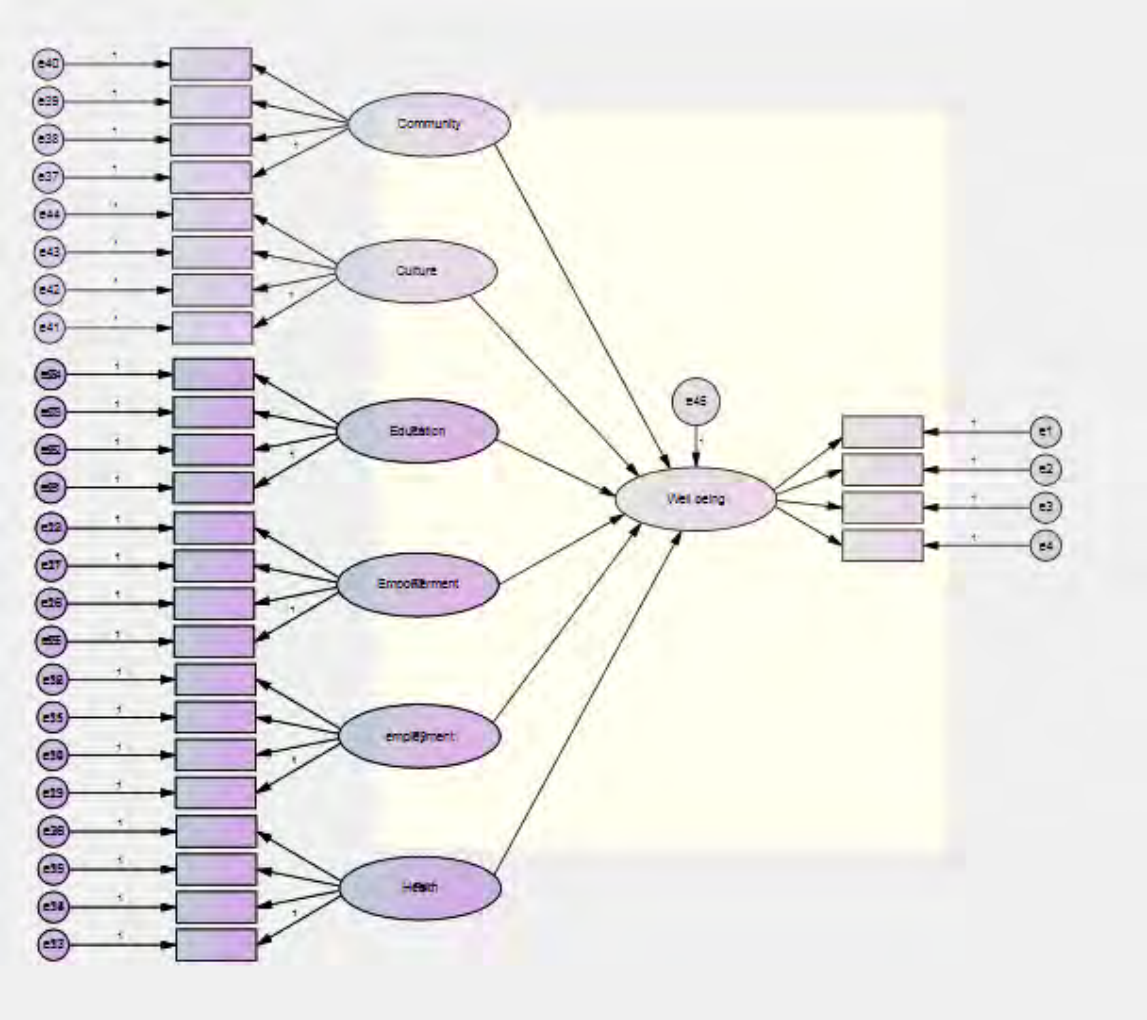
Clearances

For each participating community, clearances to proceed with the research will be obtained from relevant community groups, land council, Human Research Ethics Committee, local Health Board and state or territory wide data linkage program.

Data analysis

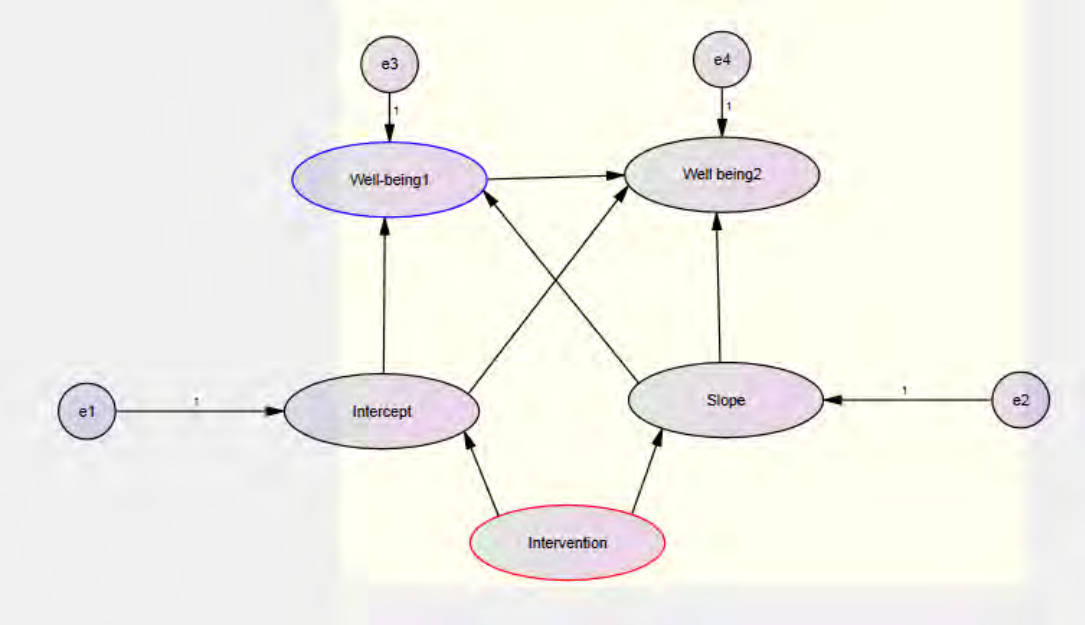
The main domains (i.e. latent traits) are culture, community, empowerment, education, employment and health. Each domain will be scored based on indicators derived from the survey items and secondary data relevant to the domain. The reliability for the indicators comprising each domain will be examined using Cronbach's alpha. Indicators that do not load well on the domain or that decrease reliability will be potentially deleted.

Multi-group confirmatory factor analysis will be used to test invariance of the underlying measurement structures across the three communities. Assuming this to hold, in Wave 1 and Wave 2 the latent predictors of wellbeing will be examined using the following structural equation model where the observed variables that comprise the indicators collected in the different surveys are represented as rectangles:



The model will be validated by checking a variety of model fit indices such as chi-square, CMIN, GFI PCFI, PCLOSE and RMSEA. Covariances between indicators loading on the same domain will be will be allowed to improve model fit, and residuals will be examined via standardised residual covariances.

To address the second aim, the change in wellbeing at successive timepoints as a function of the targeted interventions will be examined using a latent curve growth model as depicted below, with appropriate regression weights, means and intercepts, where wellbeing is informed at each wave by the previous diagram:



The model will be validated as above and the primary interest is the significance of the regression weight of the intervention on the slope, obtained by comparing the unsconstrained model to a model with the slope constrained to zero. Multivariate regression analysis will also be used to address the second research question as a sensitivity analysis (i.e. *How effective are targeted interventions in this field?)* by identifying the key factors at social, cultural, community and policy levels that have the strongest impact on health and wellbeing outcomes. The impacts on community and individual level health and wellbeing will be assessed for specific interventions and programs implemented over the course of the project. As such, each community will be treated as a case-study for this part of the analysis. Analysis will be conducted for question 2 separately for each community.

To address the third research question (*How can policy and practice be better informed by this knowledge to maximise desired health and wellbeing outcomes?),* the above analyses will identify the primary social and environmental factors that most strongly influence health and wellbeing and therefore guide effective policy development to optimise health and wellbeing outcomes.

Policy

The six core domains of the Interplay framework (culture, empowerment, community, education, employment, health and wellbeing) map closely to the building blocks identified by the Council of Australian Governments (COAG) 'Closing the Gap' agenda (see Table 2).

Table 2– *Domains from the Interplay framework mapped against the building blocks of the Australian Government's 'Close the Gap' policy*

Interplay Domain	Culture	Empowerment	Community	Education	Livelihood	Personal Health & Wellbeing
Policy Building Blocks		Governance & Leadership	Early Childhood Healthy Homes Safe Communities	Schooling	Economic Participation	Health

Current government measurement frameworks that report on progress against the Closing the Gap agenda include the Aboriginal and Torres Strait Islander Health Performance Framework, the Overcoming Indigenous Disadvantage measures, the Australian Bureau of Statistics Aboriginal and Torres Strait Islander Wellbeing Framework and the National Aboriginal and Torres Strait Islander Social Survey (NATSISS). The Interplay framework uses similar concepts and leading indicators to these reporting frameworks. However, the novel contribution of the Interplay framework is through: (1) a focus on remote communities; (2) development and validation of new community indicators, particularly to represent culture; (3) taking a whole of system approach; (4) the focus on interrelationships and (5) assessing the suitability of culturally based and community-derived indicators in relation to standard government indicators to predict wellbeing.

Project Outputs

The Interplay project expects to deliver a framework and assessment tools to monitor and evaluate the interplay between education, employment, health and wellbeing in remote Aboriginal and Torres Strait Islander communities. Reports will be delivered outlining the development and validation of the framework and its application in each of the baseline and longitudinal waves of data collection to address the research questions. Separate reports will be delivered addressing the research questions identified by each community, after each wave of data collection, accompanied by appropriate communication resources to deliver research findings in an accessible way for communities (ie, video, animation, flipchart). Community consultation strategies will be reported and key research findings will be outlined in briefs delivered to policy makers. Research capacity will be developed through the completion of two post-graduate students, two VET or vacation students, and the on-ground training of approximately 20 Aboriginal Community Researchers.

Project Impacts

Project outputs will include a powerful tool to inform and measure objectively the impact of a range of policies and programs, in addition to new measures of the interrelationships between education, employment, health and wellbeing, including key influences such as culture and empowerment.

If implemented, these tools have the potential to: improve the quality of life for Aboriginal and Torres Strait Islander people through an established evidence base to inform government policy and community initiatives; improve health and wellbeing through the delivery of more valued, relevant and linked education and employment opportunities; empower Aboriginal and Torres Strait Islander people to be more actively involved in decisions, programs and reporting of objective measures to policy; and finally, save costs for government in healthcare, education and service delivery.

Literature review of the interplay between education, employment, health and wellbeing for Aboriginal and Torres Strait Islander people in remote areas

Working towards an Aboriginal and Torres Strait Islander wellbeing framework

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CW013 | **2013**

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Contents

Shortened forms

ABS	Australia Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ALM	Aboriginal Land Management
CDEP	Community Development Employment Projects program
CIVP	Community Indicators Victoria Project
COAG	Council of Australian Governments
CSDH	Commission on the Social Determinants of Health
FaHCSIA	Department of Families, Housing, Community Services and Indigenous Affairs
HPF	Aboriginal and Torres Strait Islander Health Performance Framework
OID	Overcoming Indigenous Disadvantage
NAHS	National Aboriginal Health Strategy
NATSISS	National Aboriginal Torres Strait Islander Social Survey
NSFATSIH	National Strategic Framework for Aboriginal and Torres Strait Islander Health
NT	Northern Territory
SEWB	Social and Emotional Wellbeing
SEWBF	Social and Emotional Wellbeing Framework
WAACHS	Western Australian Aboriginal Child Health Survey
WHO	World Health Organization

Executive summary

The availability of timely, comprehensive and good quality data specifically relevant to remote Aboriginal and Torres Strait Islander notions of health and wellbeing has been a significant obstacle to understanding and addressing related disadvantage in a meaningful way. This literature review for the CRC-REP *Interplay Between Health, Wellbeing, Education and Employment* project explored existing wellbeing frameworks at global and local levels that are relevant to Aboriginal and Torres Strait Islander people in remote Australia.

Current government frameworks that collect data about Aboriginal and Torres Strait Islander people often produce a narrative that describes deficit, disadvantage and dysfunction. The frameworks include the Aboriginal and Torres Strait Islander Health Performance Framework, the Overcoming Indigenous Disadvantage Framework, the Australia Bureau of Statistics Aboriginal and Torres Strait Islander Wellbeing Framework and the National Aboriginal and Torres Strait Islander Social Survey. These frameworks gather statistical information for the purposes of policy analysis and program development and therefore use indicators that are important to policy. Increasingly, government frameworks are including holistic measures of health such as cultural health, governance and the impacts of colonisation.

This literature review has identified the need to develop a wellbeing framework that not only accurately represents education, employment, health and wellbeing and the interplay between these and other factors, but that also recognises the strengths and resilience of Aboriginal and Torres Strait people as well as reflecting their worldviews, perspectives and values. For example, a definition of 'wellbeing' that highlights the importance of *physical*, *social*, *emotional*, *cultural and spiritual* influences at the level of the individual and the community has been endorsed by Aboriginal and Torres Strait Islander groups and governments alike and sustained for over 20 years. Accordingly, this literature review has been organised along these topics.

In addition, the literature suggests that optimal wellbeing occurs when there is strong cultural identity in combination with control, achievement and inclusion at a wider societal level, such as through successful engagement in education and employment. Listening to Aboriginal and Torres Strait Islander people to learn of their conceptual thinking, knowledge and understanding, and responding to their priorities and ideas are crucial parts of the policy equation to improve outcomes across education, employment, health and wellbeing. The challenges in developing an appropriate wellbeing framework, then, are ensuring the active involvement and participation of the Aboriginal and Torres Strait Islander people.

One example of how this has worked is provided by the Community Indicators Victoria Project, which used local-level data to address issues that the local community identified as important. A focus on strengths is also important, and is exemplified in the Social and Emotional Wellbeing Framework of the National Aboriginal and Torres Strait Islander Health Council and National Mental Health Working Group. Various existing programs – such as 'Caring for Country' – can be adapted to capture data about connection to country, for example, and how that impacts on physical and mental health. Critically, the core domains of education, employment and health need to be extended to include activities and concepts that Aboriginal and Torres Strait Islander people consider important to these areas.

Recommendations for the development of a wellbeing framework are proposed here, derived from information available in the literature. Rather than being definitive, these recommendations provide a starting point for consultation and adaption towards establishing a wellbeing framework and operational system for collecting and analysing long-term health and wellbeing data for Aboriginal and Torres Strait Islander people in remote Australia as part of the research conducted by CRC-REP.

Recommendations for a wellbeing framework for Aboriginal and Torres Strait Islander people in remote Australia

Based on this review of the academic literature and global and national initiatives, the following recommendations are made towards the development of a wellbeing framework for Aboriginal and Torres Strait Islander people in remote Australia.

Recommendation 1 – Aboriginal and Torres Strait Islander people are involved in the research and their perspectives represented

Recommendation 2 – A strength-based model is used rather than focusing on deficits

Recommendation 3 – Focus on interrelationships between health and wellbeing, education and employment, and their contexts for Aboriginal and Torres Strait Islander people in remote Australia

Recommendation 4 – The following core themes are represented across the framework

- Theme 1 – Kinship, culture, land and spirituality
- Theme 2 – Control or empowerment
- Theme 3 – Healthy, safe and inclusive communities
- Theme 4 – Resilience

Recommendation 5 – The framework has broad definitions of its core domains:

- *Domain 1* – Education is considered as learning that is inclusive of mainstream education and training, but also extending to include all activities of learning related to work and health such as learning Aboriginal and Torres Strait Islander knowledge.
- *Domain 2* – Employment is considered as livelihood that is inclusive of mainstream employment with income as an indicator, but extends to include other livelihood activities, including voluntary or traditional roles.
- *Domain 3* – Health is considered as biomedical health as well as social and emotional wellbeing, culturally relevant notions of health and, particularly, resilience.

1. Introduction

1.1 The Interplay project

The objective of the Cooperative Research Centre for Remote Economic Participation (CRC-REP) is to deliver solutions to the economic challenges in remote locations and to contribute to the Australian Government's Closing the Gap agenda of reducing socio-economic inequality between Aboriginal and Torres Strait Islander and other Australians, while also accommodating unique cultural and social practices that are important to the people living in Aboriginal and Torres Strait Islander settlements. As part of this work, the CRC-REP is undertaking a longitudinal research project investigating the interplay between health, wellbeing, education and employment in remote Aboriginal and Torres Strait Islander settlements. This framework will be used to evaluate the impact of interventions and inform policy in these areas.

The key research questions of the Interplay project are:

1. What are the relationships between health and wellbeing outcomes and education and employment for individuals and communities living in remote Australia?
2. How effective are targeted interventions in this field?
3. How can policy and practice be better informed by this knowledge to maximise desired health and wellbeing outcomes?

There are three main stages to the project: the first (two years) will develop and pilot protocols; the second (two years) will involve data collection; and the final (18 months) will translate study findings and seek funding for longitudinal monitoring of participants. In the long term, this research aims to improve the quality of life for Aboriginal and Torres Strait Islander people living remotely. This will be through coordinated transformative change driven by policy and community action, using the rich knowledge derived through the research as a base.

1.2 The review

An estimated 300–500 million Indigenous peoples live worldwide, forming 5000 distinct groups (Anderson & Whyte 2008, Gracey & King 2009, Stephens et al. 2006). Despite the great diversity of Indigenous peoples, many similarities exist across health, illnesses and their determinants. Indigenous peoples are over-represented among the poor and disadvantaged and, compared with the wider population, generally experience lower life expectancies; higher incidences of chronic diseases such as diabetes, heart disease and cancers; higher incidence of mental health disorders and damaging substance misuse; and a relatively higher incidence of infectious diseases (Anderson & Whyte 2008, Burgess et al. 2005, Freemantle et al. 2007). Overall, the health of Indigenous populations worldwide compares unfavourably with their non-Indigenous, counterparts warranting the increasing international attention given to the health and social circumstances of Indigenous peoples over the last couple of decades (Anderson & Whyte 2008, Gracey & King 2009). This attention is particularly pertinent for Australia's Aboriginal and Torres Strait Islander people, who not only generally have worse health than other Australians, they also have worse health than comparable Indigenous populations in the United States, New Zealand and Canada (Booth & Carroll 2008, Hunter 2007).

Most countries do not officially recognise their Indigenous groups, and have inaccurate or no published statistical health data for these peoples (Gracey & King 2009). However, Native Americans, First Nations people of Canada, and Māori in New Zealand are Indigenous groups who are easily identified, as are Australia's Aboriginal and Torres Strait Islander people. Even within these Indigenous populations for which health data are collected, the data quality may be variable. Also, the data tend to be framed by biomedically defined measures of health and illness (Anderson & Whyte 2008, Gracey & King 2009), focusing on non-Indigenous, rather than Indigenous, notions of health (King et al. 2009). Indigenous peoples define health and wellbeing far more broadly than merely physical health or the absence of disease (Ganesharajah 2009), and the availability of timely, comprehensive, good quality data specifically relevant to remote Aboriginal and Torres Strait Islander notions of health and wellbeing has been a significant obstacle to understanding and addressing related disadvantage in a meaningful way.

In Australia, data collected on diseases – such as cancer, for example – continue to be inadequately collected to include Aboriginal or Torres Strait Islander status; as a result, the burden of many diseases among Aboriginal and Torres Strait Islander people continues to be underestimated (Garvey et al. 2011). The concept of 'social and emotional wellbeing' (SEWB) is increasingly used when referring to Aboriginal and Torres Strait Islander health (Gooda 2010, Jordan et al. 2010). It has been noted for some time that the body of Aboriginal and Torres Strait Islander research and ongoing government interventions in Australia, which have focused on Western ways of knowing and do not reflect the needs of Aboriginal and Torres Strait Islander communities, have failed to positively impact on the wellbeing of Aboriginal and Torres Strait Islander people (Kendall et al. 2011).

In light of the emerging global recognition of the inadequacies of conventional socio-economic and demographic data to reflect the relative wellbeing of Indigenous peoples (Prout 2011), this literature review explores existing wellbeing frameworks at global and local levels that are relevant to Aboriginal and Torres Strait Islander people in remote Australia. It identifies relevant indicators within an Aboriginal and Torres Strait Islander wellbeing framework – particularly those relating to education, employment and health – and reviews and presents evidence of interrelationships between these variables within a remote context.

2. Health and wellbeing frameworks

2.1 Framing health: global perspectives

Health disparities are widely prevalent within and between countries (Johnson et al. 2008). While society has traditionally looked to the health sector regarding health and disease, there is increasingly widespread recognition that 'health' is more than the absence of disease, and that a holistic approach should guide efforts to improve health (Devitt et al. 2001, Marmot et al. 2008, World Health Organization 2011). It is also accepted that much of the global burden of disease and the major causes of health inequities arise from the *social determinants of health*.

2.1.1 The social determinants of health

Although individuals do make choices about health behaviours, psychological and physiological health outcomes are influenced by structures that are beyond personal choice (Carson et al. 2007). The recognition of the social determinants of health has been largely influenced by Wilkinson and Marmot's publication *Social Determinants of Health: The Solid Facts* (2003). The Commission on the Social Determinants of Health (CSDH)[1] has defined the social determinants of health as 'the conditions in which people are born, grow, live, work and age, including the health system' (World Health Organization 2011).

Wilkinson and Marmot identify ten key determinants of health that apply to people worldwide. The first is 'the social gradient', which highlights that poor social and economic circumstances affect health throughout life; those in lower socio-economic positions experience the worst health, including high levels of illness and premature mortality. This is true in even the most affluent countries. The other key determinants are stress, early life, social exclusion, work, unemployment, social support, addiction, food, and transport (Wilkinson & Marmot 2003). The CSDH asserts: 'Change the social determinants of health and there will be dramatic improvements in health equity' (World Health Organization 2011).

2.2 Aboriginal and Torres Strait Islander health

In 2006, the Aboriginal and Torres Strait Islander population was estimated to be about 517,000, constituting 2.5% of the total Australian population (AIHW 2011a). A significant life expectancy gap of 17 years was reported between the Aboriginal and Torres Strait Islander population and other Australians between 1996 and 2001 (ABS & AIHW 2005). More recently, an alternative method of calculation estimated the 'gap' to be 11.5 years for males and 9.7 years for females between 2005 and 2007 (AIHW 2011a). Several studies have explored the contributing factors on this gap in life expectancy and estimated their relative influences, reporting 77% to be attributed to preventable chronic diseases in remote NT communities (Zhao et al. 2008), 17% to tobacco, 16% to high body mass, 12% to physical inactivity, 7% to high blood cholesterol and 4% to alcohol (Vos et al. 2009) and, in a separate analysis that explored the role of socio-economic factors, 25% was attributed to years of schooling (DSI Consulting & Benham 2009). In fact the terminology of the 'gap' has also been used to describe reduced performance on indicators of educational outcomes for Aboriginal and Torres Strait Islander people compared with other Australians. In relation to education and employment, Aboriginal and Torres Strait Islander people are less likely to have formal qualifications, and are more likely to have lower income levels and be unemployed

[1] The CSDH was set up by the World Health Organization (WHO) in 2005 to marshal the evidence on what could be done to promote health equity.

(Booth & Carroll 2008). Consequently, it has been argued that 'we are doing very badly at the level of social determinants' (Tait 2011). Certainly, government reports indicate that 'determinants of health – such as contact with the criminal justice system … and health behaviours – such as tobacco use … continue to represent significant challenges to achieving health equity for Aboriginal and Torres Strait Islander peoples, families and communities' (AHMAC 2011). Other health and wellbeing indicators clearly highlight the poor health and disadvantage of Australia's Aboriginal and Torres Strait Islander people, and these are highlighted in a later section.

Reducing this 'gap' in health outcomes has been the focus of 'Closing the Gap' policies that have subsequently been criticised for promotion of the deficit and dysfunction label for Aboriginal and Torres Strait Islander people. Focus on the 'gap' can prevent acknowledging the influence of colonisation, acculturation stress and the strength and resilience demonstrated in adapting to these conditions (Jordan et al. 2010, Pholi et al. 2009). However, these policies do highlight unacceptable disparities in opportunity and outcomes as outlined by the Aboriginal and Torres Strait Islander Social Justice Commissioner (HREOC 2005). With increasing international focus on these disparities, the Australian Government is under pressure to find strategies that genuinely improve wellbeing for Aboriginal and Torres Strait Islander people. Importantly, the positive implication here is that the poor current health status experienced by Aboriginal and Torres Strait Islander people has, at its foundation, contributing factors that are predominantly preventable if addressed at social and economic levels.

2.2.1 Remote Australia

Approximately one-third (32%) of all Aboriginal and Torres Strait Islander people live in major cities, while 43% live in regional Australia and 25% live in remote areas[2] (AIHW 2011a). By comparison, only 3% of other Australians live in remote areas (Altman & Gray 2005). In the Northern Territory (NT), four in five Aboriginal people live in either remote or very remote areas (AIHW 2011a).

Some literature indicates that Aboriginal and Torres Strait Islander people living in rural and remote settings experience more disadvantage (Booth & Carroll 2008, Marmot et al. 2008, Tedmanson & Guerin 2011). In 2008–09, for example, Aboriginal and Torres Strait Islander people living in remote areas had higher rates of hospitalisation than those in other parts of Australia (AIHW 2011a). Disorders of mental health and of SEWB are more common in remote settings (Hunter 2007), and participation in education is low (ABS 2011a, AIHW 2011a, Biddle 2010). However, the Western Australian Aboriginal Child Health Survey (WAACHS) yielded significant information on morbidity across different regions, and showed that residence in extremely remote areas appears to be protective against many lifestyle health issues, including substance misuse (Blair et al. 2005). The WAACHS also suggests that other factors, such as living on traditional land, predispose to better health and life expectancy in very remote areas (Scrimgeour 2007). Based on data from two communities in central Australia collected over seven years, a further study reported that people living in small outstation or homeland communities were healthier than those living in larger settlements (McDermott et al. 1998). A 10-year follow up of the same cohort reported reduced morbidity and mortality, particularly on indicators of cardiovascular disease, for those living in decentralised outstations (Rowley et al. 2008). These findings were attributed to localised empowerment, including supported outreach health services, strong connections to land, culture and family and associated benefits of healthy diets, physical activity and limited access to alcohol. It has been argued, therefore, that

[2] The ABS defines remoteness using the Accessibility/Remoteness Index of Australia (ARIA), based on transformation of physical road distance to the nearest urban centre with a population above 250,000 people (DoHAC 2001).

data reflecting higher mortality rates in rural and remote areas than in urban areas should be treated with caution due to problems with data quality (Scrimgeour 2007). While some commentators insist that Aboriginal people 'living in remote locations … should be encouraged to leave in search of better opportunities' and improved health outcomes, others argue that social and health problems are not confined to remote settlements; in fact, there are many benefits available to Aboriginal people who live on their traditional land (Burgess et al. 2005, Scrimgeour 2007, Zubrick et al. 2010). However, the lack of services and employment prospects in remote areas continue to cause a population drift towards large Aboriginal townships, causing further deterioration of service provision in remote centres (Burgess et al. 2005). These studies show that including factors such as living on traditional lands, empowerment and local concepts of inclusion and isolation may create better wellbeing models than using the mainstream indicators currently employed in national surveys, which may lack the specificity to understand locally relevant pathways to good health.

2.3 Framing health: Aboriginal and Torres Strait Islander health and wellbeing

Social and emotional wellbeing is an integral part of the holistic view of health held by many Aboriginal and Torres Strait Islander people and, generally speaking, the idea of wellbeing is broader and more inclusive than Western conceptions of health (Ganesharajah 2009, Garvey 2008). In Australia, with increasing consideration of these holistic concepts of health and the release of a National Aboriginal Health Strategy (NAHS) in 1989, Indigenous health was defined holistically as 'the physical, social, emotional, cultural and spiritual wellbeing of the individual and wellbeing of the whole community' (Jordan et al. 2010, Malin & Maidment 2003). Endorsed by Aboriginal and Torres Strait Islander and government groups alike, this definition has been echoed in similar approaches to understanding Indigenous health overseas and has become a standard definition in Australian academic literature and related health research over the last two decades (Jordan et al. 2010). This definition is consequently used in the current article to frame the reviewed material.

Research has identified that the health of Aboriginal and Torres Strait Islander Australians is clearly impacted by social determinants such as employment and education (Carson et al. 2007, King et al. 2009, Pholi et al. 2009). In addition, the Productivity Commission recently acknowledged the link between poor health and low educational and economic status for remote Australia (SCRGSP 2009), in alignment with globally recognised social determinants of health models. While receiving increasing recognition and policy focus, the role of these factors is not well understood (Siciliano et al. 2006, Walter & Mooney 2007). The lack of and critical need for good data on the link between education and health and wellbeing for Aboriginal and Torres Strait Islander people has been particularly noted (Dockery & Milsom 2007, Dunbar & Scrimgeour 2006). Notable exceptions are the landmark WAACHS (Zubrick et al. 2005a) which measured the health and wellbeing of children from 4 to 17 years old, including emotional and behavioural difficulties. Similarly, the *Longitudinal Study of Indigenous Children* monitored wellbeing and socio-economic factors in 1,650 children and their parents (Biddle 2011). By developing an understanding of the long-term and holistic impacts on Aboriginal and Torres Strait Islander health and wellbeing, these projects have the potential to be transformative for policy and practice in addressing remote area disadvantage and supporting Australian Government objectives on Aboriginal and Torres Strait Islander economic participation (Council of Australian Governments 2008). No comparable longitudinal studies have focused on health and wellbeing outcomes for Aboriginal and Torres Strait Islander adults, and an evidence base to inform policy is lacking.

While the holistic nature of Aboriginal and Torres Strait Islander notions of health has long been recognised, the substantial body of research and government activity in this field have largely been biomedical and focused on specific conditions, their symptomatology and epidemiology. As outlined above, the role of social determinants on health has more recently been recognised. However, Aboriginal and Torres Strait Islander definitions of health, which often extend beyond and sometimes conflict with conventional health reporting frameworks, continue to be marginalised (Freemantle et al. 2007, Pholi et al. 2009, Smylie et al. 2006, Taylor 2008). Often shaped by political agendas, frameworks used to collect information do not account for the dynamics within Aboriginal and Torres Strait Islander societies (such as collective power and control); cultural difference; or of the structural conditions and relationships with mainstream Australia, where Aboriginal and Torres Strait Islanders are a socially excluded minority (Hunter & Jordan 2010, Jordan et al. 2010, Marmot 2005, Pholi et al. 2009, Taylor 2008). In fact, Taylor suggests that appropriate indicators, should they exist, would stand outside and therefore be excluded from more mainstream indicator frameworks (Taylor 2008). As government decisions on health-related funding are based on reporting processes, it is vitally important to develop and monitor appropriate indicators that accurately represent the values and perspectives of Aboriginal and Torres Strait Islander people to achieve real health gains in this population.

2.4 Australian Government frameworks

As Saggers and Gray articulate: 'When innumerable reports on the poor state of health are released, there are expressions of shock or surprise and outraged cries for immediate action. However, the reports appear to have no real impact and the appalling state of Aboriginal health is soon forgotten and another report is released' (Saggers & Gray 2007). If information collected is to be used in any meaningful way to improve health and wellbeing, a (reporting) framework needs to be developed that incorporates 'greater recognition of Indigenous concerns, interests and interpretations of development and wellbeing' (United Nations Permanent Forum on Indigenous Issues, cited in Taylor 2008). Government reporting frameworks have, over time, attempted to include some of these factors in their collection of data regarding Aboriginal and Torres Strait Islander people. Nonetheless, government frameworks have been criticised for continually failing to accommodate Aboriginal perspectives on wellbeing, and therefore containing inappropriate indicators and data collection methods (Gooda 2010, Hunter & Jordan 2010, Jordan et al. 2010, Taylor 2008, Yu 2011). While the primary role of social determinants on poor health outcomes in disadvantaged populations is established, social interventions delivered to date in Australia that are largely 'top down' have yet to improve health for Aboriginal and Torres Strait Islander people. In alignment with the human rights approach that states 'Indigenous peoples have the right to full and effective participation in decisions which directly or indirectly affect their lives' (United Nations Permanent Forum on Indigenous Issues 2005a), these reports suggest that social indicators and consequent interventions, developed in conjunction with community groups and that recognise their strengths, would have more impact**.** Genuine, active and ongoing involvement of Aboriginal and Torres Strait Islander people in the 'ground up' development and coordination of frameworks, indicators and reporting processes on issues central to their wellbeing, and stronger linkages between data collection and action are therefore necessary to achieve improved wellbeing in this population.

2.4.1 Aboriginal and Torres Strait Islander Health Performance Framework

The *Aboriginal and Torres Strait Islander Health Performance Framework* (HPF), first published in 2006, was developed to provide the basis for measuring the impact of the *National Strategic Framework for Aboriginal and Torres Strait Islander Health* (NSFATSIH) and inform policy analyses, planning and

program implementation (AHMAC 2011). The HPF consists of 71 indicators covering three tiers: Health Status and Outcomes, Determinants of Health, and Health Systems Performance (AIHW 2011b). Tier 1 contains four domains, including wellbeing and several indicators that encompass *community functioning (1.14)* and *social and emotional wellbeing (1.16)*. Determinants of Health (Tier 2) contains five domains: environmental factors, socio-economic factors, community capacity, health behaviours, and person-related factors, with indicators under these domains including *community safety (2.13)* and *Indigenous people with access to their traditional lands (2.17).*

2.4.2 Overcoming Indigenous Disadvantage

The Overcoming Indigenous Disadvantage (OID) framework was designed to report progress towards addressing 'Indigenous disadvantage'. The reporting framework draws heavily on socio-economic indicators from census and survey sources and is 'constructed around a very explicit causal model of Indigenous disadvantage highlighting the domestic settings of child rearing and the interactions between family and schooling' (Taylor 2006). The framework is based around three Priority Outcomes: that 'reflect a vision for how life should be for Indigenous people' (SCRGSP 2011). These are: 1) Safe, healthy and supportive family environments with strong communities and cultural identity; 2) Positive child development and prevention of violence, crime and self-harm; and 3) Improved wealth creation and economic sustainability for individuals, families and communities. The COAG's recent 'Closing the Gap' policy targets – now a key feature of the OID – have been criticised for placing undue emphasis on statistical socio-economic equality at the expense of recognising cultural difference (Jordan et al. 2010).

2.4.3 The Australian Bureau of Statistics (ABS) Aboriginal and Torres Strait Islander Wellbeing Framework

The ABS Wellbeing Framework for Aboriginal and Torres Strait Islander people was developed to map statistical information. Broadly, the ABS identified nine areas to measure wellbeing: culture, heritage and leisure; family, kinship and community; health; education, learning and skills; customary, voluntary and paid work; income and economic resources; housing, infrastructure and services; law and justice; citizenship and governance. The ABS acknowledges that, while this framework is useful for measuring overall wellbeing, it does not take into account the unique cultural and historical factors that affect the individual and community wellbeing of Aboriginal and Torres Strait Islander peoples (ABS 2011b).

2.4.4 National Aboriginal Torres Strait Islander Social Survey (NATSISS)

Conducted in 2002–03 and 2008–09 by the ABS, the NATSISS was designed to assist in policy analysis and program development aimed at providing services to Aboriginal and Torres Strait Islander people. The first survey was of Aboriginal and Torres Strait Islander people aged 15 years and over, and the 2008–09 NATSISS included children aged under 15 years (ABS 2009). The 2008–09 NATSISS provides information on demographic, social, environmental and economic indicators, including personal and household characteristics, geography, language and cultural activities, social networks and support, health and disability, education, employment, financial stress, income, transport, personal safety, and housing. Information from the 2008 NATSISS contributes to existing data and the formulation of government policies and legislation (ABS 2009).

Yu argues that the NATSISS is not relevant for Aboriginal and Torres Strait Islander people as its underlying assumption is that Aboriginal and Torres Strait Islander people achieve wellbeing when they adopt the fundamental tenets of western society (Yu 2011). Similarly, Altman and colleagues argue that, while the NATSISS should allow collection of statistics that capture difference, this 'possibility is circumscribed by ABS acquiescence to the dominant paradigm of Closing the Gap and normalisation'

(Altman et al. 2011). Prout argues that while the NATSISS collect some data regarding wellbeing, the results of those surveys cannot be disaggregated at small geographical scales or for particular Aboriginal and Torres Strait Islander language and/or cultural groups (Prout 2011).

2.5 Other Aboriginal and Torres Strait Islander wellbeing frameworks

The concept of social and emotional wellbeing (SEWB), of which mental health is a component, is preferentially framed in Aboriginal and Torres Strait Islander health as it 'recognises the importance of connection to land, culture, spirituality, ancestry, family and community, and how these can affect the individual (Purdie et al. 2010). Consequently, it is increasingly referenced in research, politicians' public statements and in formal reporting frameworks (Gooda 2010, Jordan et al. 2010). With the NAHS' more holistic definition of Aboriginal and Torres Strait Islander health as a backdrop, a number of authors have further identified some unique components for a wellbeing framework. Prout (2011) outlines key indicators for a wellbeing framework, including physical and mental health, cultural health; family and community; country; education; housing and services; governance/cultural autonomy.

SEWB encompasses mental health but includes things like the impacts of particular traumas – such as colonisation, racism and social exclusion, discrimination, unresolved grief and loss, domestic violence, substance misuse, trauma and abuse, family breakdown, social disadvantage, separation from families, and loss of land and culture – on personal wellbeing (Garvey 2008, Gooda 2010, Henderson et al. 2007, Jordan et al. 2010, Kelly et al. 2009, King et al. 2009, SHRG 2004). Lowitja O'Donoghue has argued for a model of Aboriginal health that considers issues such as structural racism, history and the ongoing impacts of oppression and dispossession (Taylor & Carson 2007). The *Social and Emotional Wellbeing Framework (SEWBF)*, developed by the Social Health Reference Group in 2004, points to the unresolved issues of land, control of resources, and self-determination in contributing to the health and wellbeing of Aboriginal and Torres Strait Islander people. In addition, the SEWBF highlights the need to recognise the strengths, resilience, and cultural and historical diversity of Aboriginal and Torres Strait Islander people and, in doing so, acknowledge the potential for Aboriginal and Torres Strait Islander needs to be addressed by locally developed strategies (SHRG 2004). An Aboriginal author from Kokatha country has emphasised the importance of looking through the lens of Aboriginal cultural values when conducting research and service delivery in an Aboriginal health setting (Reid & Taylor 2011). Reid proposed a model of 'Indigenous Mind' that identifies core values of relationships, respect and reciprocity that must be honoured for any health framework to be effective.

In summary, previous frameworks representing wellbeing for Aboriginal and Torres Strait Islander people have been developed predominantly for government reporting, often for specific policy goals, and with some input from Aboriginal and Torres Strait Islander people. However, limitations of existing frameworks include their inability to reflect Aboriginal and Torres Strait Islander worldviews, perspectives and values; their lack of in-depth and ongoing involvement of this population in data selection, monitoring and interpretation; and their inability to disaggregate data at community levels. Further, Aboriginal and Torres Strait Islander people have voiced their discomfort with statistical representations of health and population (Kowal et al. 2011). Thus developing statistical indicator frameworks to represent wellbeing reflects a worldview that differs from traditional Aboriginal and Torres Strait Islander approaches to wellbeing, posing a major challenge to overcome in developing a shared understanding of wellbeing.

3. Indicators within a wellbeing framework: physical, social, emotional, cultural and spiritual factors

The following section will review the possible indicators of a wellbeing framework based around the widely endorsed definition of Aboriginal and Torres Strait Islander health that is holistic and recognises influence across physical, social, emotional, cultural and spiritual domains at individual and community levels. The characteristics of each of these domains are reviewed in detail below, and significant interrelationships will be explored.

3.1 Physical

Physical health at individual and community levels can relate to the presence or absence of sickness or injury, physical vitality and also to environmental health, including land.

3.1.1 Health

As an internationally endorsed surrogate measure of wellbeing, the health literature has increasingly focused on life expectancy and emphasised the deficit or 'gap' experienced by Aboriginal and Torres Strait Islander people among whom it is reportedly reduced by 11.5 years in men and 9.7 years for women, compared with other Australians (AIHW 2011b). Other alarming health statistics broadly reported for this population include death rates up to three times higher than for other Australians (ABS &AIHW 2008, Swan & Raphael 1995, Zubrick et al. 2005a). Aboriginal and Torres Strait Islander babies are twice as likely to be low birth weight with associated risk of poor health, disability and death, and they are more likely to be hospitalised (ABS &AIHW 2008). In 2008 for example, Aboriginal and Torres Strait Islander Australians were hospitalised for cardiovascular diseases at 1.7 times the rate for other Australians; 12% had diabetes compared to 4% for other Australians; and their incidence rate for end-stage renal disease more than doubled between 1991 and 2008, from 31 to 76 per 100,000 population. In 2008, 45% of Aboriginal and Torres Strait Islander people were current daily smokers, double the rate for other Australians. In addition, compared with other young Australians, young Aboriginal and Torres Strait Islander people were 1.8 times more likely to be hospitalised for mental and behavioural disorders, with the leading causes being schizophrenia, alcohol misuse and reactions to severe stress (AIHW 2011a). What is increasingly recognised is that these health outcomes occur as part of a complex interrelated system of historic, social, economic, cultural and environmental factors, and that solutions to these health outcomes must consider the system as a whole.

3.1.2 Land and connection to country

Aboriginal and Torres Strait Islander people maintain a strong belief that continued association with and caring for ancestral lands is a key determinant of health (Burgess et al. 2005). Prior to European arrival, Aboriginal and Torres Strait Islander people maintained their health with a diet derived from a variety of animal and plant sources, high levels of physical activity, and a high level of social cohesion within clear social structures – with little evidence of widespread illness or disease (Educational Determinants of Aboriginal Health Group 2004, O'Dea 2005). As a result of colonisation and dispossession of land, Aboriginal and Torres Strait Islander people went from a situation of complete autonomy in one mode of production to almost absolute dependence on another (Gracey & King 2009). The historical data provide clear evidence that this transition was associated with rising incidences of disease and increased mortality (Boughton 2000). Furthermore, several studies show that good health outcomes are observed where cultural values and connection to land are preserved (Burgess et al. 2009, McDermott et al. 1998, Rowley et al. 2008).

A study conducted by Lowell and colleagues with Yolngu people in Arnhem Land, NT, found that:

> The consequences of changes in nutrition, hygiene and exercise which result from a more sedentary lifestyle are compounded by, and interact with, the more subtle but serious effects of a break in connection with one's own groups (clan) as well as a break in connection to one's own land. These disconnections lead to a reduced sense of responsibility for, and control over, the new environment' (Lowell et al. 2003).

This study also found that living in homelands, where education related to Yolngu practices and knowledge is generally stronger, has a positive influence on health. Other research suggests that living in remote areas on, or near, traditional lands appears to improve resilience and mitigate the effects of the negative risk factors on people's wellbeing (Zubrick et al. 2010). Cohesion with kin, ancestors and geography is also shown to be an important factor in the formation of collective esteem and efficacy (Burgess & Morrison 2007).

Land, then, is potentially a basis for reasserting autonomy and control, which can lead to a greater sense of control of health and SEWB (Boughton 2000). Ganesharajah argues, however, that living in a remote context is itself not sufficient to improve health. Rather, there must be a relationship with the place of living and a traditional or cultural lifestyle; there must also be autonomy and choice (Ganesharajah 2009). Thus, rather than looking solely at numbers of Aboriginal and Torres Strait Islander people living on country and their health, there is a need to focus on the *quality* of living on country: whether Aboriginal and Torres Strait Islander people living on or near country are able to choose how they express their connection to country (Ganesharajah 2009). This is further emphasised by Campbell (2000, 2002) who created an 'Indigenous budget' based on traditional values to recognise and understand the cultural value and choices that Aboriginal and Torres Strait Islander people make to stay on country. Contemporary Aboriginal and Torres Strait Islander peoples' attachment to country is expressed in various ways, including living on traditional country; visiting their country; and carrying out land management practices, sometimes in collaboration with government or non-government bodies (Campbell et al. 2008). Thus land, connection to country, preservation of culture and cultural practices, and a sense of control are all strongly linked and highly significant for health for Aboriginal and Torres Strait Islander people.

Caring for country

For Aboriginal and Torres Strait Islander people, involvement in managing country can result in confirmation of identity and cultural authority; social activities; building and maintaining relationships; provision of purpose; traditional education; and sharing knowledge, exercise and food (Campbell et al. 2008, Thompson 2010). A body of work has shown that 'caring for country' programs – defined as those that enable Aboriginal and Torres Strait Islander people to have ownership of how activities are set up, managed and run – contribute to improved health and wellbeing (Burgess et al. 2009; Campbell et al. 2008, 2011). Specifically, Burgess and colleagues (2008a) developed a 'caring for country' index based on six variables assessing traditional engagement with country, otherwise known as traditional or Aboriginal and Torres Strait Islander land management. This index was found to vary inversely with the severity of chronic disease; in a population of approximately 1250 Aboriginal people in northern Australia, caring for country activities were protective for good health and reduced stress, as indicated by hormonal response data (Burgess et al. 2009). These data were further used to predict the potential cost savings in primary health care for diabetes, hypertension and renal disease as a consequence of engaging in caring for country activities, which were estimated at $268,000 annually or $4 million over 25 years (Campbell et al. 2011). Campbell and colleagues (2011) make a case that these estimates for northern Australia are likely to be mirrored in central Australia, providing impetus for public funding of these programs. Social and

psychological benefits of participating in caring for country activities include elevated cultural knowledge and status within the community, which can lead to greater capacity to assert control and take responsibility (Campbell et al. 2008). Substantial environmental benefits were also observed in west Arnhem Land in relation to local Aboriginal involvement in resource management programs (Garnett & Sithole 2007, Russell-Smith et al. 2009) and together with the associated economic, social and health gains, these are estimated to replicate in central Australia (Campbell et al. 2008). Thus, Aboriginal and Torres Strait Islander people employed in caring for country programs have been able to fulfil social and cultural obligations, educate young people, escape the stresses of settlements and earn an income, thereby improving community health, economics and environment (Burgess et al. 2005, 2008b; Ganesharajah 2009; Thompson 2010).

Environmental health and climate change

Remote communities are typically isolated from large population centres and consequently have poor access to basic housing, infrastructure and community services (ABS 2008). In 2006, an estimated 4% of remote community residents lived in non-permanent dwellings such as sheds or humpies, and others lived in housing in need of major repairs (24%) or replacement (9%) (ABS 2006a). Overcrowding was experienced in 32% of remote and very remote households, exposing residents to inadequate cooking and sewage conditions, safety issues, higher propagation of infectious diseases and further general health and wellbeing issues (ABS 2008). Among these communities in 2006, 54% relied on bore water and 12% relied on river or reservoir water for their main water supplies; 62% relied on generators for their main source of electricity; 37.7% of sewage was carried through water borne systems, 28.3% via septic tanks and 3.2% via pit toilets (ABS 2006a). For remote Aboriginal and Torres Strait Islander communities, inadequate access to essential services including water, sewerage and power – that are globally chartered human rights (UN General Assembly 1948) – are accompanied by poor access to health, education, communication, accommodation and community services. A study based in 10 Aboriginal communities in northern Australia showed that social and environmental conditions are linked with community development and child health status, and promoted the development of community-controlled programs (Munoz et al. 1992). Further research that monitored socio-economic conditions, crowding, hygiene and common childhood illness in relation to housing infrastructure improvement programs showed that improved housing conditions alone are not sufficient to improve health for children in remote communities (Bailie et al. 2011, 2012). These studies suggest housing infrastructure improvements must be accompanied by social, behavioural and environmental community development programs to improve health and wellbeing.

These built-environment conditions create a unique set of challenges in relation to interacting with and responding to environmental changes. The vulnerability and adaptive capacity of Aboriginal and Torres Strait Islander communities to respond to climate change is largely unexplored and is currently the focus of a national plan (Langton et al. 2012). Due to limited housing, low incomes, land tenure restrictions and limited supply and reliability of services, very few Aboriginal and Torres Strait Islander people living remotely have opportunities to own the houses they live in (ABS 2006b), limiting their ability to modify housing structures or select those that they prefer. Lower socio-economic populations are predicted as the most likely to suffer the health impacts of future climate change (Costello et al. 2009). With a general lack of control and opportunity in relation to widespread social conditions, particularly housing, Aboriginal and Torres Strait Islander people in remote Australia as a group are potentially at risk of further health burden from future climate change.

3.2 Social

3.2.1 History/Colonisation

The legacy of colonisation has led to the reality that Indigenous people internationally 'remain on the margins of society: they are poorer, less educated, die at a younger age, are much more likely to commit suicide, and are generally in worse health than the rest of the population' (United Nations Forum on Indigenous Issues 2005b). Colonisation in Australia also resulted in the dispossession of people from their traditional lands and destruction of their practices; exploitation, social exclusion and subsequent poverty; the forced removal of children from families (i.e. the stolen generation); under-education and unemployment; and the introduction of harmful substances such as tobacco and alcohol by colonists, all of which have had long-term effects on the health and wellbeing of Aboriginal and Torres Strait Islander people (Carson et al. 2007, Freemantle et al. 2007, Gooda 2010, Gracey & King 2009, King et al. 2009, Mitchell 2007, Reading & Wien 2009). Bell and colleagues have said that 'the health of populations has a history, and history itself is a determinant of health, both good and bad' (Bell et al. 2007). Health and wellbeing, therefore, need to be understood in the context of a history of dispossession (Mitchell 2007).

3.2.2 Social exclusion, discrimination and racism

Although many minority population groups experience racism in Australia, the lived experience of racism is considered most protracted among Aboriginal and Torres Strait Islander people, who have been described as 'by far the most "outsider" group in Australian society' (Awofeso 2011). Social exclusion associated with colonisation, oppression and historical and contemporary racism continue to create barriers for this group to participation in education, training and the national economy (Bell et al. 2007, Hunter & Jordan 2010, Paradies et al. 2008, Reading & Wien 2009). Racial discrimination is associated with a range of adverse health conditions, including internal stress and subsequent mental health and chronic physical health problems, and attempted suicide (Malin 2003, Paradies et al. 2008, Zubrick et al. 2010). The WAACHS, conducted in 2000–02, found that experiences of racism can break down self-esteem; promote aggressive behaviours; and lead to depression, anxiety and substance misuse, thereby weakening individual capacities, disrupting social cohesion and alienating groups (Zubrick et al. 2005b). Racial discrimination spanning school and workplace settings can isolate Aboriginal children and young people from both mainstream society and their own culture and community (Zubrick et al. 2006a). This extends to an institutionalised racism experienced by many Aboriginal and Torres Strait Islander people when interacting with institutions such as the workplace, health establishments, law enforcement, and through the media (Mooney 2003), suggesting engrained discrimination with negative impacts on attitudes and opportunities.

3.2.3 Control and empowerment

Racism and social exclusion have therefore created a situation in which there is a diminishing self-esteem and self-confidence among Aboriginal and Torres Strait Islander people in their culture (Awofeso 2011). These factors also impact on the level of control people feel they have over their life circumstances (Reading & Wien 2009). The Ottawa Charter, adopted over two decades ago, states that 'people cannot achieve their fullest health potential unless they are able to *take control* of those things which determine their health' [our emphasis] (World Health Organization 1986). In addition, Bell and colleagues identify disconnectedness, low self-esteem and social isolation as factors contributing to poor health, where poor health undermines one's ability to take control (Bell et al. 2007). These authors also highlight the interrelationships between these factors and educational success. The strong influence of control and empowerment on Aboriginal and Torres Strait Islander people's health and wellbeing is substantiated in other research (Askell-Williams et al. 2007, Central Australian Aboriginal Congress 2011, Lindeman et al. 2011). The CSDH Report states the importance of creating the conditions that enable people to take control

of their lives (Marmot 2011). In addition, Daniel and colleagues contend that examining 'mastery' or control has the potential to contextualise the legacy of colonisation experienced by Aboriginal people in Arnhem Land and to capture feelings of alienation relevant to marginalised peoples:

> Alienation in this sense can be understood as a disassociation of people from meaningful work, their social collectives, or their own identities, or being distanced from power and resources that may enable self-determination in political, economic, and social settings (Daniel et al. 2006).

The foundational role of control and empowerment in achieving good health is emphasised in a body of work that combines a family empowerment program with participatory action research in Aboriginal and Torres Strait Islander community groups (Haswell et al. 2010; Tsey 2000; Tsey et al. 2007, 2010; Whiteside et al. 2006). Since 1993, this program has involved rolling out, evaluating and further developing the empowerment program/s towards participant-identified goals in the Northern Territory and Queensland. Reported outcomes are encouraging, with positive impacts felt at personal and wider community levels, including improvements in self-worth, resilience, problem-solving abilities, respect for self and others, capacity to address social issues and enhanced cultural and spiritual identity (Tsey 2000; Tsey et al. 2007, 2010). Noting that empowerment programs are resource intensive but have multiple flow-on effects in terms of their benefits, this research team has developed and validated a Global Empowerment Measure (GEM; Haswell et al. 2010) and called for longer-term investment and monitoring to release the full potential of health benefits from empowerment strategies (Tsey et al. 2007, 2010).

3.2.4 Incarceration

Imprisonment is an indirect (distal) determinant of Aboriginal health in Australia (Awofeso 2011). Aboriginal and Torres Strait Islander people account for more than one-quarter of the Australian prison population (AIHW 2011a) and were 13 times more likely than other Australians to be, or have a family member, sent to jail or already incarcerated (Zubrick et al. 2010). Kreig states that:

> A culturally responsive health perspective allows us to hear what Aboriginal people have been telling us for a long time – that patterns of criminal behaviour are often an expression of the deep wells of pain, anger and grief experienced by Aboriginal people on a daily basis as a consequence of their long history of dispossession in this country' (Kreig 2006).

According to Awofeso (2011) 'imprisonment creates social exclusion, the consequences of which extend beyond release from prison, and may increase risks of suicide and drug use following release.'

3.2.5 Access to food and nutrition

While there is no doubt that the material aspirations of different cultures vary significantly, Altman (2003) argues that Aboriginal and Torres Strait Islander people's 'access to resources is determined by both the price structures and the availability of goods in the wider Australian and global economy' (Altman 2003). He goes on to suggest that 'the marginality of Indigenous people can be explained in part by their lack of access to valuable resources' (Altman 2003). One example that supports this suggestion is the high cost and limited availability of healthy food available to Aboriginal people in remote community stores, which contributes to a diet high in energy-dense, nutrient-poor foods (Brimblecombe & O'Dea 2009). In remote NT communities, an estimated 36% of the family income is needed to purchase food – at least double the proportion required by non-Aboriginal and Torres Strait Islander Australians. With low levels of education and employment, it is no surprise that poor nutrition is a major determinant of excess morbidity and

mortality among Aboriginal and Torres Strait Islander peoples, contributing to over 16% of the burden of disease (Lee et al. 2009). Malnourishment is compounded by inadequate facilities in the home to securely store and keep food cool and uncontaminated (Gracey & King 2009) and inadequate housing infrastructure for the preparation of food (Lee et al. 2009). Other studies of the facilities in remote Aboriginal and Torres Strait Islander communities identify a lack of many services other Australian citizens regard as their right to access (Altman 2003).

3.2.6 Access to health services

Differences in access to health care influence health outcomes (Marmot 2011) and access to high quality health care is very poor for Aboriginal and Torres Strait Islander people (Jenkins et al. 2009). In particular, remote communities are disadvantaged by reduced access to primary health care (PHC) providers and health services (Wakerman et al. 2008). Access is often constrained by financial, geographic and cultural barriers (Stephens et al. 2006). Evidence also indicates that discriminatory treatment and past associations of health care provision with removal of children have led many to delay or not access health services until a crises occurs (Prout 2011, SHRG 2004). It has therefore been argued that Aboriginal and Torres Strait Islander Australians are discriminated in receiving the 'double burden' of exposure to high risk factors for social determinants of poor health as well as inadequate provision of effective and timely health care services (Awofeso 2011).

3.2.7 Education

International evidence supports the proposition that education can contribute to improving the health of populations, both of the people themselves and of their children (Boughton 2000, World Health Organization 2008). In Australia, education is often posited as a key factor in improving the health and wellbeing of Aboriginal and Torres Strait Islander people (ABS 2011a, AHMAC 2011). The expectation that improved education outcomes will lead to better employment and health outcomes has led both the COAG *National Education Agreement* and *National Indigenous Reform Agreement* to prioritise improving educational attainment for Aboriginal and Torres Strait Islander people, particularly at Year 12 or equivalent (ABS 2011a).

In 2009, attendance rates in Years 5 and 10 in government schools were lower for Aboriginal and Torres Strait Islander students than non-Aboriginal and Torres Strait Islander students for all states and territories (SCRGSP 2011). While educational attainment for Aboriginal and Torres Strait Islander people has increased since the mid-1990s, a large gap remains between outcomes for Aboriginal and Torres Strait Islander people and other Australians, particularly at higher levels of educational attainment. In 2008, 92% of non-Aboriginal and Torres Strait Islander adults (aged 18 years and over) attained at least Year 10 or basic vocational qualifications compared to 71% of Aboriginal and Torres Strait Islander adults; non-Aboriginal and Torres Strait Islander adults were four times more likely to have attained a Bachelor degree or higher compared to Aboriginal and Torres Strait Islander adults (ABS 2011a).

The poor educational experiences and outcomes of Aboriginal and Torres Strait Islander peoples are influenced by a number of factors not shared by other Australians, including the geographical dispersion of the population, minimal use or knowledge of Standard Australian English (which accounts for significant proportions of Aboriginal and Torres Strait Islander children who begin school in remote parts of Australia), and a high degree of chronic health conditions (Zubrick et al. 2006a). Aboriginal and Torres Strait Islander people in remote regions are much less likely to engage in or attain higher levels of education than those in more regional or urban settings (ABS 2011a, Biddle 2010). High rates of disability and illness – such as under-nutrition, hepatitis B, vision and hearing disabilities, and anaemia – are also

shown to affect attendance and ability to learn at school and therefore impact educational outcomes for Aboriginal and Torres Strait Islander students (Askell-Williams et al. 2007, Educational Determinants of Aboriginal Health Group 2004).

While there is substantial evidence to indicate the negative impact of poor health on educational attainment levels of Aboriginal and Torres Strait Islander students, Dunbar and Scrimgeour argue there is less evidence to indicate whether higher levels of educational attainment do in fact lead to better health, or whether better health leads to higher educational attainment (Dunbar & Scrimgeour 2007). Similarly, Boughton (2000) asks, 'if educational disadvantage is associated with ill-health, is this because less educated people become sick more readily, or because regular illness tends to interfere with one's education?' Boughton also suggests that the positive impacts of education on health have not systematically been tested in relation to Aboriginal peoples in Australia or in any other first world country (Boughton 2000). The few Australian statistical studies do not point to a straightforward connection between schooling and Aboriginal and Torres Strait Islander health (Ewald & Boughton 2002, Gray & Boughton 2001). Some researchers also question the value of attempting to establish statistical links between (western) education levels and health outcomes (Ewald & Boughton 2002).

Askell-Williams and colleagues suggest a bidirectional relationship; that is, there is a 'reasonable basis' for expecting that improved education would positively impact wellbeing, which would, in turn, positively impact educational status (Askell-Williams et al. 2007). While some literature suggests that positive educational outcomes are linked with positive self-identity, and negative educational outcomes with negative perceptions of self (Purdie 2003), it is argued that positive health effects of schooling seen in third world populations may be cancelled out for Aboriginal and Torres Strait Islander people because of the socially exclusionary policies and practices that extend to school classrooms (Dunbar & Scrimgeour 2007, Ewald & Boughton 2002, Malin 2003). Education has historically undermined and challenged traditional culture, knowledge and authority and has played a role in the forced removal of children, social exclusion and resultant loss of identity, loss of power and self-determination, and subsequent poor health status of Aboriginal and Torres Strait Islander people (Askell-Williams et al. 2007, Bell et al. 2007, Boughton 2000, Dunbar & Scrimgeour 2007, Educational Determinants of Aboriginal Health Group 2004, May 1999, Zubrick et al. 2006b). Thus resistance by Aboriginal and Torres Strait Islander communities to Western education due to these factors may in part explain poor attendance and commitment to schooling and contribute to the long-standing educational disparity between Aboriginal and Torres Strait Islander and other students (Bell et al. 2007, Dockery 2010, May 1999). Boughton (2000) also suggests that the historical experience of 'education as assimilation' explains why issues of control have been a constant theme for Aboriginal people (Boughton 2000). In this sense, it can be argued that the education–wellbeing transaction operates not only at the individual level of influence; the health and wellbeing of communities also influence educational outcomes (Askell-Williams et al. 2007).

Much examination about the benefits of education focuses on the pathway from education to employment, but does not highlight a pathway from education to health or wellbeing (Askell-Williams et al. 2007, Educational Determinants of Aboriginal Health Group 2004, Ewald & Boughton 2002). Certainly, there is a link between education and employment where lower educational levels restrict employment opportunities (AIHW 2011a); at the same time, fewer jobs in remote locations make it difficult for people to see a value in education (Bell et al. 2007, Lowell et al. 2003). While there has been acknowledgement by Aboriginal and Torres Strait Islander people of the role of schooling in preparing people for employment, Western education is not generally recognised as having a positive influence on health (Dunbar & Scrimgeour 2007). The impact of education on employment and subsequently socio-economic

status is only one (albeit important) component of wellbeing, and the relationship between education and wellbeing may be unique in this context.

When determining the impact of education on Aboriginal and Torres Strait Islander health outcomes, the quality and cultural appropriateness of mainstream education need to be considered (Dunbar & Scrimgeour 2007). However, Bell and colleagues argue, 'to suggest that education can be more or less culturally appropriate obscures the fact that Aboriginal culture depends for its continued existence on social practices, which are themselves educational' (Bell et al. 2007). With the erosion of Aboriginal and Torres Strait Islander societies' pre-colonial education and health systems and where culture and native languages remain excluded from mainstream education, there is indeed a need to consider education in a broader sense than represented by schooling or training courses (Educational Determinants of Aboriginal Health Group 2004). Aboriginal land management (ALM) is an example where learning combines intergenerational transmission of Aboriginal knowledge with science central to adaptive management of wildlife and ecosystems, that happens on country and provides a key link to health and wellbeing outcomes by reducing the stress of uncertainty and loss of control (Davies et al. 2010).

3.2.8 Economic participation

Work is the origin of many important determinants of health – including financial security, social status, personal development, social relations and self esteem – and thus the positive link between employment, resultant income and health status is well established (Lowry & Moskos 2007, Marmot et al. 2008). Workforce participation rates are considerably lower for people with poor health, particularly those with poor mental health (Laplagne et al. 2007). At the same time unemployment can impact on self-worth and identity and, in turn, health and wellbeing (Morrissey et al. 2007). While, in general, having a job is better for health than not having a job, the causality between health and workforce participation is not necessarily linear or one-way. Merely having a job will not always protect physical and mental health: job quality characterised by employment conditions, nature of work and job security is also important (Arthur 1999, Marmot et al. 2008, SCRGSP 2011, Wilkinson & Marmot 2003). For example, working might increase a person's general activity level, thus improving physical health. Conversely, the nature of one's work (working long hours or the insecurity of working too few hours) may lead to a deterioration in health (Laplagne et al. 2007).

The *Overcoming Indigenous Disadvantage* Report indicates that in 2008, the unemployment rate for Aboriginal and Torres Strait Islander Australians (17%) was over four times the national average (4%). In the same year, 32% of Aboriginal and Torres Strait Islander Australians aged 18 years and over reported high levels of psychological distress; 2.5 times the rate for other Australians. High/very high psychological distress levels were associated with lower income, lower educational attainment and lower employment status (SCRGSP 2011). Of all Aboriginal and Torres Strait Islander people considered to be in the workforce, 1 in 10 was participating in the Community Development Employment Projects program (CDEP) scheme (AIHW 2011a). The CDEP scheme, initially established in remote areas in May 1977, allocates funding to CDEP organisations for wages for Aboriginal participants at a level similar to or a little higher than income support payments, enhanced by administrative and capital support (Altman & Gray 2005). The CDEP scheme is much more significant in remote areas where there are fewer or no mainstream employment opportunities. It is often argued that the CDEP scheme is attractive to Aboriginal people as it allows a combination of participation in customary activities and the paid labour market (Altman & Gray 2005). The CDEP program will transition into the new Remote Jobs and Communities Program (RJCP) from 1 July 2013.

Lowry and Moskos identify *history, location* and *culture* as the interdependent factors that contribute to the ongoing low labour-market status of Aboriginal and Torres Strait Islander people:

- the *historical* exclusion of Aboriginal and Torres Strait Islander people from mainstream institutions due to beliefs of racial inferiority
- the remote *location* of 25% of the Aboriginal and Torres Strait Islander population where opportunities for mainstream employment are reduced
- and the importance of *cultural* engagement to Aboriginal and Torres Strait Islander people, particularly in remote locations, which may take priority over migrating for employment (Lowry & Moskos 2007).

To the extent that Aboriginal and Torres Strait Islander people may not relocate for employment opportunities, mobility has been identified as having a negative impact on employment outcomes (Halchuk 2006). In 2008 in remote areas, 46% of Aboriginal and Torres Strait Islander young people were not employed and not studying, compared with 23% of other young people (AIHW 2011a). Despite this, self-assessed health status is better overall in remote communities, which may reflect higher involvement in cultural activities and the potential that the CDEP might create other benefits, such as community development and overarching benefit to community wellbeing (Altman & Gray 2005, Walter & Mooney 2007).

Thus while unemployment is often quoted as a key determinant of the health disadvantage faced by Aboriginal and Torres Strait Islander people, Morrissey and colleagues argue that it has rarely been explored in detail (Morrissey et al. 2007). This is certainly the case in remote contexts where people often maintain traditionally oriented lifestyles involving hunting and gathering, and where material considerations are of lesser importance (Altman 2003). Conventional economic indicators are developed around the assumption that wealth accumulation and economic productivity within the mainstream employment sector are the positive and primary pathways toward wellbeing. However, these models exclude recognition of customary pursuits such as hunting, fishing and gathering that provide alternative income such as food, rather than cash (Altman 2003). They also exclude alternative markers of economic prosperity (and associated wellbeing) such as the socio-cultural status derived from controlling the distribution of customary food sources, or the status of the natural resource base from which economic wealth is derived (Prout 2011).

Dockery (2010) argues that – similar to the view of 'education as assimilation' (Boughton 2000) – indicators used in conventional frameworks to inform policy regarding Aboriginal and Torres Strait Islander economic development implicitly view attachment to traditional culture and lifestyles as a hindrance to the achievement of 'mainstream' economic goals (Dockery 2010). Taylor also notes that conventional measures are often interpreted through the lens of prevailing government policy that can sometimes be in direct conflict with Aboriginal and Torres Strait Islander perceptions of wellbeing. For example, governments generally interpret increased Aboriginal and Torres Strait Islander employment in the mining sector as a positive measure of socio-economic status. By contrast, this workforce participation can directly conflict with cultural obligations, particularly in relation to the land, and can therefore negatively impact wellbeing (Taylor 2008). In this sense, low levels of Aboriginal and Torres Strait Islander engagement in the labour force may be reflective of the different notions Aboriginal and Torres Strait Islander people hold about work (Hunter & Jordan 2010).

So while increasing employment somewhat addresses economic disadvantage, it is also important for reporting frameworks to recognise that different cultures may have different constructs of employment and work (Dockery 2010, Walter & Mooney 2007). The United Nations Permanent Forum on Indigenous

Issues recommends that Indigenous wellbeing reporting frameworks include some recognition of the value of Indigenous work such as 'making a living' rather than simply 'having a job'. It advocates including indicators that provide insight into Indigenous participation, and economic benefit from, customary or subsistence activities in addition to, instead of, or in comparison with mainstream economic engagement. These might include 'working on country' programs (Prout 2011). Gaining a better sense of what 'being employed' or 'being workful' means to people, such as being employed in the mainstream labour market or engagement in tasks that contribute to community and/or cultural development, affords the opportunity to explore which method produces greater health benefits (Urquhart 2009). Certainly, Arthur (1999) found that in the Torres Strait, it cannot be assumed that employment is a social attraction and unemployment a social cost (Arthur 1999).

3.3 Emotional

3.3.1 Mental health/social and emotional wellbeing (SEWB)

The extent and impact of mental illness has been increasingly recognised in Australia over the last decade, and the comparably poor mental health of Aboriginal and Torres Strait Islander people is specifically documented (AIHW 2003, 2008; Council of Australian Governments 2006; Swan & Raphael 1995; Zubrick et al. 2005a). In assessing the burden of injury and disease for Aboriginal and Torres Strait Islander people, mental disorders were second to cardiovascular diseases. This subpopulation is 1.4 times more likely to experience a severe life stressor, twice as likely to report high to very high levels of psychological distress, and 2.3 times more likely to have contact with community mental health services compared to other Australians (ABS & AIHW 2008, AIHW 2008). Although limited epidemiological data exist on the type and prevalence of mental health disorders, from 1964 to 1984 reported mental illness prevalence rates were between 1.7 and 10% for Aboriginal and Torres Strait Islander adults and between 1.8 and 31.7% for children (Kyaw 1993). The most common conditions were personality disorders, depression, anxiety and schizophrenia. The first comprehensive collection of data on mental health and wellbeing was undertaken as part of the National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) 2004–05 (ABS 2006c) and used to inform a number of youth, health and wellbeing summary reports (ABS & AIHW 2008; AIHW 2007, 2008). These showed similar increases in depression, anxiety and suicidal behaviours as observed within western cultures (ABS 2006c, Swan & Raphael 1995, Zubrick et al. 2005a). However, youth mortality for 12–24 year olds is four times that of non-Aboriginal and Torres Strait Islander youth, the leading cause being intentional self-harm or suicide (AIHW 2003).

Improvements in recognising and treating mental illness are hindered by a lack of understanding among mainstream health services of the unique cultural and circumstantial factors underlying mental illness among the Aboriginal and Torres Strait Islander population. International research on culture has demonstrated its impacts on the conceptualisation, definition, understanding and experience of health, and in this context mental health. The experience of disorders such as anxiety, depression and psychosis are considered universal, but the triggers, symptoms and understanding of these disorders vary to different degrees between cultures (Allen 1998, Bird 1996, Cuellar 1998, Dana 2001). For example, several researchers (Tatz 2001, Vicary & Westerman 2004, Westerman 2000) have identified that Aboriginal constructs of depression and suicide do not conform to the phenomenology set out in the Diagnostic and Statistical Manual 4th Edition (DSM IV) (APA 1994), but are instead attributed to an individual's personality traits. Symptoms are generally only considered problematic when behaviour becomes more overt such as angry outbursts, crying publicly, self-harm or suicide attempts. Similarly, through developing and validating a screening tool for social and emotional wellbeing for use with Aboriginal and Torres

Strait Islander people (i.e. Strong Souls Checklist), Thomas and colleagues showed that feelings of sadness and low mood were linked with anxiety and not depression; and the expression of anger was verified as a unique symptom of depression for Aboriginal and Torres Strait Islander people (Thomas et al. 2010).

For Aboriginal and Torres Strait Islander people, mental health and wellbeing requires being in harmony with country, lawfulness, and correct social and kinship relationships; it is a belief system that does not differentiate between body and mind and is centred on an external locus of control, meaning that individual actions have little effect on outcomes (Anderson 1999; Burden 1994; Rose 1992; Vicary & Andrews 2000; Vicary & Westerman 2004; Westerman 2003, 2004). This is in contrast to a Western concept of 'mental health', which does not encompass these broader elements and instead relates health directly to the individual, with person-based assessment and treatment procedures.

This holistic and external attribution belief system has importance within the historical, social and political context of health and wellbeing. Aboriginal and Torres Strait Islander people and their cultures have been severely impacted by the processes of colonisation and subsequent policies, and associated trauma, loss and grief, forced separation of families and land, loss of culture and identity, social inequity and racial discrimination (Swan & Raphael 1995). Poor emotional wellbeing among Aboriginal and Torres Strait Islander people is inextricably linked with this context, with significant consequences, including substance abuse, domestic violence, child abuse, disruption of kin relationships, low socio-economic status, low educational outcomes, and high unemployment. While these factors continue to have intergenerational impacts on adults and youth, their impact has been difficult to quantify.

Of concern are several studies that signal elevated and complex mental and emotional problems among Aboriginal and Torres Strait Islander youth. For example, Zubrick, et al. (2005b) found that 24% of Aboriginal and Torres Strait Islander youth aged between 4 and 17 years were at high risk of clinically significant emotional or behavioural problems. Westerman (2003) identified high levels of co-morbidity and low resilience scores in Aboriginal and Torres Strait Islander youth, suggesting reduced protective factors may underlie psychiatric problems in this population. Resilience – described simply as 'the capacity of the individual … to "bounce back" in spite of significant stress or adversity' (Alperstein & Raman 2003) – is consistently identified in the cross-cultural literature as an important factor in assessing mental health (Atwool 2006, Mykota & Schwean 2006, Ungar 2004, Zubrick & Robson 2003). Important characteristics of resilience identified from these studies include positive role models, a positive and even temperament, the ability to form peer relationships, strong relationships with family, and high self-esteem. Interestingly, the best protective factors can also contribute the most risk for poor emotional wellbeing when they are problematic, such as family and kin relationships (Carlton et al. 2006, Resnick 2000) and strong peer and community relationships (Atwool 2006, Clarke et al. 1999). Assessing an individual's resilience or protective factors is therefore crucial in determining specific risks and areas of strength to work with for an intervention with this population.

3.3.2 Substance use and suicide

Substance use by Aboriginal and Torres Strait Islander people has long been recognised as one of the devastating consequences of colonisation, with associated health and social burdens increasingly recognised in remote communities (Kylie Lee et al. 2009). Researchers have identified substantial neurological, cognitive and psychological problems among Aboriginal and Torres Strait Islander people in relation to substance misuse, including petrol sniffing, cannabis, alcohol and tobacco (Cairney et al. 2005, 2007; Clough et al. 2005; Dingwall & Cairney 2011; Dingwall et al. 2011a, 2011b; Kylie Lee et al. 2009). (Cairney et al. 2007, Cairney et al. 2004, Cairney et al. 2005, Clough et al. 2005, Dingwall et al. 2010). Furthermore, Aboriginal and Torres Strait Islander people are four times more likely than the total

Australian population to be hospitalised with psychiatric illness as a result of psychoactive substance misuse (Kylie Lee et al. 2009, Thomson et al. 2011). In 2004–2008, the death rate from alcohol-related causes was 6.3 times higher for Aboriginal and Torres Strait Islander people than for other Australians (Thomson et al. 2011). In relation to illicit drug use, while illicit drug use is higher among Aboriginal and Torres Strait Islander people than other Australians, it is less common among those living in remote areas compared with those living in non-remote areas (Thomson et al. 2011).

In this population, limited employment and education opportunities; community-wide feelings of disempowerment; and grief and loss related to high mortality, morbidity and incarceration rates all serve as risk factors for substance misuse. Furthermore, Aboriginal and Torres Strait Islander cannabis users were less likely than non-users to participate in education or training and more likely to report suicidal ideation, symptoms of depression, and having been imprisoned (Kylie Lee et al. 2009). Strong links between cannabis use and depression are implicated as contributing to suicide in the NT (Measey et al. 2006). Boughton (2000) cites the continuing high number of Aboriginal deaths in custody and increasing youth suicide, including the 'slow suicide' of alcohol, drug and other substance use among many Aboriginal people, as an expression of extreme loss of meaning (Boughton 2000).

3.4 Cultural and spiritual

Moffatt (2011) talks of her own personal experiences of transgenerational trauma and its contribution to the mental, spiritual and physical unwellness of her family. After the death of her mother and the imprisonment of her son who went down 'his own road of self-destruction' using cannabis and speed and committing crime, Moffatt states: 'I felt emotionally, psychologically and spiritually immobilised and trapped within myself (and this) took its toll on my mental and physical health, and I was diagnosed with my own life-threatening illness' (Moffatt 2011). Through her experiences of dealing with her son's mental illness, Moffatt 'came to know and believe that Indigenous mental illness is also spiritual illness, as it is deeply connected to our spirituality and cultural beliefs' (Moffatt 2011).

3.4.1 Culture, self-identity and social support

The literature on Aboriginal and Torres Strait Islander wellbeing describes *cultural health* as a key indicator of SEWB (Morrissey et al. 2007, Prout 2011). In an analysis of the ABS 2002 NATSISS, Dockery presents evidence that Aboriginal and Torres Strait Islander people with stronger attachment to their culture fare better on a range of outcomes (Dockery 2010). This analysis also supports the hypothesis that cultural attachment is important to identity formation for Aboriginal and Torres Strait Islander people, and a sense of self-identity is in turn important for mental health (Dockery 2011). Similarly, Durie (2001) argues that, 'identity is a pre-requisite for mental health, and cultural identity depends not only on access to culture and heritage but also on opportunity for cultural expressions and cultural endorsement within society's institutions' (cited in Morrissey et al. 2007). Similarly, Chandler and Lalonde (1998) identified cultural continuity and identity as the main protective factors for suicide prevention among First Nations Canadians. It is now evident that past practices, such as the forced removal of children from their families and the undermining of parenting and familial roles, have led many Aboriginal and Torres Strait Islander people to grow up with emotional scars and cultural identity issues, leading to deep and highly visible problems such family violence and drug and alcohol abuse (Hermeston 2005). National evidence shows that stressful life events or conditions – such as not being able to get a job, involuntary loss of job, alcohol and/or drug-related problems, gambling, being witness to violence, abuse or violent crime, being in trouble with the police, having a member of family sent to/currently in jail, and overcrowding at home – adversely

affect individuals, families and communities (Zubrick et al. 2010). Aboriginal and Torres Strait Islander people are exposed to stressful life events 1.4 times more than other Australians (Zubrick et al. 2010).

The United Nations Permanent Forum on Indigenous Issues stresses the significance of language retention and fluency as important indicators of wellbeing for many Indigenous peoples (Prout 2011). For the Māori in New Zealand, it is accepted that wellbeing not only depends on participation and achievement in wider society, but also participation and achievement in Māori society (Davies et al. 2010, Durie 2006). Measures such as community functioning show that Aboriginal and Torres Strait Islander people draw strength from a range of health determinants such as connectedness to family, land, culture and identity (AHMAC 2011). Distinguishing characteristics of Aboriginal and Torres Strait Islander culture include centrality of family and the extended kinship system, low emphasis on individual ownership of possessions relative to obligations and contributions to the other members of the family and community, and the role of connections to land and the past in a sense of self-identity (Dockery 2010). Traditional teachings and knowledge also provide a basis for positive self-image and healthy identity among Aboriginal and Torres Strait Islander people (King et al. 2009).

Optimal wellbeing occurs when there is strong cultural identity in combination with control and achievement at a wider societal level, such as through successful engagement in education, employment and health. In relation to education, it may be argued that Aboriginal and Torres Strait Islander ceremonial and social obligations limit school attendance rates; on the other hand, it may also be argued that strong cultural orientation promotes resilience and better educational outcomes (Dockery 2010). Awofeso (2011) asserts that, 'internalisation of positive Indigenous identity as well as educational and career successes provide significant counterweights to being subject to racial stereotypes and discrimination, and is strongly associated with healthier lifestyles' (Awofeso 2011). In the case of employment, while it might be an important indicator for wellbeing for many Australians, if it is at the expense of connection with country, family and community, it may not result in the actual improvement of wellbeing for an Aboriginal or Torres Strait Islander person (Gooda 2010). Morrissey and colleagues argue that the relationship of culture to health for Aboriginal and Torres Strait Islander people can only be understood within the context of their degree of power over their circumstances (Morrissey et al. 2007). Internationally, comparable Indigenous populations have successfully used informal activities focusing on culture in the rehabilitation of substance abuse and management of diabetes (see Burgess et al. 2005).

Aboriginal and Torres Strait Islander peoples' attachment to country is a fundamental practice of culture, and this is discussed in detail in section 3.1.2.

3.5 Towards a wellbeing framework

In moving towards the development of a wellbeing framework, the collaborative *Community Indicators Victoria* Project (CIVP) provides a good example of an initiative whose goal is to 'support the development and use of local community wellbeing indicators as a tool for informed, engaged and integrated community planning and policy making' (West & Langworthy 2007). Relevant to the smaller population of Aboriginal and Torres Strait Islander people in remote Australia, CIVP focuses on a small number of headline wellbeing measures to gather trends and outcomes important to local communities. As stated by the CIVP, the purpose of an indicators framework is to provide an integrated perspective on community progress in a manner that ties together the various contributing factors to community wellbeing (Wiseman et al. 2006). Their criteria for choosing local community indicators are that they measure what is valued, are conceptually sound, make sense and are useful to citizens and policy makers, and are relevant and measurable at a local level (West & Langworthy 2007).

4. A wellbeing framework for Aboriginal and Torres Strait Islander people in remote Australia

Based on this review of the academic literature and global and national initiatives, the following recommendations are made towards the development of a wellbeing framework for Aboriginal and Torres Strait Islander people in remote Australia.

Key Recommendations

Recommendation 1 – Aboriginal and Torres Strait Islander people are involved in the research and their perspectives represented

A wellbeing framework for Aboriginal and Torres Strait Islander people in remote Australia must have strong input from Aboriginal and Torres Strait Islander people in design, monitoring and interpretation and must represent Aboriginal and Torres Strait Islander values, perspectives and priorities.

While identifying the right indicators and measures is a complex task, without a clear and relevant framework for health and wellbeing, the goals and priorities of more powerful interests can overshadow those of remote Aboriginal and Torres Strait Islander communities. The *Community Indicators Victoria Project (CIVP)* developed a community wellbeing indicator framework with local-level data in order to address issues identified as important by local communities in Victoria. In developing this framework, the CIVP aimed to choose a set of indicators that were 'small and meaningful and that facilitate our understanding of where we are going and in relation to our values' (Wiseman et al. 2006). Similarly, and as argued by Bauer (1966), the real purpose of indicators is to 'enable us to assess where we stand and are going with respect to our values and goals', thus giving rise to the questions: Whose values? Whose goals? (Wiseman et al. 2006). The literature examined here certainly indicates a continued absence and marginalisation of Aboriginal and Torres Strait Islander meanings of health and wellbeing and a lack of recognition of this population's concerns or interests (Freemantle et al. 2007, Pholi et al. 2009, Smylie et al. 2006, Taylor 2008). Moreover, much of the literature argues that mainstream indicator frameworks that collect data on Aboriginal and Torres Strait Islander societies are for bureaucratic purposes and shaped by political agendas, rather than to support the objectives and determinants identified by Aboriginal and Torres Strait Islander people themselves (Smylie et al. 2006, Yu 2011).

Expanded research models that account more fully for the social and historical contexts that influence the health of individuals and populations are important in addressing continuing disparities (Banks 2012). Most of the innovative models of research, proposed by Indigenous researchers nationally and internationally, highlight the need to adopt new ways of seeing that respect local Indigenous ways of knowing and adopt participatory approaches whereby knowledge remains under the control of the community (Kendall et al. 2011). Although much progress has been made in this area, the literature concludes that Indigenous performance measurement systems in Canada, Australia and New Zealand are underdeveloped locally and hence deficient in their support of local service development (Smylie et al. 2006). This deficit is particularly pertinent for Aboriginal and Torres Strait Islander people living in remote Australia who experience limited access to valuable resources, appropriate primary health care and other services (Altman 2003, Wakerman et al. 2008).

The strategies used to collect information are just as important as the nature of information collected, particularly for populations who have been systematically marginalised within a society (Banks 2012). Self-assessed health is one of very few measures of overall health status currently available for Aboriginal

and Torres Strait Islander peoples throughout the country (AHMAC 2011). Morrissey argues for the need to utilise 'a full arsenal of social research methods, both quantitative and qualitative' if we are to tackle the complexities of the social causes of Aboriginal ill-health (Morrissey 2003). Banks promotes storytelling as a data collection method that can expand our understanding of the particular contexts in which health and health decision-making occurs, more actively involve the target population, and build bridges between researchers and communities (Banks 2012).

Recommendation 2 – A strength-based model is used rather than focusing on deficits

Move away from models that focus on deficit and dysfunction for Aboriginal and Torres Strait Islander people towards a framework that identifies and promotes successes and strength.

The OID report identifies a vision of 'a society where Aboriginal and Torres Strait Islander peoples should enjoy a similar standard of living to that of other Australians, without losing their cultural identity'. However, as previously discussed, 'the OID framework can be seen to be measuring aspects of Aboriginal 'ill-being' rather than Aboriginal wellbeing' (Jordan et al. 2010). Comparing the measures between Aboriginal and Torres Strait Islander people and other Australians homogenises the varied health and wellbeing of individual Aboriginal people (Kowal & Paradies 2010). Focusing on the disparity between the groups can also result in a misplaced characterisation of Aboriginal and Torres Strait Islander peoples as being 'dysfunctional' (Jordan et al. 2010) as well as tying Aboriginal and Torres Strait Islander identity to inevitable ill health (Taylor et al. 2010). In such an approach, there is limited scope for recognising Aboriginal and Torres Strait Islander people's strengths, resources and capabilities, which equally contribute to their wellbeing (Jordan et al. 2010).

A key goal for a wellbeing framework, therefore, is that it relates to local circumstances and engages with Aboriginal and Torres Strait Islander meanings, knowledge and understanding. A greater emphasis on building local measurement systems might enable an increased responsiveness to local cultural values and priorities (Smylie et al. 2006). Moreover, and as identified by the SEWB Framework 2004–09, an Aboriginal and Torres Strait Islander wellbeing framework should be guided by a recognition of the strengths and resilience of Aboriginal and Torres Strait Islander people (SHRG 2004). It is also important that any framework measures progress towards community goals.

Recommendation 3 – Focus on interrelationships

A wellbeing framework for Aboriginal and Torres Strait Islander people in remote Australia must take a whole-of-system approach where all components are interrelated.

Much of the literature examined here identifies interrelationships that exist across the various components of a wellbeing framework, including education, employment, health and wellbeing, which are rarely linear or unilateral. Together with recognising the dynamic nature of these interrelationships when attempting to understand and address wellbeing, it is also important to consider the unique determinants and contexts that exist for Aboriginal and Torres Strait Islander people in remote Australia, which 'require a model that permits researchers and governments to explore the pathways that influence health and the points at which interventions will be more effective' (Reading & Wien 2009). The WHO defines the social determinants of health as 'the conditions in which people are born, grow, live, work and age, including the health system' (World Health Organization 2008); for Aboriginal and Torres Strait Islander people, these conditions include a history of colonisation; discrimination and social exclusion; removal of family, culture and

country; loss of control; and denigration as a people, whose strengths and resilience are continually sidelined. The literature shows that these factors often overlap and are influential across all education, employment, health and wellbeing outcomes for Aboriginal and Torres Strait Islander people.

This literature review has identified that many interrelationships exist between multiple indicators across education, employment, health and wellbeing and these are influenced by contextual factors and experiences that are unique to Aboriginal and Torres Strait Islander people in remote Australia. Relationships between different components of a wellbeing framework do not occur in isolation; rather, they interrelate as a whole system. Most importantly, the development of an appropriate and effective wellbeing framework must incorporate Aboriginal and Torres Strait Islander concepts and knowledge of health and wellbeing, and ideas and aspirations in relation to participation in formal education or employment in the mainstream labour market. The collection, analysis and interpretation of information within such a wellbeing framework may be used to understand if and why, for example, the positive health effects of schooling seen in third world countries may not translate for Aboriginal and Torres Strait Islander people (Dunbar & Scrimgeour 2007, Ewald & Boughton 2002, Malin 2003). This approach may also be used to understand how strong cultural orientation may promote resilience and better educational outcomes for Aboriginal and Torres Strait Islander people (Davies et al. 2010), and therefore create an evidence base to inform policies and interventions to improve education, employment, health and wellbeing outcomes for Aboriginal and Torres Strait Islander people and communities. Thus, a framework that aims to collect and analyse long-term health and wellbeing data for Aboriginal and Torres Strait Islander people across these factors must recognise the interdependent nature of these interrelationships at an overarching whole-of-system level.

Recommendation 4 – The following core themes are represented across the framework

The following core themes have been identified as highly influential over the interrelated system that represents wellbeing in this context.

Theme 1 – Kinship, culture, land and spirituality

The literature examined here highlights the importance of connection to land and cultural activities as important factors to many Aboriginal and Torres Strait Islander people's beliefs about mental, social and emotional wellbeing (Zubrick et al. 2010). This is particularly true for people living in remote communities, where engagement in traditional activities continues to be practised (Campbell et al. 2008, Scrimgeour 2007). Continued association with and caring for ancestral lands – related to autonomy and mastery over life; cohesion with kin, ancestors and land; and strengthening the traditional base for governance – has been shown to be associated with significantly better health, including decreased incidence of diabetes, renal disease and hypertension, along with decreased stress levels (Burgess et al. 2009). Capturing the complexity of this information and of the interrelationships that exist within and between these factors is required. Rather than looking solely at numbers of people living on country and their health, for example, there is a need to focus on the *quality* of living on country – whether people living on or near country are able to choose how they express their connection to country (Ganesharajah 2009). In regards to 'Caring for Country' programs, it would be useful to collect information on participation in these and other tradition-oriented activities, as well as the impact this might have on physical and mental health. Information to be collected under this domain could include traditional language use and retention; measures relating to kinship and community networks and relationships; access to culture and heritage; ability to access land for own purposes; 'work' on land; and contribution 'work' on land makes to livelihood for self and/or family (e.g. provide food, shelter, money, status; sense

of identity: self and cultural; sense of autonomy and control). The wellbeing framework proposed by the United Nations Permanent Forum on Indigenous Issues has also included other relevant themes and indicators: actual control of territories, lands and natural resources; and measures to protect traditional production and subsistence (Jordan et al. 2010).

Theme 2 – Control or Empowerment

The Ottawa Charter states that 'people cannot achieve their fullest health potential unless they are able to *take control* of those things which determine their health' [our emphasis] (World Health Organization 1986). The CSDH Report asserts the importance of creating the conditions that enable people to take control of their lives (Marmot 2011) and the literature substantiates the strong influence control and empowerment have on Aboriginal and Torres Strait Islander people's health and wellbeing (Askell-Williams et al. 2007, Central Australian Aboriginal Congress 2011). Factors that influence people's level of control – perceived and actual – have been shown in the literature to be interrelated and overlapping. Racism, for example impacts on self-esteem and confidence, which impacts on the level of control people feel they have over their life circumstances (Reading & Wien 2009). Connection to land, including knowledge of sacred sites and rituals, provides a basis for individual autonomy, which is achieved through relatedness to kin and country. Collective esteem, efficacy, control and self-determination also result from cohesion with kin, ancestors and country and, inherently, in maintaining cultural beliefs and cultural practices (Burgess & Morrison 2007, Zubrick et al. 2010). Thus indicators located under other domains are also relevant to control, both individual and collective. Decision-making and control of resources are also important indicators, as they reflect standing within families and communities.

Control or mastery is also influenced by alienation, including loss and grief as a result of colonisation; disassociation from meaningful work; and being distanced from power and resources that may enable self-determination in political, economic and social settings (Daniel et al. 2006). Similar to those found in Theme 3 below, relevant indicators may include experiences of racism and associated outcomes of such experiences. The broad-reaching influences on control should also encompass access to health and other services, including education and employment, and the relevance of such services to Aboriginal and Torres Strait Islander people. At the individual level, indicators of control may include educational and employment status and their relative influence, status within kinship systems, family and local governance, and access to support people and services. At a community level, control may be indicated by the accessibility of meaningful education and work opportunities; health treatment options; the involvement of community members in governing education and health systems; representation of local people in regional, state or national governance; and opportunity for development generally.

Theme 3 – Healthy, safe and inclusive communities

Hunter and Jordan argue that the OID framework is notable for its failure to acknowledge social exclusion as a key health determinant, and its lack of recognition of the needs and aspirations of Aboriginal and Torres Strait Islander people (Hunter & Jordan 2010). They state that 'if "improved wealth creation and economic sustainability" is taken to mean participation in the mainstream labour market or the prevalence of home ownership, alternative forms of Aboriginal economic activity are overlooked' (Hunter & Jordan 2010). Moreover, social *exclusion* implies that one is being excluded from something, presumably mainstream society, and they suggest that shifting the focus to social *inclusion* would allow policy makers to acknowledge that people can choose to be included in a range of social and economic practices, such as education or employment (Hunter & Jordan 2010).

Rather than collecting data on employment status then, information may be sought on what activities respondents chose to participate in. Collecting information on the preferences, incentives and opportunities

available to Aboriginal and Torres Strait Islander people to participate in mainstream and customary employment activities and engagement in mainstream and tradition-orientated learning may also be useful here. The ABS Wellbeing Framework does attempt to explore 'accessibility' and 'cultural security' under its 'work' domain (ABS 2011b). In addition, collecting information regarding opportunities for accessing mainstream or Aboriginal and Torres Strait Islander–controlled health and other services would be reflective of the inclusion and opportunity Aboriginal and Torres Strait Islander people have in choosing to participate in a society they value, are valued in, and which has meaning to them. This may involve collecting information regarding functioning and cohesive communities, for example, relating to kinship and community networks and relationships. Collecting information on social and structural conditions is also important as a predominantly individualistic focus on data collection – which Close the Gap and the OID framework have been accused of having – fails to account for an imbalanced distribution of power and limited degree of Aboriginal and Torres Strait Islander control over their own circumstances (Pholi et al. 2009).

Racial discrimination can isolate Aboriginal children and young people from both mainstream society and their own culture and community (Zubrick et al. 2006a). In addition, racial discrimination is shown to be associated with a range of adverse health conditions, including internal stress, subsequent mental health and chronic physical health problems, and attempted suicide (Malin 2003, Paradies et al. 2008, Zubrick et al. 2010). It makes sense under this domain, then, to collect information on experiences of racism and discrimination or of acceptance/inclusiveness in the education system, mainstream employment market, and health and other services, as well as inclusion/connection to mainstream society and own culture and community.

Theme 4 – Resilience

Resilience – what keeps people strong in the face of adversity and stress – is an important notion known to affect health and wellbeing, particularly for Aboriginal and Torres Strait Islander people (King et al. 2009, Zubrick et al. 2010). The SEWBF highlights the need to recognise the strengths, resilience, and cultural and historical diversity of Aboriginal and Torres Strait Islander communities and, in doing so, acknowledge the potential for Aboriginal and Torres Strait Islander needs to be addressed by locally developed strategies (SHRG 2004). As part of wellbeing knowledge, the literature also indicates the need to identify the protective factors known to people that helped them to survive several generations of trauma, adverse events and extreme disadvantage post-colonisation (Zubrick et al. 2010). Thus, a theme that addresses the components of resilience is important if there is to be any real progression towards enabling Aboriginal and Torres Strait Islander people to draw on their unique strengths and diversity in order to improve education, employment, health and wellbeing outcomes. Moreover, a framework that enables the collection of information that demonstrates Aboriginal and Torres Strait Islander function – rather than dysfunction – is highly needed.

Resilience has many facets highlighted in the literature as important to Aboriginal and Torres Strait Islander people, including spiritual connections, ties with kin and community, connection to the land, and cultural and historical continuity (King et al. 2009). The previous three themes proposed in this conceptual framework and many of their indicators, therefore, feed into this theme of *resilience* in the sense that they cover the factors that *contribute* to the ability of individuals and communities to be resilient.

Since resilience requires a positive outcome amid a climate of increased risk (as Aboriginal and Torres Strait Islander people continue to experience), identifying communities that have somehow managed to 'beat the odds' enables an exploration of what works for Aboriginal and Torres Strait Islander people (Lalonde 2006). Some insight into functioning and resilience is achieved by measuring the extent to which

communities have taken active steps to preserve or promote their own cultural heritage and to regain control over various aspects of their communal life, such as through legal title to traditional lands and forms of self-government, through reasserting control over education and the provision of health care, as well as steps taken to promote and encourage traditional cultural events and practices (Lalonde 2006). In gathering such information, what is also needed instead of the usual top-down forms of 'knowledge transfer' is some way to facilitate lateral 'knowledge exchange' that encourages and promotes the cross-community sharing of those experiences and forms of knowledge that enable resilience and improve Aboriginal and Torres Strait Islander education, employment, health and wellbeing (Lalonde 2006). Gathering information regarding relevant indicators under this domain should aim to draw on the unique experiences of Aboriginal and Torres Strait Islander people through qualitative methods such as story telling or narratives. Indicators may include achievement across areas of personal and community value; strong family networks; the presence of role models; level of acculturation; social and emotional wellbeing; self-esteem; gambling; substance use; domestic violence; experience of trauma and abuse; diet; physical activity; and opportunity for cultural expressions and cultural endorsement.

Recommendation 5 – The framework has broad definitions of its core domains:

Domain 1 – That ***education*** is considered as ***learning*** being inclusive of mainstream education and training but extending beyond to include all activities of learning related to work and health such as learning Aboriginal and Torres Strait Islander knowledge.

Domain 2 – That ***employment*** is considered as ***livelihood*** being inclusive of mainstream employment with income as an indicator, but extending to include other livelihood activities including voluntary or traditional roles.

Domain 3 – That ***health*** is considered as biomedical health as well as ***social and emotional wellbeing***, and culturally relevant notions of health, particularly, ***resilience***.

5. Conclusion

While the gathering of statistical data within existing frameworks has provided an understanding of the levels of disadvantage experienced by Aboriginal and Torres Strait Islander people, further development is needed to better represent Aboriginal and Torres Strait Islander notions of health and wellbeing, particularly in the remote context.

This review has suggested some ways forward in developing a wellbeing framework that are collaborative, inclusive and represent the strengths, values and perspectives of Aboriginal and Torres Strait Islander people in remote areas. The importance of going beyond formal indicators – such as levels of achievement as an indicator of education and income as an indicator of employment – are identified. For example, the many ways that people learn and work in this context, such as learning traditional knowledge passed down from elders, and the work that people do to care for family, land and for cultural maintenance, are as important here as formal indicators of education and employment and need to be represented equivalently. Similarly, in additional to biomedical indicators of health, culturally relevant indicators of the broader social and emotional issues and impacts relating to health – including nutrition, exercise, relationships, lifestyle and history – will need emphasis and further development.

Importantly, the review has identified core themes that are integral to understanding the interrelationships between education, employment, health and wellbeing and must therefore be represented centrally in the wellbeing framework. The first of these themes includes factors central to culture such as *kinship*, *family*, *land* and *spirituality*. While much is written and spoken of these factors, they are by nature represented qualitatively and are much more difficult to represent in large-scale information systems such as those used for policy decision making that are generally quantitative. Second is the theme of *empowerment* or *control* that can be monitored individually and socially as self-efficacy and at local community, regional and state levels as active involvement in governance structures. Third is the theme of communities that are *safe*, *healthy* and *inclusive*, acknowledging that local social and infrastructural factors interplay with internal or personal factors as well as more external or wider societal factors to influence wellbeing. Objective measures of community safety, industries, schooling, law enforcement and opportunities as well as subjective measures that identify perceived safety, inclusiveness and opportunity are important. The fourth theme of *resilience* represents the resources and capacity of people and communities to respond to stress and adversity, and includes protective and risk factors and their relative impacts.

Qualitative research with local Aboriginal and Torres Strait Islander people living in remote communities must be conducted to determine the most influential factors within these domains, and how these concepts and values can be translated to indicators that give local perspectives a voice in the statistical language of policy. In alignment with recommendations from this review, the involvement of local Aboriginal and Torres Strait Islander community perspectives and people is required at all stages and levels of the research to understand wellbeing and its influences accurately and authentically. Aboriginal and Torres Strait Islander people must therefore be involved across community, researcher, communications and governance levels through various strategies, including advisory, employment, capacity development and engagement. While these conclusions reflect a review of the relevant literature, interactive and qualitative sessions with diverse Aboriginal and Torres Strait Islander groups living in remote areas nationally are now required to refine and consolidate a wellbeing framework. Importantly, qualitative processes as these must be evaluated and documented both to contribute to the development of knowledge and to validate effective processes of genuine knowledge sharing.

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PARTNERS IN THE CRC FOR REMOTE ECONOMIC PARTICIPATION

Principal Partners

Project Partners

APPENDIX 3 – Table of clearances required to undertake research in each location

Community	Galiwin'ku	Wiluna
State/Territory	**NT**	**WA**
Human Research Ethics Committee/s (HREC)	Topend HREC (NEAF + Section D)	WA HREC (NEAF + WA Specific Module + WA Aboriginal HREC Form)
Land Council	Northern Land Council (NLC)	Central Desert Native Title Services (CDNTS)
Data linkage	SA-NT Datalink	Data Linkage WA
Health Board	Miwatj Health	Nangganawili Aboriginal Health Service (NAHS)
Community groups	-Marthakal Homelands Resource Centre -Yalu Marnggithinyaraw Indigenous Corporation	-Muntjiltjarra Wurrgumu Group (MWG) -Newmont Mine, Jundee -Wiluna PBS
Other	Remote Health NTG	

CRC for Remote Economic Participation
Ninti One Limited ABN 28 106 610 833
PO Box 3971
Alice Springs NT 0871
P (08) 8959 6000
F (08) 8959 6048
W www.crc-rep.com.au

Values

Through this work we build relationships that improve the lives of people in remote Australia.

Our values are:

- We respect the cultural diversity and cultural authority of Aboriginal and Torres Strait Islander peoples
- We will exhibit courage, innovation and entrepreneurship in our work
- Integrity, accountability, empathy, listening and learning will characterise our dealing with people

People involved in Ninti One Ltd will:

- Serve remote Australia with passion, integrity and imagination
- Openly embrace diversity
- Think creatively
- Be professional in our approach and in all our dealings
- Communicate respectfully with others
- Value and support our colleagues
- Abide by Ninti One Limited Ethical Practices and Principles (Desert Knowledge CRC Protocol for Aboriginal and Intellectual Property)

Vision

Resilient remote communities and businesses that enrich Australia through their vigour, cultural integrity, innovativeness and sustainable use of resources.

Mission

Through research, innovation, expertise, education and outreach, the Cooperative Research Centre for Remote Economic Participation (CRC-REP) will provide the knowledge base essential to create thriving remote communities and economies.

Centre for Remote Health
A joint centre of Flinders University and Charles Darwin University

NINTI ONE : CRC REMOTE ECONOMIC PARTICIPATION

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You are invite to participate in the

Interplay Project

Information Sheet
(this is for you to keep)

This means you can say NO

The Interplay Project aims to understand what is good health and wellbeing for Aboriginal people

The project will collect information from people and communities on Culture, Community, Empowerment, Education, Employment, Health and Wellbeing.

The *Interplay* is how everything connects together

This information will be used to understand the relationships between these areas and how this knowledge can be used to improve health and wellbeing.

Communities and government can use this knowledge to work together on strategies for good health and wellbeing for Aboriginal people.

This research project has been approved by the Human Research Ethics Committee of the NT Department of Health and Menzies School of health Research

HOW IS INFORMATION COLLECTED?

If you are 15-34 years, you will be asked to do a survey that will take less than 1 hour. You will be asked questions about your culture, community, empowerment, education, employment, health and wellbeing. Local Aboriginal researchers will conduct the surveys. You will be also asked if the researchers can access your health and education records.

If you are a community representative, you may be asked to participate in a focus group to talk about social, cultural, health and wellbeing information on your community.

Information will be collected in 2014 and again in 2015.

OTHER INFORMATION

- You can have a translator to ask the questions in your first language.
- The ownership of Aboriginal knowledge and cultural heritage is retained by you and this will be acknowledged with the research findings.
- You can pull out of the project at any time and this will not affect your relationships with researchers, or your health treatment now or in the future.
- All the information you give will be kept private. Your name will not appear next to any private information. A number will be used instead.
- All information with your name will be kept in Alice Springs in locked files protected by a password. Only the senior researchers will have the password and the information will be destroyed 7 years after the research project ends.
- The research findings will be presented to the community through reports, flipcharts, videos and presentations by the local Aboriginal Researchers. None of this will include your name or identity. It will all be general information about the community.

If you have any worries or questions about this study, please contact:

Project Leader
Associate Professor Sheree Cairney
Sheree.cairney@nintione.com.au
Phone: 0438 121 473

Lead Aboriginal Researcher
Tammy Abbott
Tammy.Abbott@nintione.com.au
Phone: 0437 312 134

If you have concerns or complaints you can contact:

Secretary,
Human Research Ethics Committee
of NT Department of Health
and Menzies School of Health Research

Phone: (08) 8922 7922
Fax: (08) 8927 5187
Email: ethics@menzies.edu.au

This research project has been approved by the Human Research Ethics Committee of the NT Department of Health and Menzies School of health Research

Interplay Project
Consent Form

This means you can say NO

NOTE: This will be administered electronically on ipad with the survey

CONSENT

(Please tick if you are agree to the following)	**Yes**	**No**
For all participants		
I have read or somebody has read to me the **Interplay Project Information Sheet** and I understand what it means for me to participate in this research.		
I agree to answer questions about education, work, lifestyle, community, culture, health and wellbeing		
I can be contacted in the future for follow-up assessments		
I agree to have my picture taken and kept for records		
For survey participants (not the focus group)		
The researchers can access my health and education records		
My de-identified information can be added to a database for use in future research on Aboriginal and Torres Strait Islander wellbeing		

SIGNATURES

	Name	**Signature**	**Date**
Participant			
Witness			
Researcher			
Interpreter (if used)			
Parent/Guardian (if required)			

If you have any worries or questions about this study, please contact:
Project Leader
Dr Sheree Cairney
Sheree.cairney@nintione.com.au
Phone: 0438 121 473

Lead Aboriginal Researcher
Tammy Abbott
Tammy.Abbott@nintione.com.au
Phone: 0437 312 134

This research project has been approved by the Human Research Ethics Committee of the NT Department of Health and Menzies School of health Research.

PART 1 - CULTURE

IDENTITY

1. Are you:
    a. Aboriginal
    b. Torres Strait Islander
    c. Both Aboriginal & Torres Strait Islander
    d. Non-Indigenous Australian
    e. Other

LANGUAGE

2. What is the main language you speak at home?
    a. List Aboriginal languages (Martu, Yolgnu, etc)
    b. English
    c. Both English and Aboriginal language
    d. Other

3. How many Aboriginal languages do you understand?
    Specify ……..

4. For your main Aboriginal language, how well can you do the following?

	Not at all	Little bit	Some	Fair bit	Really well
Understand (know)					
Speak					
Write					

FAMILY

5. Have you felt or experienced any of these things **in your family** in the last few months?

	Never	Little bit	Sometimes	Fair bit	Lots
Happiness					
Stress					
Respect					
Worries					
Helping each other					
Fighting					
Safe					
Scared					
Sharing					
Money problems					
Family outings					
Sadness					
Laughter					

COUNTRY

6. Do you live on your traditional lands?
    a. Yes
    b. Sometimes
    c. No

7. Can you access and use your traditional lands when you want?
    a. Yes
    b. Sometimes
    c. No

8. What makes it hard to access your traditional lands? (tick all that apply)
    a. No transport
    b. Health problem
    c. No money
    d. Not interested
    e. Too far away
    f. No access
    g. Conflict
    h. Other
    i. Nothing makes it hard, I can go whenever

9. **In <u>the last few months</u>, did you do these things?**

This is Paul Burgess questionnaire

	No (None in the last year)	A little bit (A few days in the last year)	A fair bit (A few weeks in the last year)	Heaps (A few months in the last year)	Most of the time
Time on country (Living in homeland, Traveling through country)					
Burning Grass (Cleaning up Country, Fire work)					
Using Country (Bush tucker, Bush medicine, Hunting, Fishing)					
Protecting Country (Sacred sites, Animals, Totems)					
Ceremony (Sorry business, men's business, women's business, mourning)					
Making artworks (Painting, Weaving, Carving)					

10. In the last few months, did you feel any of these things when you were on country? *(skip if no for the above)*

	Never	Little bit	Sometimes	Fair bit	Lots
Happiness					
Sadness					
Worries					
Feeling Strong					
Feeling Safe					
Sharing					
Scared					
Respect					

CEREMONY & LAW

11. How important is law and ceremony to you?

	Not at all	Little bit	Sometimes	Fair bit	Lots

12. Do you practice law and ceremony?

	Never	Little bit	Sometimes	Fair bit	Lots

13. Do any of these things make it hard to practice law and ceremony?

	Never	Little bit	Sometimes	Fair bit	Lots
Work					
Study					
Caring commitments					
Poor health					
No access to land					
No one available to organise					
No one available to teach					
Family disputes					
Lost touch/not enough knowledge					
Don't think its relevant anymore					
Don't have transport					
Drugs and alcohol					
Can't afford to					

14. Is spirituality or religion a big part of your life?

	No	Little bit	Sometimes	Fair bit	Lots

PART 2 - EMPOWERMENT

15. In the last few months, how much of this is true for you?

	Never	Little bit	Sometimes	Fair bit	Lots
INNER PEACE					
I have confidence in myself					
I feel a lot of anger about the way my life is					
I put other people before me					
I feel very happy in myself and with my life					
I feel safe and secure and can face whatever's ahead					
SELF CAPACITY					
I can speak out and explain my views, people listen					
I am hopeful for a better future					
I don't feel like there are good work opportunities for me					
I belong in community. I feel connected					
HEALING					
I can move on from bad experiences					
Criticism and being judged causes problems for me					
Most of my relationships are healthy not harmful					
I am able to speak out and be heard					
CONNECTION					
I can make changes in my life when I need to					
I am very strong about who I am					
Our community works well together					

EMPOWERMENT - Racism

16. How often do you or your family experience racism or discrimination?

	Never	Little bit	Sometimes	Fair bit	Lots

17. Have you experienced racism in any of these places?

	Never	Little bit	Sometimes	Fair bit	Lots
Home					
School					
Work					
Shops					
Police or security workers					
Other towns or cities					
Health centre or hospital					
Government Departments					
In other Aboriginal communities					
Social places (pubs, casino, cinema)					
On the street					

EMPOWERMENT– Resilience

18. How much is this like you?

	Never	Little bit	Sometimes	Fair bit	Lots
RESILIENCE					
You got lots of friends					
You know someone who is a really good person					
You are really into something (like music, cars, clothes, football, fishing, computers etc)					
You are a good son or daughter to your family					
When you are sad or upset, you have a person you can talk to					
You laugh and make jokes a lot					
You have a strong family who help each other					
You got an older person looking out for you					

EMPOWERMENT - Mobility

19. Do you drive?
    a. Yes
    b. No

20. Could you find a way to travel when you want to?

	Never	Little bit	Sometimes	Fair bit	Lots

EMPOWERMENT – Life Stresses

21. Did any of these happen to you or anyone in your family in the last few months?

Gambling problem	Yes	No	Refused
Serious illness or disability	Yes	No	Refused
Divorce or separation	Yes	No	Refused
Death of family member or close friend	Yes	No	Refused
Serious accident	Yes	No	Refused
Alcohol or drug problem	Yes	No	Refused
Not able to get a job	Yes	No	Refused
Lost job, became unemployed	Yes	No	Refused
Witness to violence	Yes	No	Refused
Abuse or violent crime	Yes	No	Refused
Trouble with the police	Yes	No	Refused
House too crowded	Yes	No	Refused
Money problems	Yes	No	Refused

PART 3 - EDUCATION

22. Where did you do most of your schooling? *(pick one only)*
    a. Didn't go to school
    b. Bush School
    c. Mission School
    d. Shepherdson College (Galiwin'ku)
    e. St Johns College (Darwin)
    f. Kormilda College (Darwin)
    g. Wiluna Remote Community School (Wiluna)
    h. Clontarf Academy (Perth) - sports
    i. Bindoo (Perth) - agricultural

j. Swan Lee (Perth) - sports
k. Amata Anangu School (Amata)
l. Wiltja (Woodville High)(Adelaide)
m. Yirara College (Alice Springs)
n. Adelaide Boarding school
o. Other (free text)…….

23. What year did you complete school?
    a. Didn't go to school [skip next]
    b. Primary school only [skip next]
    c. Went to high school to year 9 or less [skip next]
    d. Year 10
    e. Year 11
    f. Year 12

24. What is the highest level of study you have completed?
    a. None
    b. Short courses
    c. TAFE/VET Certificate
    d. Diploma
    e. University degree
    f. Post-graduate qualification (Masters, PhD)
    g. Other

For b-g; What has been your main area of study?

1. Health (includes mental health, alcohol and drugs)
2. Education/Teaching
3. Technical work (computer, IT)
4. Creative Arts
5. Trade (building, car mechanic, electrician)
6. Council work (road maintenance, cleaning rubbish)
7. Administration/Office work
8. Retail/Sales (store, shops)
9. Hospitality (café, restaurant)
10. Land Management (Ranger)
11. Sports and Recreation (youth programs)
12. Research
13. Other

25. How much learning have you done through Bush School (cultural learning)?

	None	Little bit	Some	Fair bit	Lots

26. Are you studying now?
    a. Yes
    b. No

If Yes, where are you studying?

a. Bush/home school
b. Primary school
c. High school

d. TAFE/VET
e. Apprenticeship
f. University
g. Work place training
h. Other, specify …….

EDUCATION – Literacy & Numeracy

27. Please answer the following questions.

	Never	Little bit	Sometimes	Fair bit	Lots
Do you speak English?					
Do you read English?					
Do your write English?					
Are you good with numbers?					
Can you do calculations? (adding, subtracting)					
Do you understand numbers in a table or graph?					

EDUCATION – Motivations

28. Have these been reasons for study?

	Never	Little bit	Sometimes	Fair bit	Lots
Family want me to					
Encouragement from friends, teachers or school					
Want to get a job					
Bored					
Get away from trouble					
Court order					
Job training					
Help the community					
For myself					

EDUCATION - Barriers

29. Have you always felt like you could access formal education if you wanted it?
    a. Yes
    b. No
    c. Don't know

30. How much have these things made it hard to study or get an education?

	Never	Little bit	Some	Fair bit	Lots
Not enough time					
Can't afford it					
Illness/disability					
No opportunity/not eligible					
No transport					
Don't know how					
Language or cultural barriers					
Would have to leave home and live away from family					
Cultural or family responsibilities do not allow it					
Education does not suit culture or beliefs					

EDUCATION - Experiences

31. How much of this is true for you?

	Never	Little bit	Sometimes	Fair bit	Lots
EDUCATION AND WORK					
Going to school gave me confidence to get a job					
I did work experience at school					
People talked to me at school about what jobs I could get					
At school I learnt how to manage my wages and savings					
My education helped me get a job					
ENGAGEMENT					
Local Aboriginal people were employed in my school					
Local families were involved or had input into decisions					

about the school					
It was hard to balance family life and school					
My family valued education					
RELEVANCE					
Some of my schooling was my first language (bilingual education)					
My school respected my culture					
I learnt about my culture at school					
Things I learnt in school weren't relevant to my life					
I felt safe at school					
I learnt about Aboriginal history at school					
EDUCATION QUALITY					
School was a good experience for me					
My education has helped my community					
My cultural knowledge helps my community					
I use cultural knowledge in my job					

PART 4 - WORK

32. How much of your time do you spend on the following activities?

	Never	Little bit	Sometimes	Fair bit	Lots
Caring for children, family, disabled or aged					
Home duties (Cleaning, cooking, gardening)					
Farming					
Fishing					
Hunting					
Collecting bush food					
Making arts and craft					

Performing music, dance and theatre					
Writing or telling Aboriginal stories					
Paid job					
Other voluntary work					

33. If you are working in a paid job, is it:
    a. Full-time
    b. Part-time
    c. Casual
    d. Contract
    e. Cash in hand
    f. Not in a paid job

34. Which of the following best describes your main paid job?
    a. Mining
    b. Arts
    c. Council/Shire work
    d. Teaching
    e. Health worker (substance abuse, youth, mental health)
    f. Labourer
    g. Housing & Maintenance
    h. Centrelink/Job Networks
    i. Child care/Creche
    j. Tourism
    k. Horticulture and Fruit Growing
    l. Farming
    m. Stock work
    n. Caring for Country/Land and Sea Management/Ranger
    o. Forestry and Logging
    p. Police and Night Patrol
    q. Legal work
    r. Self-employed or business owner
    s. Research
    t. Work for the dole
    u. Other Government
    v. Other Business
    w. Not working in paid job

35. How long have you had your main paid job?
    a. Less than 1 year
    b. 1-5 years
    c. 5-10 years
    d. More than 20 years

WORK – Motivations

36. How much are these reasons for working?

	Never	Little bit	Sometimes	Fair bit	Lots
Money					
Maintain culture					
Support family					
Sense of pride					
Get away from trouble					
Court order					
Keep occupied					
Help the community					
Pressure from society					

WORK – Barriers

37. Do any of these make it hard to work or hold a job?

	Never	Little bit	Sometimes	Fair bit	Lots
Need to care for family					
Cultural responsibilities					
Health problems					
Not enough work opportunities					
No jobs that I like					
Lose government benefits if I worked					
Not enough schooling or training					
Other people get favoured for jobs					
Motivation					
No access to transport (don't have licence)					
Criminal record					
Too much red tape (hard to get ochre card, ID, white card, etc)					

WORK – Experiences

38. How much of this is true for you?

	Never	Little bit	Sometimes	Fair bit	Lots
ACCESS/OPPORTUNITY					
There are good jobs in the community					
Community jobs go to outsiders more than local people					
Jobs are not equally available to everybody					
I know where to go if I need help with my job					
I use things I learnt at school or training in my job					
CULTURAL SAFETY					
Employers understand and are flexible with family and cultural responsibilities					
I have had trouble at work or lost a job because I had to fulfil cultural responsibilities					
I have had trouble with family because work got in the way of cultural responsibilities					
I use cultural knowledge in my job					
I use cultural knowledge in my everyday life					
VALUES					
My family and cultural responsibilities come before work					
It is important for me to balance my work and cultural responsibilities					
EMPOWERMENT AT WORK					
I am involved in decision making roles at work					
I am involved in decision making roles at home					
I feel confident about managing money					
I don't feel trusted at work					
My role at work is clear					

I know my rights at work					
Work conditions don't seem fair					
I know the details of my contract					
If I need support for work conditions, I know where to go					

WORK – Income Management

39. How much of your money comes from these places?

	None	Little bit	Sometimes	Fair bit	Most
Paid job					
Royalties					
Selling goods (art, food, artefact)					
Investment					
Child support or maintenance					
Workers compensation					
Work for the dole/CDEP					
Disability support					
Other Government benefit, pension or allowance					
Family supports me					

40. How long does your money last you?
    a. 1 day
    b. A few days
    c. 1 week
    d. 2 weeks
    e. I save

PART 5 – HEALTH

HEALTH - Nutrition

41. Which of these statements best describes the food eaten in your household in the last few months?
    a. We always have enough to eat and the kinds of food we want.
    b. We have enough to eat but not always the kinds of food we want.
    c. We don't have enough to eat.

42. How many days per week do you usually eat fruit or vegetables?
    a. 1-2 days per week

b. 3-4 days per week
c. 5-6 days per week
d. Every day
e. Don't eat fruit/vegetable usually

43. How much of the food you eat is from hunting and gathering (bush tucker)?

	None	Little bit	Some	Fair bit	Lots

44. How much of the food you eat is from the store?

	None	Little bit	Some	Fair bit	Lots

HEALTH – Physical activity

45. How much of your work or livelihood involves hard physical activity? *(includes paid employment, hunting, house cleaning or looking after children)*

	None	Little bit	Some	Fair bit	Lots

46. Outside of your work, how often do you exercise?

	Never	Little bit	Some	Fair bit	Lots

47. On average how long do you exercise each time?
    a. Less than 20 minutes
    b. Less than 1 hour
    c. 1-2 hours
    d. More than 2 hours

HEALTH – Addiction (Alcohol, Drugs & Gambling)

48. Do you use or practice these?

	Never	Used to, gave up	Sometimes	Every week	Every day
Tobacco					
Grog					
Gunja					
Sniff petrol, paint or other inhalants					
Use other drugs					
Gambling (play cards, pokies, casino)					

49. <u>In the last few months</u>, how much has this happened for you?

	Never	Used to, gave up	Sometimes	Every week	Every day

Need to drink or use more drugs to get the effects you want					
End up drinking or using drugs much more than you expected					
Have difficulty stopping or cutting down on your drinking or drug use					
Spent the whole day drinking or using drugs					
Need to drink or take drugs first thing in the morning					
Spent money on gambling that was meant for something else, and then you or your family had to go without it					

HEALTH - Mental and Emotional

50. In the past few months, have any of these happened to you?

	Never	Little bit	Sometimes	Fair bit	Lots
ANXIETY					
Have you felt so worried it was hard to breathe?					
Have you felt so worried you got dizzy?					
Have you felt so worried you start to shake?					
Have you been so worried you felt sick in the guts?					
Have you felt so worried you got really sweaty?					
Have felt so sad that nothing could cheer you up?					
DEPRESSION					
Had too many bad moods?					
Get angry or wild real quick?					
Have had trouble sleeping?					
Felt lonely much of the time?					
Hard to focus. Thinking all over the place?					
Felt like giving up – no point in trying?					

Got angry or wild and stayed that way for a long time?					

51. During last few months, have you used any doctors/health services for these problems?
    a. Yes
    b. No
    c. Don't know/Refused

52. During last few months, have you used any medicine for these problems?
    a. Yes
    b. No
    c. Don't know/Refused

53. In the last few months, have emotional problems been the cause of physical health problems for you?

	None	Little bit	Some	Fair bit	Lots

HEALTH – Dental

54. Compared to others your age, how would you rate your dental health?

	Excellent	Very good	Good	Fair	Poor

55. How often in the last few months did you have toothache?

	Very often	Fairly often	Sometimes	Hardly ever	Never

56. How often in the last few months did you feel uncomfortable about the way your teeth looked?

	Very often	Fairly often	Sometimes	Hardly ever	Never

57. How often in the last few months could you not eat some foods because of problems with your teeth?

	Very often	Fairly often	Sometimes	Hardly ever	Never

HEALTH – Physical health

58. In the last few months, how much did you experience the following?

	Never	Little bit	Sometimes	Fair bit	Most of the time
Health problems					
Health problems that got in the way of normal activities (walking or climbing stairs)					

Health problems that got in the way of work (both home and away)					
Body pain					
Low energy					
Cut back socialising with family or friends because of health or emotional problems					
Troubled by emotional problems (such as feeling anxious, depressed or irritable)					
Personal or emotional problems got in the way of work, school or other daily activities					

59. Do you have any of the following conditions?

	Never	Used to, not now	Sometimes	Yes, just recently	Yes, for a long time
Problems with vision or seeing things					
Problems hearing					
Problems speaking					
Problems moving fingers, arms, legs or feet					
Disability					
A nervous or emotional condition (being sad all the time) which requires treatment, or any mental illness which requires help or supervision					
Arthritis					
Osteoporosis					
Diabetes					
Renal disease					

Heart disease					
High blood pressure					
Cancer					
Asthma					
Breathing problem apart from asthma					
Chronic or recurring pain (e.g. back problems, migraines)					
Dental problems					

60. In the last 12 months did you stay in hospital because you were sick, injured or required surgery?

    IF YES, PROBE: Please tell me each illness or injury that resulted in a hospital stay. CLARIFY IF NECESSARY: Hospital stay is referring to being treated in hospital for a number of hours. Does not include attendance at clinics, x-rays, vaccinations, and short appointments with nurses, doctors or specialists.

Month	*Hospital*	*Reason/Condition*

HEALTH – Services

61. If you have a health problem, do you feel like you can get help easily?

	No	Little bit	Some	Fair bit	Lots

62. How often do you use the following services for health problems?

	Never	Little bit	Sometimes	Fair bit	Lots
Aboriginal Medical Service					
Community health clinic					
A Doctor/General Practitioner (GP)					
Mental Health Services					
Alcohol and other drug services					
Disability services					
Hospital					
Traditional healer					
A relative or other community person					

HEALTH - Health services barriers

63. Have any of these things made it hard to get help with health problems?

	Never	Little bit	Some	Fair bit	Lots
Can't get transport to get treatment					
Culture and language barriers					
Hard to understand what the doctor, nurse or health worker says					
Don't want people to know my personal information					
Don't feel like my privacy is respected					
Health services are too far away					

PART 6 - COMMUNITY

COMMUNITY – Safety

64. Have these things happened in your community in the last few months?

	Never	Little bit	Sometimes	Fair bit	Lots
Stealing or theft					
Kids have nothing to do					
Graffiti and property damage					
Dangerous or noisy driving					
Drinking alcohol/grog					
Gunja					
Petrol sniffing					
Family violence					
Fighting or people being beaten up					
Sexual assault or rape					
Littering or not looking after the public spaces					
People not getting along					

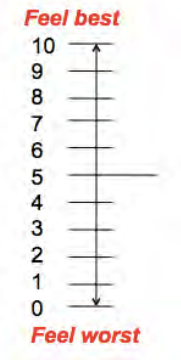
65. How much of this is true for your community?

	Never	Little bit	Sometimes	Fair bit	Lots
GOVERNANCE					
Community members have a chance to be involved in decisions about the community					
Community members have good opportunities to improve their health and wellbeing					
Everybody's rights are protected					
Community leaders represent the views of the community equally					
Community members agree on what is best for the community					
The community governance meets the needs of community members					
SAFETY					
It is not safe to be out in the community at night					
Our community feels very safe					
CONNECTEDNESS					
Our community works well together					
People in our community are working with services and organisations to improve our lives					
Healing has taken place at a community level					
There is a lot of respect in our community					

Community members trust each other					

PART 7 – WELLBEING

Subjective wellbeing



(Using the above ladder/scale, please answer the following questions)

66. How do you feel in your life right now?

67. How about 5 years ago?

68. How do you think you will feel in 5 years time?

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……..……..

Name: ……..……	Phone: ……..……
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Signature: ……..……..	Parent/Guardian signature (if under 18): ……..……
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Caption: ....

Photographer: ....

Photo credit text required: ....

Date taken: .... Place taken: ....

Subject matter: (Please include as much detail as possible. It will be obvious to you that your photograph is of *Acacia harpophylla* – but I will see a photograph of a tree.)

.....

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.....

.....

(extra table for more names if required)

Name:	Phone:	Email:	Signature (Parent/Guardian signature if under 18):

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CENTRAL AUSTRALIAN HUMAN RESEARCH ETHICS COMMITTEE
Centre for Remote Health
PO Box 4066 Alice Springs NT 0871
Ph: (08) 8951 4700 Fax: (08) 8951 4777
Email: cahrec@flinders.edu.au

Dr Sheree Cairney
Centre for Remote Health
PO Box 4066
Alice Springs NT 0871

21st November 2012

Our Ref: HREC-12-118

Dear Dr Cairney

RE: Ethics Application – Approval

The Central Australian Human Research Ethics Committee (CAHREC) considered your research project **'Interplay between Employment, Education, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas (Stage 1-Initiate community engagement)'** at their meeting on the **15th November 2012.**

The Ethics Committee agreed that this project meets the requirements of the National Statement on Ethical Conduct in Human Research.

The Committee members decided to **grant approval** for your project to proceed.

The period for which approval has been given is from the date of this letter until the **31st December 2017**. If you do not complete the research within the projected time please request an extension from CAHREC.

Ethics Approval is contingent upon the submission of an annual Progress Report and a Final Report upon completion of the project. It is your responsibility to ensure you provide these reports. Please make a note of the following dates as failure to submit reports in a timely manner will result in your Ethics Approval lapsing.

Your reports are due on:

14th November 2013

14th November 2014

14th November 2015

14th November 2016

31st December 2017

Copies of the report form can be downloaded from the CAHREC website.

All the best with your research project.

Yours sincerely

Chris Schwarz
Secretariat Support
Central Australian Human Research Ethics Committee

Sheree Cairney

From: Human Research Ethics
Sent: Thursday, 2 May 2013 4:50 PM
To: Sheree Cairney; John Wakerman; Weiping Kostenko; judy.lovell@nintione.com.au; theresetyacke@gmail.com
Cc: Perry Fiegert; Mandy Price
Subject: 5919 SBREC - Final approval (2 May 2013)

Importance: High

Dear Sheree,

The Chair of the Social and Behavioural Research Ethics Committee (SBREC) at Flinders University considered your response to conditional approval out of session and your project has now been granted final ethics approval. Your ethics final approval notice can be found below.

FINAL APPROVAL NOTICE

Project No.:	**5919**
Project Title:	Interplay between Employment, Education, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas (Stage 1 Formative Research: initiate community engagement)
Principal Researcher:	Dr Sheree Cairney
Email:	sheree.cairney@flinders.edu.au
Address:	Centre for Remote Health PO Box 4066 Alice Springs NT 0871

j

Approval Date:	2 May 2013	Ethics Approval Expiry Date:	**30 June 2017**

The above proposed project has been **approved** on the basis of the information contained in the application, its attachments and the information subsequently provided.

RESPONSIBILITIES OF RESEARCHERS AND SUPERVISORS

1. Participant Documentation

Please note that it is the responsibility of researchers and supervisors, in the case of student projects, to ensure that:

- all participant documents are checked for spelling, grammatical, numbering and formatting errors. The Committee does not accept any responsibility for the above mentioned errors.
- the Flinders University logo is included on all participant documentation (e.g., letters of Introduction, information Sheets, consent forms, debriefing information and questionnaires – with the exception of purchased research tools) and the current Flinders University letterhead is included in the header of all letters of introduction. The Flinders University international logo/letterhead should be used and documentation should contain international dialling codes for all telephone and fax numbers listed for all research to be conducted overseas.
- the SBREC contact details, listed below, are included in the footer of all letters of introduction and information sheets.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project Number 'INSERT PROJECT No. here following approval'). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au.

2. Annual Progress / Final Reports

In order to comply with the monitoring requirements of the *National Statement on Ethical Conduct in Human Research (March 2007)* an annual progress report must be submitted each year on the **2 May** (approval anniversary date) for the duration of the ethics approval using the annual progress / final report pro forma. *Please retain this notice for reference when completing annual progress or final reports.*

If the project is completed *before* ethics approval has expired please ensure a final report is submitted immediately. If ethics approval for your project expires please submit either (1) a final report; or (2) an extension of time request and an annual report.

Your first report is due on **2 May 2014** or on completion of the project, whichever is the earliest.

3. Modifications to Project

Modifications to the project must not proceed until approval has been obtained from the Ethics Committee. Such matters include:

- proposed changes to the research protocol;
- proposed changes to participant recruitment methods;
- amendments to participant documentation and/or research tools;
- change of project title;
- extension of ethics approval expiry date; and
- changes to the research team (addition, removals, supervisor changes).

To notify the Committee of any proposed modifications to the project please submit a Modification Request Form to the Executive Officer. Download the form from the website every time a new modification request is submitted to ensure that the most recent form is used. Please note that extension of time requests should be submitted prior to the Ethics Approval Expiry Date listed on this notice.

Change of Contact Details

Please ensure that you notify the Committee if either your mailing or email address changes to ensure that correspondence relating to this project can be sent to you. A modification request is not required to change your contact details.

4. Adverse Events and/or Complaints

Researchers should advise the Executive Officer of the Ethics Committee on 08 8201-3116 or human.researchethics@flinders.edu.au immediately if:

- any complaints regarding the research are received;
- a serious or unexpected adverse event occurs that effects participants;
- an unforseen event occurs that may affect the ethical acceptability of the project.

Andrea Fiegert
Executive Officer
Social and Behavioural Research Ethics Committee

c.c Prof John Wakerman
Dr Weiping Kostenko
Ms Judith Lovell
Ms Therese Tyacke
Ms Mandy Price, Executive Officer, Yunggorendi, mandy.price@flinders.edu.au

---

Andrea Fiegert
Executive Officer, Social and Behavioural Research Ethics Committee
Research Services Office |Union Building Basement
Flinders University
Sturt Road, Bedford Park | South Australia | 5042
GPO Box 2100 | Adelaide SA 5001
P: +61 8 8201-3116 | F: +61 8 8201-2035 |Web: Social and Behavioural Research Ethics Committee

NINTI ONE: CRC REMOTE ECONOMIC PARTICIPATION

CRC for Remote Economic Participation
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Date 25:10:2013

Name JOANNE GARNGALKPUY

Organisation YALU MARNGGITHINYARAW INDIGENOUS CORPORATION

Position MANAGER

Email YALUoffice@gmail.com

Phone 0498683685

Re: *Interplay between Education, Employment, Health and Wellbeing Project (Interplay Project)*

We would be grateful if your organisation could support this research project that will be conducted from February to December 2014.

If you require more information or have any concerns about the project please don't hesitate to contact me.

Sheree Cairney

Project Manager

Phone: 0438 121 473

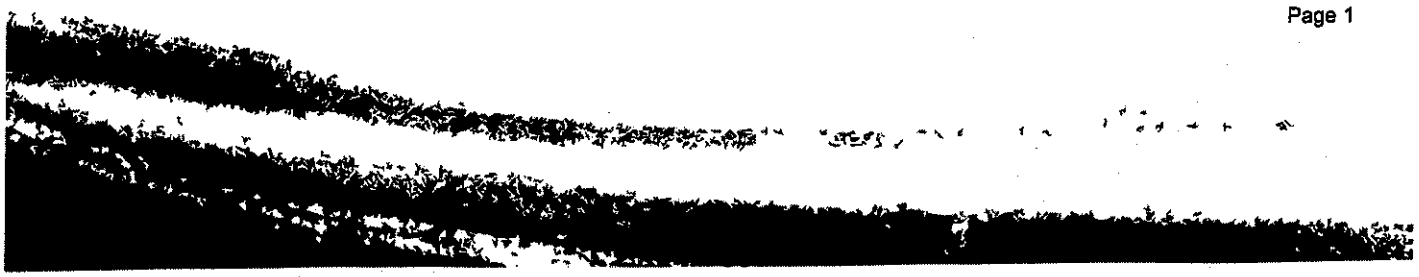
Email: sheree.cairney@nintione.com.au

I/we have had the ***Interplay Project***, explained to me and have been provided enough information and

- ☑ I/we agree
- ☐ I/we disagree

To support the project for its entire duration

Signature Joanne Garngalkpuy Date 25/10/2013



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W www.crc-rep.com.au

Date.....30th Augus 2013.....

Name.....Trevor Gurruwiwi.....

Organisation : Marthakal Homelands Resouce Centre.....

Position : Community Development Officer.....

Emai : comdev@marthakal.org.....

Phone:.....0458898947...0889705500.....

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Sheree Cairney

Project Manager

Phone: 0438 121 473

Email: sheree.cairney@nintione.com.au

I/we have had the ***Interplay Project***, explained to me and have been provided enough information and

- ☑ I/we agree
- ☐ I/we disagree

To support the project for its entire duration

Signature.....Date.....30/08/2013

Level 3 UniSA House
195 North Terrace, Adelaide
GPO Box 2471
Adelaide SA 5001
www.santdatalink.org.au

18 October 2013

Sheree Cairney
Principal Investigator
Centre for Remote Health
Flinders University
C/- Ninti One Ltd PO Box 3971
Alice Springs NT 0871

Dear Sheree

Re: Interplay between Education, Employment, Health and Wellbeing Project

Thank you for submitting your Expression of Interest for Interplay Project data to SA NT DataLink for technical review. I am able to confirm that the project as specified in the application is technically feasible and could be carried out by SA NT DataLink, subject to data custodian and ethical approval.

SA NT DataLink note that this is a consented study with a combined SA/NT study population of approximately 500 persons across two remote communities. SA NT DataLink highly recommend review of the expected quality of linkage once the study cohort has been established.

Should you wish to discuss the proposal further, please do not hesitate to contact me on (08) 8985 8011 or by email on Nicky.O'Brien@nt.gov.au.

Yours sincerely

Nicky O'Brien

Nicky O'Brien

Linkage Projects Coordinator | SA NT DataLink
Health Gains Planning Branch | Department of Health

From: Eddie Mulholland <ceo@miwatj.com.au>
Subject: **RE: Interplay Project - request for health records**
Date: 3 December 2013 4:39:27 PM AEDT
To: Sheree Cairney <sheree.cairney@flinders.edu.au>
1 Attachment, 5.1 KB

Hi Sheree,

This project was approved at the Miwatj Health Board meeting on 28 and 29 November. A formal letter of approval will be forthcoming in the near future.

Yours sincerely
Eddie Mulholland CEO
Miwatj Health Aboriginal Corporation
(08) 8939 1900

From: Sheree Cairney [mailto:sheree.cairney@flinders.edu.au]
Sent: Monday, 14 October 2013 2:03 PM
To: Eddie Mulholland
Subject: RE: Interplay Project - request for health records

Hi Eddie,

Apologies this took awhile – I was on leave.

Attached is the completed Miwatj proforma for the Interplay Project together with the other additional information.

Could you please advise – when is the date of your next board meeting when this project will be considered? We will need to let the Ethics committee know as we are submitting our application there for the 6th November deadline.

Cheers,

Sheree.

Dr Sheree Cairney
Principal Research Leader
Interplay between Health, Wellbeing, Education and Employment Project
Centre for Remote Health, Flinders University, and
Ninti One Limited: Information-Innovation-Ideas for remote Australia
Managing the Cooperative Research Centre for Remote Economic Participation (CRC-REP)

Mobile: +61 438 121 473
Email: sheree.cairney@flinders.edu.au

From: Eddie Mulholland [mailto:ceo@miwatj.com.au]
Sent: Thursday, 26 September 2013 4:26 PM
To: Sheree Cairney
Subject: Interplay Project - request for health records

Yours sincerely
Eddie Mulholland CEO
Miwatj Health Aboriginal Corporation
(08) 8939 1900

From: Sheree Cairney [mailto:sheree.cairney@flinders.edu.au]
Sent: Wednesday, 25 September 2013 7:45 PM
To: Eddie Mulholland
Subject: Interplay Project - request for health records

Hi Eddie,

Thanks for speaking with me on the phone about the Interplay project.

Please find attached:

- A letter outlining our request for health data for the Interplay project in Galiwin'ku
- Ninti One Values
- 2 information sheets on the project
- Project postcard

Please call me if you have any enquiries but please note I will not have reception all of next week.

I look forward to hearing from you.

Sheree.

Dr Sheree Cairney
Principal Research Leader
Interplay between Health, Wellbeing, Education and Employment Project
Centre for Remote Health, Flinders University, and
Ninti One Limited: Information-Innovation-Ideas for remote Australia
Managing the Cooperative Research Centre for Remote Economic Participation (CRC-REP)

Mobile: +61 438 121 473
Email: sheree.cairney@flinders.edu.au

NINTI ONE : CRC REMOTE ECONOMIC PARTICIPATION

CRC for Remote Economic Participation
Ninti One Limited ABN 28 106 610 833
PO Box 3971
Alice Springs NT 0871
P (08) 8959 6000
F (08) 8959 6048
W www.crc-rep.com.au

Date 15/10/13

Name REGINA. NEWLAND

Organisation Muntgiltgarra Wurrguma Group

Position MWG member

Email Maggie.kavanagh1@gmail.com

Phone: 0438 524 050

Re: *Interplay between Education, Employment, Health and Wellbeing Project (Interplay Project)*

We would be grateful if your organisation could support this research project that will be conducted from February to December 2014.

If you require more information or have any concerns about the project please don't hesitate to contact me.

Sheree Cairney

Project Manager

Phone: 0438 121 473

Email: sheree.cairney@nintione.com.au

I/we have had the ***Interplay Project***, explained to me and have been provided enough information and

- ☑ I/we agree
- ☐ I/we disagree

To support the project for its entire duration

Signature R Newland Date 15-10-13

NINTI ONE CRC REMOTE ECONOMIC PARTICIPATION

CRC for Remote Economic Participation
Ninti One Limited ABN 28 106 610 833
PO Box 3971
Alice Springs NT 0871
P (08) 8959 6000
F (08) 8959 6048
W www.crc-rep.com.au

Date 16/9/2013

Name Ian Rawlings

Organisation Central Desert Native Title Services

Position Chief Executive Officer

Email ianrawlings@centraldesert.org.au

Phone: 0894252000

Re: *Interplay between Education, Employment, Health and Wellbeing Project (Interplay Project)*

We would be grateful if your organisation could support this research project that will be conducted from February to December 2014.

If you require more information or have any concerns about the project please don't hesitate to contact me.

Sheree Cairney

Project Manager

Phone: 0438 121 473

Email: sheree.cairney@nintione.com.au

I/we have had the ***Interplay Project***, explained to me and have been provided enough information and

☑ I/we agree

To support the project for its entire duration

Signature..... Date 17/9/13

CRC for Remote Economic Participation
Ninti One Limited ABN 28 106 610 833
PO Box 3971
Alice Springs NT 0871
P (08) 8959 6000
F (08) 8959 6048
W www.crc-rep.com.au

Date 18 SEPT 2013

Name KELUYN EGLINTON

Organisation NEWMONT ASIA PACIFIC

Position REGIONAL MANAGER - SOCIAL RESPONSIBILITY

Email keluyn.eglinton@newmont.com

Phone: +61 4 00482736

Re: *Interplay between Education, Employment, Health and Wellbeing Project (Interplay Project)*

We would be grateful if your organisation could support this research project that will be conducted from February to December 2014.

If you require more information or have any concerns about the project please don't hesitate to contact me.

KEY CONTACT: GUY SINGLETON.
guy.singleton@newmont.com

Sheree Cairney

Project Manager

Phone: 0438 121 473

Email: sheree.cairney@nintione.com.au

I/we have had the ***Interplay Project***, explained to me and have been provided enough information and

☑ I/we agree

☐ I/we disagree

To support the project for its entire duration

Signature ..... Date 18/9/2013

From: QualitySafetyMgrRemoteHealth THS <QualitySafetyMgrRemoteHealth.THS@nt.gov.au>
Subject: **RE: Interplay Project**
Date: 10 November 2013 8:16:39 PM AEDT
To: 'Sheree Cairney' <sheree.cairney@flinders.edu.au>

Hi Sheree

Apologies that I have only got to this mail now and hence a tardy reply.

I have had a quick scan through the proposal, but think that it does not apply to us in the NT Department of Health. I note the 3 communities where you are intending to conduct the activities with Galiwinku as the only NT site. However, Galiwinku is an independent AMS and not a Department run health centre, so we do not have authority to comment.

Regards

John

John Loudon
Quality & Safety Manager
Remote Health | Department of Health
PO Box 721, Alice Springs NT 0871
ph…(08) 8951 9526 | fax …(08) 8923 9514 | mob… 0427 189 998
http://health.nt.gov.au/ www.health.nt.gov.au/remote_health_atlas/

From: Sheree Cairney [mailto:sheree.cairney@flinders.edu.au]
Sent: Wednesday, 6 November 2013 6:03 PM
To: QualitySafetyMgrRemoteHealth THS
Subject: Interplay Project

To the Manager of Quality and Safety,

Please find attached a form for a Research Project titled, The Interplay between Education, Employment, Health and Wellbeing Project. We prefer to call it by the shorter title of, 'The Interplay Project'.

The project has a national focus for remote Aboriginal communities and will be conducted in three communities: Galiwin'ku in the NT, Amata in SA and Wiluna in WA. It will therefore require clearance from all of the necessary groups in the NT, WA and SA.

Attached here is information most relevant to the NT including

- A brief project information sheet
- A table of the clearances we are seeking for each of the sites
- Letters of support from Yalu and Marthakal as the community organisations supporting the project in Galiwin'ku

Relevant to the NT, we have submitted for ethical clearance through the Topend HREC (deadline today) and have also applied for clearance by Miwatj Health and the Northern Land Council

Please let me know if you require further information.

Looking forward to hearing from you.

Cheers,

Sheree.

Dr Sheree Cairney
Principal Research Leader
Interplay between Health, Wellbeing, Education and Employment Project

Centre for Remote Health, Flinders University, and
Ninti One Limited: Information-Innovation-Ideas for remote Australia
Managing the Cooperative Research Centre for Remote Economic Participation (CRC-REP)

Mobile: +61 438 121 473
Email: sheree.cairney@flinders.edu.au

menzies school of health research

Postal: PO Box 41096, Casuarina NT 0811, Australia
Location: John Mathews Building (Bldg 58),
Royal Darwin Hospital Campus, Rocklands Drv, Casuarina NT 0810
Ph: (08) 8946 8600 **Fax:** (08) 8946 8464
Website: menzies.edu.au
ABN: 70 413 542 847

Ethics Administration Office
File Reference Number: HREC-2013-2125
Phone: (08) 8946 8687 or (08) 8946 8692
Email: ethics@menzies.edu.au

17 June 2016

Associate Professor Sheree Cairney
Centre for Remote Health
Flinders University
23 Edwin Street
Preston Vic 3072

Dear A/Professor Cairney,

HREC Reference Number: 2013-2125
Project Title: *Interplay between Employment, Education, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas Project*

The amendment to the above project submitted on 16/06/2016 was approved and will be ratified at the next meeting of the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research (HREC). Please note that this approval applies only to research conducted after the date of this letter.

The following amendments are approved:

- **The addition of Dr Rosalie Schultz as a student investigator**

Please note that all requirements of the original ethical approval for this project still apply.

As a reminder, the approved project timeline is: ***26/03/2014 – 31/12/2017***. An annual progress report or final report is required on or before the ***26/03/2017.***

APPROVAL IS SUBJECT TO the following conditions being met:

1. The Coordinating Principal Investigator will **immediately report anything that might warrant review** of ethical approval of the project.

2. The Coordinating Principal Investigator will notify the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research (HREC) of any event that requires a **modification or amendment to the protocol or other project documents** and submit any required amendments in accordance with the instructions provided by the HREC. These instructions can be found on the Menzies' website.

3. The Coordinating Principal Investigator will submit any necessary reports related to the **safety of research participants (e.g. protocol deviations, protocol violations)** in accordance with the HREC's policy and procedures. These guidelines can be found on the Menzies' website.

4. The Coordinating Principal Investigator will **report** to the HREC **annually** and notify the HREC when the project is completed at all sites using the specified forms. Forms and instructions may be found on the Menzies' website.

5. The Coordinating Principal Investigator will notify the HREC if the project is **discontinued at a participating site before the expected completion date**, and provide the reason/s for discontinuance.

6. The Coordinating Principal Investigator will notify the HREC of any plan to **extend the duration of the project past the approval period listed above** and will submit any associated required documentation. The preferred time and method of requesting an extension of ethical approval is during the **annual progress report**. However, an extension may be requested at any time.

7. The Coordinating Principal Investigator will notify the HREC of his or her **inability to continue as Coordinating Principal Investigator**, including the name of and contact information for a replacement.

8. The safe and ethical conduct of this project is entirely the responsibility of the investigators and their institution(s).

9. Researchers should immediately report anything which might affect continuing ethical acceptance of the project, including:

- Adverse effects of the project on participants and the steps taken to deal with these;
    - Other unforeseen events;
    - New information that may invalidate the ethical integrity of the study; and
    - Proposed changes in the project.

10. Approval for a further twelve months, within the original proposed timeframe, will be granted upon receipt of an annual progress report if the HREC is satisfied that the conduct of the project has been consistent with the original protocol.

11. Confidentiality of research participants should be maintained at all times as required by law.

12. The Patient Information Sheet and the Consent Form shall be printed on the relevant site letterhead with full contact details.

13. The Patient Information Sheet must provide a brief outline of the research activity including: risks and benefits, withdrawal options, contact details of the researchers and must also state that the Human Research Ethics Administrators can be contacted (telephone and email) for information concerning policies, rights of participants, concerns or complaints regarding the ethical conduct of the study.

14. You must forward a copy of this letter to all Investigators and to your institution (if applicable).

This letter constitutes ethical approval only. This project cannot proceed at any site until separate research governance authorisation has been obtained from the CEO or Delegate of the institution under whose auspices the research will be conducted at that site.

Should you wish to discuss the above research project further, please contact the Ethics Administrators via email: ethics@menzies.edu.au or telephone: (08) 8946 8687 or (08) 8946 8692.

The Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research wishes you every continued success in your research.

Yours sincerely,

Dr Lewis Campbell
Chair
Human Research Ethics Committee
of the Northern Territory Department of Health
and Menzies School of Health Research
NHMRC Registration No. EC00153
http://www.menzies.edu.au/page/Research/Ethics_approval/

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007)*. The processes used by this HREC to review multi-centre research proposals have been certified by the National Health and Medical Research Council.

Appendix 3.3

Rosalie Schultz

From: Human Research Ethics
Sent: Wednesday, 18 January 2017 3:43 PM
To: Sheree Cairney; John Wakerman; kay.nevill@nintione.com.au; tammy.abbott@nintione.com.au; byron.wilson2@menzies.edu.au; Rosalie Schultz
Subject: OH-00122 - SBREC Acceptance Notice (18 January 2017)
Attachments: Other HREC application (OH-00122)

Importance: High

Dear Sheree,

Your request for ethics approval from the Social and Behavioural Research Ethics Committee (SBREC) at Flinders University based on the ethics approval already granted by the Human Research Ethics Committee of Northern Territory Department of Health and Menzies School of Health Research has been received.

As outlined on the Social and Behavioural Research Ethics Committee (SBREC) website ethics approvals conducted by Flinders University staff and students (including those with adjunct status), for social and behavioural research, granted by another Australian NHMRC Human Research Ethics Committee (HREC) will be accepted by the SBREC without further review or scrutiny. This approach is in line with Chapter 5.3 of the *National Statement on Ethical Conduct in Human Research,* which encourages the minimising of ethical review duplication. On that basis, the research project listed below has been accepted by the SBREC.

Important Note
The application submitted (SBREC Project OH-00122) has been accepted by the SBREC on the condition that:

1. the research is not clinical in nature (as per the guidelines on the SBREC website); and
2. no participants will be recruited from any organisations under the banner of the Southern Adelaide Local Health Network (SALHN) which includes the Flinders Centre for Innovation in Cancer (FCIC).

ACCEPTANCE OF ETHICS APPROVAL

Granted by other NHMRC Registered HREC

SBREC Project Number:	**OH-00122**
Other HREC approval number:	HREC-20.3-2125
Ethics approval granted by:	Human Research Ethics Committee of Northern Territory Department of Health and Menzies School of Health Research
Project Title:	Interplay between Education, Employment, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas Project (Interplay Project)
Flinders University Researcher:	A/Prof Sheree Cairney

School / Dept	Centre for Remote Health
Email:	sheree.cairney@flinders.edu.au

Date approval accepted:	18 January 2017

Conditions of Acceptance

As the ethics approval granted by the Human Research Ethics Committee of Northern Territory Department of Health and Menzies School of Health Research has been accepted by the Social and Behavioural Research Ethics Committee (SBREC) it is a requirement that the following conditions be met:

1. **Flinders University Letterhead**
   a) If the Flinders University researcher is the principal researcher on the accepted application it is a requirement that all documentation and/or information to be distributed to potential participants is placed on the Flinders University letterhead. Please ensure that these changes are submitted to the original approving Human Research Ethics Committee (HREC) as a modification request and are approved by them prior to implementation. Please also submit a copy of the modification request (and any relevant attachments) along with the modification approval notice from the other HREC to the SBREC. This information will just be saved onto your electronic project file.

   b) If the Flinders University researcher is not the principal researcher on the project; then documentation to be provided to potential participants does not need to be placed on Flinders University letterhead.

2. **Modifications / Amendments**
   With the exception of modifications that may be required in number 1 above, the research project will continue being monitored by the other HREC that granted ethics approval; and on that basis copies of modification requests and approvals do not need to be submitted to the SBREC.

3. **Submission of Other HREC Reports**
   Copies of all reports (i.e., annual progress and final) submitted to the Human Research Ethics Committee that originally approved the application need to be submitted to the Social and Behavioural Research Ethics Committee (SBREC).The reports will be reviewed by the SBREC Chair and then placed on your project file (i.e., a report approval notice will not be emailed to you). When reports are emailed to the SBREC please ensure that the SBREC project number the report relates to is listed in the subject line of the email.

For Future Reference

If you need to contact the SBREC in relation to this email in the future please ensure that you quote the project number allocated by the SBREC (OH-00122).

Kind regards
Andrea

Mrs Andrea Fiegert and Ms Rae Tyler
Ethics Officers and Executive Officer, Social and Behavioural Research Ethics Committee
Andrea - Telephone: +61 8 8201-3116 | Monday, Tuesday and Wednesday
Rae – Telephone: +61 8 8201-7938 | ½ day Wednesday, Thursday and Friday

Email: human.researchethics@flinders.edu.au
Web: Social and Behavioural Research Ethics Committee (SBREC)

Manager, Research Ethics and Integrity – Dr Peter Wigley
Telephone: +61 8 8201-5466 | email: peter.wigley@flinders.edu.au

Research Services Office |Union Building Basement
Flinders University
Sturt Road, Bedford Park | South Australia | 5042
GPO Box 2100 | Adelaide SA 5001

WAAHEC

9th August, 2016

Dear Sheree,

RE: HREC Reference number: 549

Project title: *Interplay between Employment, Education, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas (Interplay Project)*

Thank you for submitting the above amendment which was considered by the WAAHEC at the meeting held on 8th August, 2016 and approved the request for Amendment providing:

- Addition of PhD student Rosalie Schultz

Should you have any queries about the WAAHEC' consideratio f your amendment please contact ethics@ahcwa.org.

It should be noted that all requirements of the original approval still apply.

The WAAHEC wishes you every success in your research.

Kind regards

Pierson

Tara Pierson
For, Vicki O'Donnell
Chair, WAAHEC

This HREC is constituted and operates in accordance with the National Health and Medical Rese Council' (NHMRC) *National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.* The process this HREC uses to review multi-centre research proposals has been certified by the NHMRC.

WAAHEC

9th August, 2016

Dear Sheree,

RE: HREC Reference number: 549

Project title: *Interplay between Employment, Education, Health and Wellbeing for Aboriginal and Torres Strait Islander people in Remote Areas (Interplay Project)*

Thank you for submitting the above amendment which was considered by the WAAHEC at the meeting held on 8th August, 2016 and approved the request for Amendment providing:

- Addition of PhD student Rosalie Schultz

Should you have any queries about the WAAHEC' consideratio f your amendment please contact ethics@ahcwa.org.

It should be noted that all requirements of the original approval still apply.

The WAAHEC wishes you every success in your research.

Kind regards

Pierson

Tara Pierson
For, Vicki O'Donnell
Chair, WAAHEC

This HREC is constituted and operates in accordance with the National Health and Medical Rese Council' (NHMRC) *National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.* The process this HREC uses to review multi-centre research proposals has been certified by the NHMRC.

Appendix 4: Publications

These are ordered by the Chapter to which they contribute in the thesis.

Perspective

Caring for country and the health of Aboriginal and Torres Strait Islander Australians

Investment in caring for country may help close the gaps in education, employment and health

Health services for Aboriginal and Torres Strait Islander people are expensive. The National Aboriginal Community Controlled Health Organisation reported that government Aboriginal and Torres Strait Islander health and hospital service expenditure per person in 2010–11 was $8190 nationally, and as high as $16 110 in the Northern Territory, compared with $4054 per non-Indigenous person.[1] Increasing expenditure on health services for Aboriginal and Torres Strait Islander people is not closing the gap in health outcomes at the rate to which governments have committed.[2]

Gaps in education and employment outcomes between Aboriginal and Torres Strait Islander Australians and other Australians are also not closing, despite significant investment. Overall employment indicators for Aboriginal and Torres Strait Islander Australians are deteriorating.[2] Comprehensive lack of progress in the three key areas of education, employment and health highlights the interplay among these three areas. Transformative changes in our approaches to the health and wellbeing of Aboriginal and Torres Strait Islander people are needed.[3]

Linking health of people and country

When asked about their health, Aboriginal and Torres Strait Islander people draw attention to the importance of relationships with their culture and country.[4] However, partitions among government departments and service agencies have led to the development of silos within and between government and different service agencies. The relationship between people and their country is rarely considered in policy or service development.

Health services for Aboriginal and Torres Strait Islander Australians have funding and performance indicators linked to their provision of clinical care.[1] The very meaning of health for Aboriginal and Torres Strait Islander people is often overlooked.[5]

Because health service funding and performance indicators are driven by government, services are limited in their opportunity for innovation.[1] This may be compounded by government focus on the deficits and deficiencies of Aboriginal and Torres Strait Islander communities — the need to close the gap — and lack of recognition of the importance of the relationships between health and country for Aboriginal and Torres Strait Islander people.[6]

To overcome these challenges, Aboriginal and Torres Strait Islander people will need supportive government and industry partners, responsive to people's own aspirations, and a recognition of the complex interplay of factors that affect wellbeing.[6]

Indigenous land management — caring for country

Outside the health sector, there has been convergence of interests in Indigenous land management between Aboriginal and Torres Strait Islander people, non-Indigenous land managers and scientists, with increasing recognition of the value of Aboriginal and Torres Strait Islander people's knowledge and skills.[7] Indigenous land management can maintain and improve the condition of Australia's ecosystems, which have developed in response to people caring for their country over thousands of years. For example, Aboriginal fire regimes could have prevented the huge fires of northern Australia of the late 20th century, which resulted from build-up of fuel through neglect of Aboriginal burning practices.[8]

Through the work of government and non-government environment, resource management and Aboriginal and Torres Strait Islander agencies, Indigenous land management programs now operate in every state of Australia and in the NT.[7] Health benefits are among the positive outcomes of these programs.[9]

Health impacts

Direct health impacts for Aboriginal and Torres Strait Islander people's involvement in land management include increased physical activity; less alcohol and illicit substance use; greater access to bush foods; and less access to takeaway foods.[7,9,10]

Recognition of Aboriginal and Torres Strait Islander people's knowledge and skills in land management may enhance individual and community autonomy, cultural identity and sense of control. Addressing these factors may counteract the underlying health disadvantage that reflects profound loss of control, disempowerment and disengagement that many Aboriginal and Torres Strait Islander people suffer.[5]

Young and older Aboriginal and Torres Strait Islander men and women are interested in land management, which can provide both education and employment. Land management presents unique opportunities for young people in remote regions who have few other options.[11] Non-Indigenous people lack the necessary skills, knowledge, and community and cultural affiliation, and are less likely to live in regions where land management programs operate. Thus, there is little competition for either participants or program resources.[11]

Rosalie Schultz[1,2]

Sheree Cairney[1,2]

1 Centre for Remote Health, Flinders University and Charles Darwin University, Alice Springs, NT.

2 Cooperative Research Centre for Remote Economic Participation, Alice Springs, NT.

rosalie.schultz@flinders.edu.au

doi: 10.5694/mja16.00687

Podcast available at https://www.mja.com.au/podcasts

Land management in remote regions

Aboriginal and Torres Strait Islander people are involved in land management in urban, rural and remote regions of Australia.[7] However, there are more significant opportunities and more potential benefits in remote regions, where health status is worse than in non-remote regions.[12,13]

Aboriginal and Torres Strait Islander people in remote regions suffer even worse health than their compatriots in urban regions. This is attributed to socio-economic determinants of health such as overcrowding, substandard housing, low workforce participation, low school attendance and achievement, and low income.[13] Many risk factors and markers for chronic diseases, notably diabetes, are more common among Aboriginal and Torres Strait Islander people in remote regions.[13]

However, Aboriginal and Torres Strait Islander people in remote regions are less likely to use alcohol and illicit drugs. They experience fewer stressors, suffer fewer injuries, and report better mental health than Aboriginal and Torres Strait Islander people in non-remote regions.[13] These social and emotional wellbeing factors may reflect the fact that many remote Aboriginal and Torres Strait Islander people can access their lands and have more opportunity to participate in land management and other cultural activities.[5,12]

Access to Indigenous lands and funding

Aboriginal and Torres Strait Islander people now have formally recognised interests in over half of the Australian land area, through native title, Indigenous Protected Areas and Indigenous Land Use Agreements.[7] Aboriginal and Torres Strait Islander people on these lands are increasingly undertaking commercial economic activities such as pastoralism and tourism; control of feral animals, weeds and fire; preservation of their cultural heritage; and improving the conditions of their communities through dust suppression and management of waterways. However, the scale of human input is still small, with less than 800 full-time equivalent Indigenous ranger positions Australia-wide.[14]

The Australian government is the major funder of Indigenous land management, principally through its Working on Country initiative. This covers wages and operations to support land management activities by Indigenous rangers. In August 2016, the Commonwealth made a commitment of $335 million over 5 years (2014–2018) — just under $70 million per year — to support Indigenous ranger groups through Working on Country projects.[15] This complements state and territory, non-government, philanthropic and other funding to total approximately $120 million annual expenditure on Indigenous land management nationwide.[7]

Expenditure on land management could be considered in comparison with the total government health service expenditure of $826 million for 2014–15 for Aboriginal and Torres Strait Islander people[1] and the estimated cost savings of $900 per person from the health benefits of participation in land management.[12] Estimates of social return on investment suggest net benefits of $2.70 for each dollar invested on Indigenous land management through economic, cultural and environmental outcomes.[16]

Primary health care

Being responsive to the community is a fundamental principle of primary health care as it was originally conceived.[17] Investment in health is broader than investment in clinical services. Applying this global principle, for many Aboriginal and Torres Strait Islander people — in both remote and urban areas — comprehensive primary health care would require connection to country and support for participation in land management activitities.[5] Land management services can provide Aboriginal and Torres Strait Islander people with aspects of primary health care as it was originally conceived: community, economic and social development; self-reliance and self-determination, and provision of basic needs extending beyond clinical health services.[17]

Aboriginal Community Controlled Health Services provide primary health care and have the capacity to provide cultural services including land management.[1] Integration of land management into health care services may be part of the transformative change needed to better serve Aboriginal and Torres Strait Islander people.

Postulated education, employment and health benefits of participation in land management for Aboriginal and Torres Strait Islander Australians are enough to warrant strong government commitment and investment.[7] Such investment should include rigorous research and evaluation to optimise the impacts on people and our shared country.

Conclusion

There are opportunities for efficiency when investment achieves outcomes in several sectors. Investment in land management for Aboriginal and Torres Strait Islander Australians provides opportunities for better health, complemented by empowerment, education, employment and economic development,[6] with enhancement of Australian land values benefitting the wider community.[7] Such transformative change could potentially accelerate progress towards improving the wellbeing of Aboriginal and Torres Strait Islander people through closing gaps in education, employment and health.[12]

Acknowledgements: This research is supported by the Cooperative Research Centre for Remote Economic Participation, hosted by Ninti One. We acknowledge the support and involvement of our key organisational stakeholders: Centre for Remote Health (Flinders University and Charles Darwin University), Department of Prime Minister and Cabinet, Northern Star Resources, Yalu Marŋgithinyaraw Indigenous Corporation, Marthakal Homelands Resource Centre, Central Desert Native Title Services, Poche Centre for Indigenous Health, Miwatj Health Aboriginal Corporation, Australian Bureau of Statistics, Muntjiltjarra Wurrgumu Group, Kalano Community Association, Wurli–Wurlinjang Health Service, StrongBala Men's Health Program, Flinders NT (Katherine), Katherine Stolen Generation Group, Banatjarl Strongbala Wumin Grup, Wiluna Martu Rangers, and Nganganawili Aboriginal Health Service Community.

Competing interests: No relevant disclosures.

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Re-Imagining Indigenous Education for Health, Wellbeing and Sustainable Development in Remote Australia

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Abstract

In Australia both Indigenous communities and governments are concerned at the educational outcomes of Indigenous children, especially children in remote regions. However, there are divergent visions of Indigenous education. For Indigenous communities, education embraces culture and contributes to wellbeing, the focus of our research, while for governments, educational goals comprise school attendance, English literacy and completion of year 12. Our team of Indigenous and non-Indigenous researchers explored wellbeing for Indigenous people in remote Australia through focus groups and interviews. Grounded analysis showed how research participants would like more Indigenous education for their children. Their vision for education includes transmission of Indigenous knowledge and skills in art, culture, history, land and sea management, and literacy in both English and Indigenous languages. Remote Indigenous communities hold under-utilised resources and strengths for education, and Indigenous people's knowledge is needed, particularly in conservation and land and sea management. Research participants feel thwarted by education policies which require competition for funding and segregation of services. Re-imagining education from the perspectives of Indigenous communities offers opportunities to enhance education, together with employment, health and wellbeing, and strengthen Indigenous languages, knowledge and skills. These are important for both overcoming Indigenous disadvantage and for Australia to reach its commitments to conservation and sustainable development goals.

Keywords

Indigenous People, Education, Wellbeing, Culture, Land Management, Sustainable Development

1. Introduction

Education directly enhances people's agency, capacity, capabilities and wellbeing. Indirectly, education enhances health and wellbeing, through both economic and intangible benefits, such as creativity, tolerance and community cohesion (Vila, 2000). Both the people who are educated, especially children, and their communities benefit from education (Robeyns, 2006). Benefits of education cross generations, highlighting the importance and urgency of improving the effectiveness of Australia's education systems to meet the needs of Indigenous peoples (Partington & Beresford, 2012).

1.1. Indigenous Australians

Indigenous Australians comprise two distinct and diverse populations, Aboriginal and Torres Strait Islander peoples, who together number approximately 700 000 people or 3% of Australians. For brevity we refer to "Indigenous" Australians to include both Aboriginal and Torres Strait Islander peoples.

Indigenous Australians have occupied Australia for 50000 years, and continue to identify themselves as distinct from other Australians, whose arrival since the late 1700s led to the deaths of 75% of Indigenous Australians (Australian Institute of Health and Welfare, 2015). Forced removal of Indigenous children from their homelands and families continued until the 1970s through Australia's assimilation and protection policies (Partington & Beresford, 2012).

Australians voted in a referendum in 1967 for the national government to take responsibility in Indigenous affairs (Partington & Beresford, 2012). Since then Indigenous Australians have been included in Australia's population census, providing data on education, employment and other indicators. Availability of data has prompted governments and communities to develop policies intended to improve Indigenous indicators (Altman, Biddle, & Hunter, 2008).

Indigenous Australians established that they had legal right to their lands in the 1992 Mabo court case if they could demonstrate that their pre-colonial system of land tenure, dubbed "native title", still functions (Altman & Markham, 2015). However native title rights are limited and Indigenous people's economic opportunities and access to appropriate education, health, and infrastructure remain inadequate, especially in remote regions where Indigenous people comprise 30% of the population (Australian Bureau of Statistics, 2018; O'Faircheallaigh, 2015). Indigenous Australians remain disadvantaged in almost all socioeconomic indicators, and many indicators are lower for people in remote regions.

1.2. Indigenous Australian Education

Educational disadvantage for Indigenous children in remote Australia is of widespread concern. Less than 2/3 of Indigenous children in remote regions attend school; less than half reach minimum reading standards at Year 3; and only 42% complete 12 years of schooling compared with 89% of all Australian stu-

dents (Commonwealth of Australia: Department of Prime Minister and Cabinet, 2018). Policy-makers believe that improving these education indicators is necessary to improve people's life experiences (Commonwealth of Australia: Department of Prime Minister and Cabinet, 2018). However aspects of Australia's approach to Indigenous education are based on assumptions that are not supported by evidence, and may undermine the strengths and diversity of Indigenous people (Guenther, 2013).

Education is much more than schooling, especially for Indigenous people, for whom school has arisen in the context of historic and on-going colonization. Attending school has costs, particularly where children face racism in its many forms (Bodkin-Andrews & Carlson, 2016). Racism at school contributes to the disengagement of Indigenous children and families from school and the education system (Gollan & Malin, 2012).

1.3. Education, Health and Wellbeing for Indigenous Australians

In most populations, education is directly correlated with health. Education improves health throughout people's lives, through psychological and social effects such as self-esteem and confidence, and increasing health literacy (Cohen & Syme, 2013). Education also improves health through increasing employment opportunities, facilitating access to healthier, safer, more secure and higher status work (Vila & Garcia-Mora, 2005). The greater economic benefits from skilled and professional employment further increase the health benefits of education (Ross & Wu, 1995).

However, relationships between education and health are in both directions: better health enhances people's motivation and capacity to learn, while many medical conditions can interfere with learning (Basch, 2011). Hearing impairment is a particular concern for Indigenous Australian children in remote regions where 90% suffer ear disease (Morris et al., 2005). Hearing impairment causes problems at school for both affected children and their peers. Entire classrooms are disadvantaged when children are disruptive because they cannot hear and communicate effectively (Partington & Galloway, 2005).

Chronic or recurrent illnesses that lead to frequent absences also affect school performance, an important issue for Indigenous Australian children, in whom many conditions are more common than in non-Indigenous children (Dockett, Perry, & Kearney, 2010). These include anemia, diarrhea, dental caries, and respiratory, skin and urinary infections (Gracey & King, 2009). Overall, relationships between children's health and education are complex, with factors such as parental employment affecting both health and education (Lynch & von Hippel, 2016). However, assumptions from other populations may be confounded in their application to Indigenous Australians (Biddle, 2006).

For Indigenous Australians a U-shaped relationship between education and health has been described, with better health among the people with the lowest and the highest levels of education (Shepherd, Li, & Zubrick, 2012). This relationship suggests that the interactions between education and health for Indi-

genous people differ substantially from the consistently positive associations in other populations (Lynch & von Hippel, 2016). Damaging effects of racism that Indigenous people face at school and work may outweigh possible future benefits of education (Shepherd et al., 2012). Because of incomplete knowledge of relationships between health and education for Indigenous people, current strategies to improve education may not lead to anticipated benefits (Boughton, 2000).

1.4. Improving Educational Outcomes for Indigenous Australians

The Australian Government's 2009 *Closing the Gap: National Indigenous Reform Agreement* aimed to address disparities in socio-economic indicators between Indigenous and non-Indigenous Australians. The Agreement recognized interconnections between education, employment and health, and included targets of reduced disparities between Indigenous and non-Indigenous Australians in each (Council of Australian Governments, 2012). The education targets were to eliminate disparities in school attendance, and halve the disparities in reading, writing and numeracy between Indigenous and non-Indigenous children by 2018; and halve the disparity in year twelve attainment by 2020. Health targets were to halve the child mortality difference by 2018 and eliminate the difference in life expectancy by 2031 (Commonwealth of Australia: Department of Prime Minister and Cabinet, 2018).

While many Australians support the idea of reducing disparities, both Indigenous and non-Indigenous people have raised concerns with the *Closing the Gap* strategy. The perceived need for Indigenous Australians to overcome disparity and become more like non-Indigenous people reflects a perception of Indigenous people as problematic, and of non-Indigenous people as providing appropriate targets (Walter, 2016). This approach can overlook the strengths, diversity and different lifeways and aspirations of Indigenous people (Altman, 2009).

Effective approaches to policy development to reduce Indigenous disadvantage require attention to needs defined by Indigenous people and communities themselves.

Wellbeing provides a basis for defining need, and an opportunity for development that is not biased towards any particular culture or section of society (OECD, 2017). Enhancing wellbeing as a development goal enables fair comparison between people of different cultures, within societies and over time (Cairney et al., 2017; OECD, 2017). Indigenous Australians in remote communities report high levels of wellbeing with mean life satisfaction 7.6, equal to the average life satisfaction of all Australians (Australian Bureau of Statistics, 2015, 2016), an overlooked statistic when much policy focus is on changing poor indicators in education, employment and health, violence, crime and imprisonment (Australian Institute of Health and Welfare, 2015). Our research was designed to explore wellbeing for Indigenous people in remote Australia to provide a basis for education and other policy development based on Indigenous people's diverse aspirations and goals.

2. Methods

2.1. Education as a Wellbeing Priority

Our research aimed to explore and explain the conundrum of high levels of wellbeing despite low indicators in education, employment and health among Indigenous people in remote Australia, through a framework developed collaboratively with Indigenous researchers and participants. Both Indigenous and non-Indigenous methodologies and knowledge were used, with Indigenous and non-Indigenous people teaching and learning from one another in a two way process (LaFlamme, 2011). We aimed to share knowledge between communities, scientists and government, and ensure community development, rigorous science, and policy impact (Cairney et al., 2017).

Six priorities were identified to form a wellbeing framework: education, employment and health being those of government; and Indigenous people's priorities of community, culture and empowerment.

Indigenous communities throughout remote Australia with connections to the research team were invited to participate. Four communities were selected, with a range of levels of remoteness, and diverse geography, culture and language use, population size and proportion who are Indigenous.

In each community, Indigenous Community Researchers were employed in the research, including facilitating focus groups through Indigenous organizations. Focus groups enable exploration of participants' knowledge and experience, building on other group members' contributions. They are particularly valuable in cross-cultural research, and in enabling criticism of services that individuals may withhold from researchers (Kitzinger, 1995). No-one was excluded from participation, and people who could not participate in focus groups were interviewed individually. Demographics of participants are described in Table 1 and Table 2, with 68 Indigenous and seven non-Indigenous participants in 14 focus groups, and four Indigenous and one non-Indigenous service providers interviewed between June 2014 and June 2015.

Focus groups and interviews were audio-recorded, then transcribed and thematically coded, based on the wellbeing priorities, and on sub-themes which emerged in the discussions.

This article describes findings that relate to education and its relationships with wellbeing for Indigenous people in remote Australia.

2.2. Ethics

All Indigenous people and organizations involved actively engaged with the research, providing an Indigenous ethical framework for the research. Formal ethics approval was granted by the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research (Reference 2013-2125) and the Western Australian Aboriginal Health Ethics Committee (HREC Reference Number 549). All participants gave written informed consent.

Table 1. Research participants in focus groups by service, Indigenous status and gender.

Service	Participants	Total participants	Indigenous participants	Female participants
Business development	Managers	2	1	0
Education	Managers, employees	6	6	6
Education	Managers, employees	12	12	9
Land and Sea Management	Community members	4	4	3
Land and Sea Management	Employees	4	4	1
Land and Sea Management	Employees	4	4	4
Land and Sea Management	Employees	7	7	0
Land and Sea Management	Employees	8	8	8
Health	Managers, employees	4	1	1
Health	Employees, community	9	9	0
Health	Employees	3	1	3
Municipal	Managers, employees	6	6	4
Municipal	Managers	2	1	1
Research	Employees	4	4	4
Total		75	68	44

Table 2. Interview participants by service, Indigenous status and gender.

Service	Participants	Total Interviews	Indigenous Interviewees	Female Interviewees
Art	Manager	1	1	1
Business development	Manager	1	1	0
Education	Founder	1	1	1
Education	Manager	1	1	1
Land and sea management	Program leader	1	0	0

3. Results

3.1. Education for Meaningful Livelihoods for People in Remote Regions

Research participants described the need for distinctive Indigenous schooling and education to support Indigenous people to remain on their traditional land with knowledge and skills to engage in contemporary society.

"We grew up here and are the traditional owners. Our elders fought hard for this country to continue on for other generations." (Participant in focus group 9)

"The best learning for our people is on the land." (Interview 4: Indigenous service provider)

"The school's mantra is Indigenous people: strong in both worlds." (Interview 2: non-Indigenous service provider)

Research participants confirmed that Indigenous families in remote Australia, appreciate and enjoy quality school and education:

"Lots of our kids love school, they love school." (Participant in focus group 4)

3.2. Improving School Attendance and Educational Participation

Increased school attendance was a target of the *Closing the Gap* strategy, but there has been no progress nationally in increasing Indigenous school attendance overall, and attendance in the Northern Territory declined (Commonwealth of Australia: Department of Prime Minister and Cabinet, 2018). In our research, participants identified reasons for children and young people to not attend school. These included children feeling a lack of freedom and connection to the culture of the school, and that they have out-grown school. Non-attendance was then linked to risk-taking behaviors.

"I think it is the freedom, like our people weren't locked up… enclosed in a school getting all of this stuff pumped into us … We were out on the land and education was cultural, and education was survival and learning to live off the land in our culture and our country… not in the classroom." (Interview 4: Indigenous service provider)

"They obviously don't want to go to school coz they feel like they're too big to go to a school. They don't feel like they little kids going to a school setting. Is there another place they could go to... to learn to continue their learning in [this community]?" (Participant in focus group 4)

"Some kids reach 13 and 14 years old and think they are adults—they start drinking and gunja [marijuana] and take off." (Participant in focus group 4)

In our research, participants identified how communities could respond to children not attending school by listening to community elders and seeking cultural advice.

"The elders say… send kids to school." (Participant in focus group 9)

"Cultural advisors help with any trouble like kids going to school." (Participant in focus group 9)

3.3. Pathways from Education to Employment

Although the importance of attending school was recognized, some participants in our research believed that culture is more important than school, and if young people are educated about Indigenous culture, then attending school may be less important.

"If they're old enough to go out, [they should] get away from the community so they learn more cultural stuff. It's an education issue, it's the way learning about the land." (Participant in focus group 1)

For many Indigenous research participants, relationships between education, school and future wellbeing are not closely linked. Research participants stated:

"The kids don't know how to do things after school, they don't know how to look for a job and they are too shame to. They should have a program at the

schools that prepare them for what they do after. They're not working together after they leave school, they don't prepare them for school leaving. Then they get into drugs and everything." (Participant in focus group 6)

"No pathways—kids leave middle school and don't go onto secondary school." (Participant in focus group 9)

Many employment opportunities in remote communities, such as in art and land and sea management programs arise from Indigenous culture and knowledge. Education to support such employment will enhance Indigenous culture and knowledge, and may be better delivered outside the school environment. Research participants noted:

"[Young people] recognize the employment pathway between education and programs such as the ranger program, so we support school camps for this program." (Participant in focus group 3)

"Workplace accredited training, largely not classroom based. TAFE send out teachers to work on site—culturally appropriate, not as invasive." (Interview 2: non-Indigenous service provider)

Indigenous history and culture are of special interest to Indigenous people and may assist in retaining Indigenous students' interest. Research participants noted the importance of these areas:

"People including our own mob don't know Indigenous history. It's not taught in schools, in training there is nothing on it." (Participant in focus group 10)

"Learning on country program… working with schools. Culture program has always been here, to help them understand the Dhuwa, Yirritja way that's been here since the start." (Participant in focus group 14)

3.4. Indigenous Knowledge and Expertise

Indigenous histories and cultures are described in Australia's education curriculum as a cross-curriculum priority, rather than an area of learning, with the intention of improving outcomes for Indigenous students. Learning from, with and about Indigenous Australians is not required in Australian schools (Australian Curriculum Assessment and Reporting Authority (ACARA); Williamson-Kefu, 2016).

Research participants identified how Indigenous knowledge may be valuable for all children in the teaching of art, culture, history, ecology, land and sea management and language. Indigenous education occurs both in the school and when working on the land:

"She walks around the school; shows kids different types of plants and cultural education about the plants." (Participant in focus group 4)

"It gives you an opportunity to learn the stories of the country as well …when we're out there working, we're learning, we're passing something on to young people." (Participant in focus group 1)

Indigenous people in our research welcomed opportunities to share their knowledge, and contribute to schooling and education through other services.

"I like learning both ways—white fella way and Martu way. Helping one another—learning from one another—teamwork." (Participant in focus group 1)

"It was hard first, you know. But now the Balanda [non-Indigenous people] here today they've learned a lot of things what we—that we started to respect them, you know and they respect us, also." (Participant in focus group 7)

"The little term is 'Ngapatji, ngapatji' and that means—you come and work with us, we work with you. Two way and that's the rule, you know." (Participant in focus group 7)

3.4.1. Indigenous Languages

Indigenous languages were important for Indigenous research participants. Multilingualism is a feature of Indigenous Australian society and connects people to their land, community and family. Indigenous languages are also used as a sign of resistance against colonization and Australia's monolingual Australian government and institutions (Simpson & Wigglesworth, 2018). Indigenous research participants described the value of Indigenous languages for Indigenous children at school:

"[Indigenous] people want to talk their language because to them, it's like they got their language they speak all the time. Why don't we speak our languages at school, you know, like they want to be recognised?" (Participant in focus group 4)

"Coz our language, they should put our language, that [Indigenous] language, we should be there, coz we're the first nations of the land." (Participant in focus group 4)

3.4.2. Indigenous Land Management

Indigenous land management involves Indigenous people using customary knowledge and skills together with modern techniques in managing fire, weeds and feral animals; monitoring and protecting threatened species; inland waterway and coastal surveillance; revegetation; pastoralism; harvesting of bush foods; and art and craft work (Hill et al., 2013). Indigenous land management programs are popular and effective for engaging people in education and employment, as one research participant noted:

"I can't think of another program that has achieved pathway from training into employment like this program has done. There are not any other examples of things happening in this community that have successfully achieved this outcome. This program provides training within the context of the job… There's four of the fellows here, they're doing Certificate 3 in Conservation and Land Management, so the work here links into that." (Interview 1: Non-indigenous Land Management program leader).

3.5. Intersectoral Partnerships

Some organizations involved in the focus groups were providing services beyond

their main role. For example, education services for Indigenous people provide training in land and sea management, and traditional foods and medicines. This supports education, employment and health outcomes. Such collaboration demonstrates commitment to outcomes based on the needs of the Indigenous community:

"My family have been involved with the kids programs. Every school holidays we go out bush. Over the years they [the school kids] have been supported for this program by DCP [Department of Child Protection] and AMS [Indigenous Medical Service]." (Interview 4: Indigenous service provider)

"It is a real partnership, that's the way to engage people and the women's group meetings. Engagement, cooking, talking to people, good approach for social work." (Participant in focus group 5)

These examples highlight service perspectives driven by Indigenous communities rather than government departments.

Research participants highlighted commonalities across services and opportunities to work together for common aims:

"We've had to look at other ways to fund from other avenues and partnerships to pull money in, and taking this on like an enterprise rather than a centrally funded idea." (Interview 2: non-Indigenous service provider)

"Judy [nurse] is doing preventative work with the school kids, if identified for referral to the Medical services through the school." (Participant in focus group 3).

Outcomes that Indigenous communities seek from services may not be those that the services are established to provide; these include care of the community and the land. One research participant stated:

"Government think school and employment are the only priorities. We don't. There's other things." (Participant in focus group 9)

3.6. Service Models for Indigenous Communities

Research participants explained how partnerships and relationships can be important outcomes in themselves:

"I was apprehensive because I am not Martu [Indigenous] but Martu are working here helping mentor me in my role, it is a good partnership." (Participant in focus group 5)

In remote communities, separation between departments and bureaucracies leads to lack of coordination and inefficiencies in services, and this especially affects Indigenous people. Focusing on the needs of people and communities, and bringing resources together to meet those needs is likely to achieve better outcomes.

Some rules and formalities appeared counter-productive and absurd for research participants. In remote Indigenous communities, greater flexibility around employment and registration conditions may enhance service delivery and outcomes, and reduce the disparities in service provision.

"We are trying to argue the case that the school-health partnership should allow the psychologist to work in the school…There are 50 odd kids on a waiting list to see the psychologist but as she cannot see the kids at school, so they are not getting the services." (Participant in focus group 4)

Policies and regulations designed to improve service provision and quality in urban centres may be inappropriate in small communities.

Lack of attention to relationships was quite distressing for one of the interviewees, because for her as an Indigenous person, relationships are central to wellbeing.

"Lack of communication and not working together, too much politics and not working together. Jealously business, it disconnects [Indigenous educational organisation] straight away. Not connected." (Interview 5: Indigenous service provider)

These issues are compounded by competition between service providers for a limited pool of resources. Competition can undermine interpersonal relationships and highlight differences and disagreements among community members and services, particularly when people and services have similar overall aims.

"It all comes back to the same thing, the funding competing for each other. It's all in silos still. If you say interplay between education and health, that's not how it happens on the ground. They're all working separately silos." (Participant in focus group 10)

"Because when funding comes to [Indigenous educational organisation], clinic gets jealous, and school want to do it on their own, and they have ideas about [Indigenous educational organisation] and they don't work with [Indigenous educational organisation]." (Interview 5: Indigenous service provider)

4. Discussion

4.1. Remoteness and Equity

Australia's remoteness classifications were developed to support equitable service provision, but did not consider what remoteness means for Indigenous Australians (Australian Bureau of Statistics, 2014). For many Indigenous people, their land is their spiritual home, even though this is classified remote and statistically disadvantaged (Birch, 2016; Walker, Porter, & Marsh, 2012). Indigenous Australians may be the dominant cultural group in remote communities, and less subject to racism (Priest, Paradies, Stewart, & Luke, 2011). Thus Indigenous people's insights are needed to understand the importance of associations between remoteness and statistical disadvantage. Education for non-Indigenous Australians about remoteness may improve educational outcomes for Indigenous Australians in remote communities.

4.2. School Attendance

The goal of increasing Indigenous children's school attendance assumes that their lower attendance contributes directly to their lower educational outcomes

compared with other children (Commonwealth of Australia: Department of Prime Minister and Cabinet, 2018; Gray & Partington, 2012). However, the relationship is complex, and social, cultural and economic factors that contribute to Indigenous children's lower rates of school attendance also impact on their educational outcomes. For communities for whom the overall outcomes of school are less important, attendance is less important (Gray & Partington, 2012).

The importance of school attendance depends on the desired outcomes. Focusing on educational outcomes that meet the needs of Indigenous communities may lead to effective teaching and learning outside the formal school environment (Fogarty & Schwab, 2012). As research participants highlighted, attending school may not be necessary, and education about Indigenous culture, language and land management may be better provided outside school.

Even where attending school is considered essential, policies that manipulate families through coercion and punishment may have negative effects. Strategies that limit people's autonomy can increase the resistance of both parents and children to attending school (Guenther, 2013). For example, quarantining portions of welfare payments was introduced to Indigenous communities in 2007, with the aim of improving school attendance. Evaluation showed that welfare quarantining led to an initial reduction in school attendance, through increased family stress (Cobb-Clark, Kettlewell, Schurer, & Silburn, 2017).

Effective approaches to increasing school attendance take account of the reasons why children do not attend school. In our research, reasons for children not attending school were loss of freedom, removal from culture, and the disconnection from future livelihoods on the land. Addressing these issues through curriculum development may assist in improving educational outcomes, regardless of school attendance.

Research participants recognized the importance of school and education. They described how involving elders and cultural education could assist in retaining adolescents at school.

4.3. Indigenous Culture, Health, Knowledge and Land Management

Research participants identified cultural, knowledge and infrastructure resources in their communities which could improve Indigenous education, and these are summarized in **Table 3**.

Indigenous child-rearing skills and practices can contribute to Indigenous education. Indigenous parents emphasize promoting children's freedom to explore and experience the world, which increases their independence and creativity (Lohoar, Butera, & Kennedy, 2014). These are strengths of Indigenous communities and can assist in education, and promote learning both within and outside school.

Indigenous people's knowledge could improve the response to ear disease, which harms schooling of all children. Australia's national guideline for ear disease focusses on clinical definitions, treatments and outcomes, and recommends

Table 3. Strengths and resources to inform development of meaningful indicators of Indigenous education in remote Australia.

Source of strengths and resources		
Student	School	Community
Creativity	Transmission of traditional knowledge	Elders and cultural advisors
Eagerness to learn	Learning on country	Indigenous knowledge: ecological knowledge, language, history
Independence	Community-based schools	Family desire to support children at school
	Two-way learning	Partnerships and collaborations between organisations and services
	Workplace based training and assessment	Pathways from education to employment such as through Ranger programs
		Building infrastructure

that parents be advised to recognize the problem of ear disease and act quickly if the child has symptoms (Morris et al., 2015). Indigenous community responses to children's ear disease, based on Indigenous sign languages and non-hearing communication appear under-recognized (Lowell, 2013), as is the experience of learning Indigenous cultural knowledge, where communication difficulties related to hearing impairment do not seem to be a barrier (Fogarty & Schwab, 2012).

Australia's 1989 *National Aboriginal Health Strategy* and each of its iterations have pointed to the wellbeing of Indigenous Australians, their community and land as being central to Indigenous health (Australian Government, 2013; National Aboriginal Health Strategy Working Group, 1989). However the wellbeing of Australia's lands and seas are deteriorating and current conservation strategies are inadequate (Cresswell & Murphy, 2016). Environmental degradation directly contributes to the health status of Indigenous people. For example, in the state of New South Wales Indigenous people affected by drought associated with human induced climate change are suffering mental health problems and social and economic losses (Rigby, Rosen, Berry, & Hart, 2011), while Indigenous people in urban Victoria reported that degradation of ecosystems contributes to their sicknesses (Kingsley, Townsend, Phillips, & Aldous, 2009).

Over millennia, Indigenous people's management of lands and seas has contributed to the development of Australia's ecosystems. The removal of Indigenous people from their lands and cessation of Indigenous land management practices are contributing to the deterioration of ecosystems and loss of biodiversity (Cresswell & Murphy, 2016). The importance of Indigenous ecological knowledge is increasingly being recognized in Australia's conservation strategies. Indigenous knowledge and skills contribute to research and management of feral animals and weeds, protection of coasts, waterways and other ecosystems, fire management leading to increased carbon storage with potential for large scale

carbon farming, and conservation of biodiversity and ecosystems (Cresswell & Murphy, 2016; Hill et al., 2013).

Recognition of the role of Indigenous people in conservation and land management has led to the establishment of Indigenous Protected Areas (IPAs) where Indigenous people are given responsibility for managing their traditional lands and seas, in accordance with Australia's commitments to international organizations such as the International Union for the Conservation of Nature (IUCN). IPAs now comprise almost half of Australia's nature reserves (Cresswell & Murphy, 2016) so Indigenous people with land management knowledge and skills are needed for Australia to meet international conservation commitments (Commonwealth of Australia, 2011; Fogarty, 2012). Including Indigenous knowledge in education curricula as highlighted in our research will be essential for this to continue. Since Indigenous knowledge has not been consistently transmitted to younger people, Indigenous people are concerned at the loss of their knowledge which is not yet included in the curriculum (Douglas, 2011).

Indigenous people's health depends on the health of the land, so health and land management services could be managed cooperatively (Kingsley et al., 2009). Working in land management improves the health of Indigenous people, including increased levels of physical activity, improved diet, less obesity and diabetes and renal disease, lower blood pressure, blood sugar and cholesterol, and cardiovascular disease risk (Burgess et al., 2009). These indicators support Indigenous people's holistic understanding of their own and their country's health, where caring for the country is caring for oneself and one's family. Indigenous individuals' health is associated with wellbeing of community and country, and with using Indigenous languages (Biddle & Swee, 2012).

Indigenous culture, knowledge and languages are important areas of Indigenous expertise, which provide opportunities for two-way learning between Indigenous communities and service providers (McRae et al., 2000). Indigenous languages are embedded in the land, and enable Indigenous people to articulate their unique knowledge. Current Australian schooling in English is likely to be contributing to loss of Indigenous languages and irretrievable loss of Indigenous knowledge (Nettle & Romaine, 2000). Australian education authorities are ambivalent about Indigenous languages, with for example Northern Territory bilingual programs cut in 1998, then terminated in 2008 in response to media representation of the crises in Indigenous education (Nicholls, 2005; Waller, 2012). Meanwhile there is global concern at the loss of indigenous languages and the impact of this on cultural survival (United Nations Economic and Social Council, 2016). The concerns of Indigenous research participants with using, maintaining and strengthening their languages at school reflect a global recognition of the irreplaceable value of indigenous languages as part of human heritage (Nettle & Romaine, 2000).

4.4. Service Partnerships, Coordination and Collaboration

Research participants described how cooperation among services enables com-

munities to achieve more with limited resources. Different organizations and services have related aims, and partnerships can involve pooling and sharing of resources. Re-imagining education for the needs of Indigenous people could involve changing funding allocation. Rather than services competing for resources, funding that promotes collaboration among service providers may improve relationships, processes and outcomes across sectors in remote communities. Facilitating collaboration between services in remote communities, such as education and health, could improve outcomes in each. For example, education provided by Indigenous health workers in schools could be included in employment structures. This may contribute to overcoming conflicting expectations, racism and stress, which may contribute to the poorer health outcomes among the Indigenous people who reach higher levels of education (Shepherd et al., 2012).

Opportunities for employment in Indigenous land management provide levers for enhancing overall educational outcomes, including Indigenous and English language literacy (Fogarty, 2012). Rather than removing people from mainstream economic opportunities, providing culturally driven education and employment increases Indigenous people's employment participation rates. The National Aboriginal and Torres Strait Islander Social Survey showed that strong traditional culture is associated with improved socio-economic outcomes, as measured and valued by mainstream society (Cairney et al., 2017; Dockery, 2012).

While the terminology of the *Closing the Gap* Strategy suggests reducing inequity, current efforts to reduce disparities between Indigenous and other Australians involve employing increasing numbers of non-Indigenous people to provide services for Indigenous people (Moran, 2009). Participants in our research reported non-Indigenous service providers in their communities receiving disproportionately high remuneration packages 'as high as the Prime Minister.' (Participant in focus group 10). Salaries of AUD $380 000 [USD 280 000] in addition to accommodation and other entitlements are offered for remote general practitioners (Rural Health West, 2017). This remuneration is are offered despite lack of evidence of improved recruitment or retention (Buykx, Humphreys, Wakerman, & Pashen, 2010). Meanwhile overcrowding and associated health and social problems contribute to the disadvantage of Indigenous people, especially in remote regions (SCRGSP, 2016).

The stated commitment to reducing disparity between Indigenous and non-Indigenous Australians is inconsistent with high levels of remuneration for non-Indigenous service providers in remote regions where more than half of Indigenous households live in income poverty (Markham & Biddle, 2018). Difficulties in recruiting service providers in remote regions, despite high entitlements, draw into question whether there is commitment to reduce the disadvantage of Indigenous people. Commitment to improved wellbeing for Indigenous people could be demonstrated by more equitable social payments in remote communities. For example, subsidizing food supply or improving housing would provide community-wide benefit and enhance equity with service providers (Colles, Maypilama, & Brimblecombe, 2014; Moran et al., 2016). Classifi-

cations of remoteness defined to enhance equity in service provision have the perverse outcome of increasing the entitlements for services providers but not social payments to Indigenous people. This increases the disparity between Indigenous and non-Indigenous people in remote regions.

4.5. Education and Indigenous Knowledge outside Remote Australia

Our research explored wellbeing with Indigenous people in remote communities and identified education as a priority. Opportunities and strategies to re-imagine education to promote wellbeing require appreciating the aspirations of Indigenous people in remote communities, and recognizing the importance of Indigenous expertise in languages, and land and sea management. Indigenous people's contribution to education can support economic development in remote regions, and improve equity between service providers and Indigenous community members. These strategies for re-imagining Indigenous education in remote communities are summarized in Table 4.

Beyond remote communities, themes of Indigenous identity, culture, empowerment, and employment aspirations are important for Indigenous people throughout Australia (Grieves, 2007; Hunt, 2012). There is scope for expansion of Indigenous land management programs, as Indigenous people in urban areas are eager to establish Indigenous land management practices, based on the success of land management remote Australia (Williamson, 2017). Valuing Indigenous knowledge and skills, and recognizing Indigenous people's goals and aspirations may enhance Indigenous education and wellbeing, and promote Australia's sustainable development.

Australia is committed to the United Nations 17 Sustainable Development Goals (SDGs). These include goals of sustainable use of land and ocean ecosystems, sustainable food production, responding to environmental changes, and building partnerships (United Nations, 2015). Australia's report on progress towards meeting these goals confirms the roles of Indigenous people in meeting these goals (Department of Foreign Affairs and Trade, 2018). Re-imagining Indigenous education will enable Indigenous people to contribute knowledge and skills to Australia's efforts towards the SDGs.

Table 4. Strategies re-imagining Indigenous education in remote communities.

Appreciate remoteness
Value Indigenous aspirations and worldviews
Build collaboration and partnerships
Consider equity between service providers and community members
Strengthen Indigenous knowledge of land and sea management
Strengthen Indigenous languages including sign languages
Support Indigenous people's livelihoods in land management
Reflect Indigenous perspectives on health and wellbeing

Around the world, there is increasing recognition of indigenous peoples' expertise in sustainability (Parsons, Nalau, & Fisher, 2017). Indigenous people have knowledge and skills in sustainable practices and management of natural resources, shared custodianship of land, and adaptability to and knowledge of climate change (Ens et al., 2015). Many indigenous cultures including many Indigenous people in Australia aspire to *buen vivir*, "living well" as a goal for human development (Gudynas, 2011). Living well as a policy goal, rather than economic growth, provides a radically different approach to development. Many issues highlighted in our research allude to such an approach: interdependent relationships rather competition; equality and complementarity rather than personal gain; autonomy and identity as outcomes of education. Internationally, many indigenous communities emphasize the importance of family and community in ensuring transmission of indigenous knowledge, to complement formal schooling (Magni, 2017).

Thus greater awareness of Indigenous people and their aspirations in Australia's overall economy may provide a sound basis for development and assist in reaching commitments to global sustainable development agenda (Magni, 2017).

5. Conclusions

Positive voices for Indigenous education and wellbeing in Australia's remote communities show diverse benefits and opportunities from engaging with Indigenous people's knowledge and skills in education. Indigenous knowledge of art, culture, history, languages and land management has a key role in the future wellbeing of Indigenous children and in Australia's conservation and land management strategies.

Application of these findings requires action across sectors and levels of Australia's education and land management systems. Greater recognition and use of Indigenous knowledge in the education curriculum would increase understanding of Indigenous culture and languages, and promote capacity for land and sea management. This would assist in ensuring that education in Australia offers meaningful options for Indigenous children to improve attendance and literacy outcomes that are of widespread concern. Developing educational indicators based on Indigenous aspirations will drive policy with benefits for Indigenous people and communities, and Australia as a whole. To attain the Sustainable Development Goals requires Australia to recognize Indigenous knowledge and skills, and adopt approaches to development that meet broader wellbeing goals than economic growth.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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ORIGINAL ARTICLE

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Injury prevention through employment as a priority for wellbeing among Aboriginal people in remote Australia

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Abstract

Issue addressed: Injuries lead to more hospitalisations and lost years of healthy life for Aboriginal people than any other cause. However, they are often overlooked in discussion of relieving Aboriginal disadvantage.

Methods: Four Aboriginal communities with diverse geography, culture and service arrangements participated in the Interplay Wellbeing project. In each community, Aboriginal researchers conducted focus groups and interviews arranged through Aboriginal organisations to explore wellbeing. A total of 84 participants contributed to 14 focus groups and eight interviews, which were recorded, transcribed and coded. This article reports on injury and possibilities for prevention, unanticipated themes raised in discussions of wellbeing.

Results: Interpersonal violence, injury and imprisonment emerged as themes that were linked with employment and wellbeing. Employment in Aboriginal ranger programs provides meaningful activity, which strengthens people's identity and cultural integrity. This can avert interpersonal violence through empowering women and reducing alcohol access and consumption.

Conclusion: Ranger programs may provide a much-needed opportunity to control escalating rates of injury for Aboriginal people in remote communities.

So what? The manifold benefits of Aboriginal ranger programs include reducing violence and its injury and criminal justice consequences.

KEYWORDS
Aboriginal and Torres Strait Islander people, community based intervention, environmental health, healthy environments, interpersonal violence

1 | INTRODUCTION

Injury is the leading cause of loss of years of healthy life among Aboriginal and Torres Strait Islander people; the second most common cause of death after coronary heart disease, and the most common reason for hospitalisation if renal dialysis sessions are excluded.[1] Preventing injury could provide significant opportunities to enhance the wellbeing of Aboriginal and Torres Strait Islander Australians.

Rates of both injury and its main cause, assault, are increasing among Aboriginal and Torres Strait Islander Australians. The age-standardised burden of disease due to intimate partner violence among Aboriginal and Torres Strait Islander Australians increased 23% between 2003 and 2011.[1]

Interactions with the criminal justice system also contribute to the damaging impact of interpersonal violence on Aboriginal and Torres Strait Islander Australians. *Acts intended to cause injury* are the most common offence leading to Aboriginal and Torres Strait Islander people being in custody and imprisoned.[2] Imprisonment rates of Aboriginal and Torres Strait Islander people are 13 times higher than those of non-indigenous Australians, and the ratio is increasing.[3]

Imprisonment rates are now so high that Aboriginal and Torres Strait Islander community demographics are affected by missing young men, with 15% of all Aboriginal and Torres Strait Islander men in NT in prison.[4] Aboriginal and Torres Strait Islander women are imprisoned at lower rates than Aboriginal and Torres Strait Islander men but at rates over 20 times higher than non-Indigenous women.[2] These extraordinary rates of imprisonment, often for interpersonal violence against another Aboriginal or Torres Strait Islander person, can undermine community capacity, and contribute to weakening of family structures, child development and cultural identity, further entrenching disadvantage.[2,4.]

The need for specific strategies to reduce injury among Aboriginal and Torres Strait Islander people has been recognised, together with the inadequacy of research into effective interventions.[5] Most strategies to reduce injury among Aboriginal and Torres Strait Islander people focus on alcohol control and on alternative approaches to justice.[5] Preferably, strategies to prevent injury would entail primary prevention through focusing on the aspirations of Aboriginal and Torres Strait Islander people.[6]

Aboriginal ranger programs provide opportunities for employment for Aboriginal people in land and sea management, often using a combination of customary and modern knowledge and techniques. Ranger programs include commercial economic activities such as pastoralism and harvesting bush foods, managing fire, water, feral animals and weeds, and ceremonial activities. Substantial economic, environmental, health and social benefits have been demonstrated from ranger programs.[7]

This report draws on the need for Aboriginal and Torres Strait Islander people to lead policy development to enhance wellbeing.[8] Discussion that was unanticipated by the researchers described opportunities to prevent interpersonal violence and its injury and criminal justice repercussions, within a research program focussed on the development of a multi-faceted approach to wellbeing in remote Australia.

2 | METHODS

The Interplay project was a study conducted by the Cooperative Research Centre for Remote Economic Participation (CRC-REP) to identify Aboriginal and Torres Strait Islander people's priorities for wellbeing in a policy framework for economic development in remote Australia.[8]

Based on a "shared space" approach to collaboration between remote communities, government and scientists, the Interplay Wellbeing Framework was designed to bring together the government's priorities of education, employment and health, with people's priorities of community, culture and empowerment.[9] The approach throughout was based on the strengths of the Aboriginal and Torres Strait Islander communities. From 2014 to 2015, qualitative and quantitative data were collected to build on the wellbeing framework. This article reports on the qualitative data relevant to injury that arose in discussions of wellbeing and employment.

2.1 | Community and individual participants

Four Aboriginal communities in remote regions of WA and NT participated in the research, selected through their relationships with the researchers. Each of these communities was Aboriginal rather than Torres Strait Islander so this report will refer to Aboriginal communities and people.

From these communities 42 Aboriginal community researchers were employed to collaborate in designing the research, collecting data and communicating results.[9] Community researchers recruited participants from staff and clients of Aboriginal organisations providing services in health and community care, education, employment, consultancy and research, and land and sea management through Aboriginal ranger programs.

2.2 | Procedure

Fourteen focus groups and eight interviews were conducted between June 2014 and June 2015, exploring the Interplay Wellbeing Framework domains of education, employment and health, community, culture and empowerment. A total of 84 people participated in the research, including 75 Aboriginal people, and 41 men. Demographic details are shown in the Table 1.[10]

The focus groups and interviews recorded, then transcribed and coded into themes using NVivo.[11] This report describes how employment contributes to wellbeing where coding of these items linked to preventing injury. The Interplay research project did not involve specific enquiry about injury or safety, and these were not anticipated as themes. However, analysis of focus groups and interviews identified the importance of these issues to research participants as they discussed wellbeing.

2.3 | Ethics

Formal ethics approval was granted by the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research (Reference 2013-2125) and the

TABLE 1 Research participants in focus groups and interviews by service, Aboriginality and gender

	Aboriginal participants		Non-Aboriginal participants	
Service	M	F	M	F
Art	0	1	0	0
Business, Employment	2	0	1	0
Education	3	17	0	0
Health	9	2	3	2
Municipal	2	5	0	1
Aboriginal Ranger programs	19	11	2	0
Research, Advocacy	0	4	0	0
Total	35	40	6	3

Western Australian Aboriginal Health Ethics Committee (Reference 549). All participating organisations provided letters of support.

3 | RESULTS

Wellbeing as a discussion theme led research participants in both focus groups and interviews to discuss the importance of employment. Most of the employment opportunities discussed were in Aboriginal ranger programs, reflecting the organisations through which the research participants were recruited and how much people value these programs.

3.1 | Employment provides education and training in both Aboriginal and non-Aboriginal cultures

Employment in Aboriginal ranger programs provides Aboriginal cultural education and training towards formal qualifications. This strengthens Aboriginal identity and can open opportunities for mainstream employment.

> *It gives you an opportunity to learn the stories of the country as well . . .when we're out there working, we're learning, we're passing something on to young people.* *(Ranger focus group 1)*

> *If they're old enough to go out, get away from the community so they learn more cultural stuff. It's an education issue, it's the way learning about the land.* *(Ranger focus group 1)*

Leaders of ranger programs elaborated on formal educational opportunities:

> *There's four of the fellows here, they're doing Certificate 3 in Conservation and Land Management, so the work here links into that.* *(Interview 1)*

> *I can't think of another program that has achieved pathway from training into employment like this program has done. There are not any other examples of things happening in this community that have successfully achieved this outcome. This program provides training within the context of the job.* *(Interview 1).*

In contrast, outside of ranger programs, research participants noted the lack of integration of employment and training, which can impair people's wellbeing.

> *But you know that doesn't necessarily always work that way. They could see a job that's perfect for them, but then they don't get that job simply because . . . they don't have enough degrees. Why didn't they get the job? Was it because of the colour of the skin?* *(Interview 5)*

> *[Organisation] came and stuffed it up. We did all this training when [organisation] came and trained for nothing. No jobs.* *(Women's Group focus group)*

3.2 | Employment strengthens identity

Research participants described how wellbeing is enhanced through strengthening their identity. Employment in Aboriginal ranger programs strengthens Aboriginal identities through its use of their specific skills and expertise required for the work.

Distinctive cultural understandings of employment were raised in a number of interviews. Where employment enhances people's sense of identity and integrates with the market economy there are mutual benefits for the Aboriginal employees and the economy, as articulated here:

> *You need that initial investment from community to create a market-oriented product. Money that comes into the project is directed by the community into an appropriate supported program that delivers outcomes to market.* *(Interview 2)*

> *Working on country and land management is one of the most important things we have in these communities. . . community and land connects everyone together, emotionally, physically, spiritually and culturally. (Interview 1)*

> *Ranger program is a blue sky idea, fee for service model where industry can engage with a cultural model. Engaging [local Aboriginal people] with an Indigenous lens. Environment management is a strong knowledge area and skill set of the Aboriginal people. We asked: What are your skills and interests? Engage someone through their assets not their disadvantage—it's empowering.* *(Interview 2)*

In contrast for the research participants, mainstream employment opportunities appear remote:

> *[The mine] has lately been opening up changes to employ people directly. Surprising how little employment is there for the [Aboriginal people]. Roughly twenty [Aboriginal people] employed at the moment. (Aboriginal business focus group)*

> *Failed concept is to bring Indigenous into mainstream concepts. Strong concept is that culture and work can give opportunity; it is done well and works.* *(Interview 2)*

3.3 | Meaningful activity

Research participants described employment as a source of meaningful activity, providing an opportunity to reduce boredom, and enhance self-respect.

People need more things to do that are worthwhile.
(Women's council focus group)

We're providing support across the board like a wrap-around service which I suppose employment agencies don't provide at all—it's part of the job that has meant one on one support – this has been part of the success of the program…. Making sure land managers are getting their licenses and holding onto them—staying out of jail. *(Interview 1).*

3.4 | Empowerment particularly for women

Research participants described how they can be empowered through ranger programs by the recognition of their distinctive cultural knowledge.

The Country, and being in charge of managing it, is extremely important to people in the desert and probably across Indigenous communities in Australia.
(Interview 1)

That [work] made me stronger within my confidence, my abilities, my knowledge, you know, I can be an outspoken speaker… *(Women's council focus group)*

Through strengthening cultural and personal identity, employment empowers people. Women participants described how such empowerment enables them to protect themselves from violence.

That's why I think all ladies here, we have got more power over, empower over the men, our tribal men.
(Aboriginal corporation focus group)

I was abused in domestic violence but this [employment] made me stronger, more confidence, stronger abilities. No men have anything over me anymore. *(Women's council focus group)*

3.5 | Reducing access to and consumption of alcohol

Research participants in ranger programs described increased wellbeing through reduced substance use and increased physical activity.

Health … like I look at it, I get away from drinking, and I'm out there working, I'm fit! *(Ranger focus group)*

Of note alcohol and drug tests conducted for workplace safety were described positively in the context of desirable employment.

Rangers … have to meet fitness for work tests, drug and alcohol tests, criminal background checks… Some people have actively changed (their health and habits) to get into this work. *(Interview 2)*

Participants openly discussed issues with problematic alcohol consumption, and associated interpersonal violence, and the potential for employment to assist in controlling these.

[working] gets them away from the streets and from alcohol and drugs. *(Aboriginal corporation focus group)*

Drugs and alcohol is the biggest issue—leads to domestic violence and that leads to kids being troubled. Domestic violence in the home. *(Aboriginal corporation focus group 2)*

Ranger work, undertaken at a distance from alcohol outlets, supports people to reduce their alcohol consumption.

That ranger program… they're getting out and away from the community and some of the men said … "It's good you know, you're away from alcohol, you're out on the country. It's good." *(Women's council focus group)*

Employment at a distance from from alcohol outlets reduces access, while people choose to reduce their consumption in order to hold employment.

Takes them away from alcohol and drugs.
(Women's council focus group)

3.6 | Rehabilitation after release from prison

Research participants identified the need for employment to support rehabilitation of family members after release from prison.

When they come out of prison they have nothing for them for aftercare—they go back in, they come out for a couple of days and steal again and go back into prison. This aftercare service support could be part of employment. *(Women's Group focus group)*

In summary research participants identified a range of wellbeing benefits from employment, particularly in ranger programs, including reducing interpersonal violence. Stigmatised issues of interpersonal violence, alcohol misuse, and imprisonment were raised spontaneously, with suggestions of how employment may assist in preventing these problems. Interpersonal violence was raised explicitly in the discussions about empowerment of women and alcohol. Prevention of imprisonment ("staying out of jail") was raised by a ranger program manager as part of ensuring on-going employment, and by women discussing how employment contributes to rehabilitation from prison.

4 | DISCUSSION

By interpreting employment broadly and flexibly, the Interplay project has established the links between employment and wellbeing for Aboriginal people in remote Australia, who are marginalised in Australia's economic development through limited employment opportunities associated with poor socioeconomic status.[12]

Employment enhances the wellbeing of Aboriginal people in remote communities. Research participants described how employment contributes to education and training, strengthening identity, meaningful activity, empowerment, and reducing access to and consumption of alcohol.

Beyond well-established benefits of employment, and unanticipated in the research project, was discussion of how employment can contribute to preventing interpersonal violence. Research participants explained how employment in ranger programs that strengthen Aboriginal cultural identity reduces the risks of interpersonal violence. In this way, ranger programs could provide community-led injury prevention. This is consistent with World Health Organisation (WHO) reports that employment prevents interpersonal violence. WHO nominates a range of mechanisms relevant to the situation in Aboriginal communities, namely providing a source of income and meaningful activity, offering single-gender environments, separating partners, and reducing access to alcohol for both perpetrators and victims.[13] In Australia, remote communities suffer from many risk factors for injury through interpersonal violence, including high rates of alcohol and drug use, low levels of education, high rates of unemployment and receipt of welfare benefits, and remoteness.[4,14] The participants in this study described how interpersonal violence directly impacts on themselves as victims, and perpetuates cycles of imprisonment and broken families.

Aboriginal ranger programs provide great benefits in health and wellbeing, cultural and social, economic and environmental outcomes. These programs are increasing in scale and scope, with government, non-government and philanthropic investments totalling around $120 million per year.[7] Overall benefits have been quantified at $2.7 for each dollar invested.[15]

Interpersonal violence and injury are not among the benefits anticipated or measured in the literature on Aboriginal ranger programs.[14] Furthermore, both perpetrators and victims of interpersonal violence often report shame, so may not discuss how it affects them.[12] However, participants in the focus groups and interviews in this project readily discussed interpersonal violence, and its reduction through employment in ranger programs. The results suggest that measures of interpersonal violence should be included in evaluation of ranger and other employment programs. Possible measures of interpersonal violence that could be linked to the establishment of ranger programs include community rates of assault, injury and imprisonment.

4.1 | Strengths and limitations of this work

Aboriginal research interests and concerns drove the Interplay project, seeking to counter the discourse of Aboriginal deficit and disadvantage that permeate research about Aboriginal and Torres Strait Islander people.[16] For disadvantaged communities such as those in this study, the approach based on strengths and the community-driven methodology affirm people's agency, and the research itself provides education and employment opportunities. However, from the perspective of Western research methodologies the research is subject to criticisms of lack of rigour and a range of biases.[17,18] In particular the choice of ranger programs to recruit research participants has led to a focus on these programs; and the emphasis on wellbeing may have led to overlooking negative aspects. Nonetheless exploratory results of this project can guide further research into various aspects of wellbeing, including the mechanisms and extent which employment in ranger programs may protect against interpersonal violence, and the significance of this in the overall outcomes of Aboriginal ranger programs.[15]

Participation was limited to four Aboriginal communities in remote NT and WA. Exploration of the perspectives of other communities may provide further insights.

5 | CONCLUSION

Ranger programs provide distinctive opportunities for Aboriginal and Torres Strait Islander.

The decisive finding in this study is that employment in ranger programs may reduce interpersonal violence, and resulting injury and incarceration in Aboriginal communities. A comprehensive strategy is needed to combat injury in Aboriginal and Torres Strait Islander communities: increasing appropriate employment opportunities is part of this strategy.

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CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.

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RESEARCH ARTICLE Open Access

Indigenous land management as primary health care: qualitative analysis from the Interplay research project in remote Australia

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Abstract

Background: For Indigenous Australians, health transcends the absence of disease, and includes the health and wellbeing of their community and Country: their whole physical, cultural and spiritual environment. Stronger relationships with Country and greater involvement in cultural practices enhance the wellbeing of Indigenous Australians, and those in more remote regions have greater access to their Country and higher levels of wellbeing. However this does not translate into improvements in clinical indicators, and Indigenous Australians in more remote regions suffer higher levels of morbidity and mortality than Indigenous people in non-remote areas, and other Australians.
The Interplay research project aimed to explore how Indigenous Australians in remote regions experience high levels of wellbeing despite poor health statistics, and how services could more effectively enhance both health and wellbeing.

Methods: Indigenous Australians in remote regions, together with researchers and government representatives developed a wellbeing framework, comprising government and community priorities: education, employment and health, and community, culture and empowerment respectively. To explore these priorities Indigenous community researchers recruited participants from diverse Indigenous organizations, including Indigenous land management, art, business development, education, employment, health and municipal services. Fourteen focus groups and seven interviews, involving 75 Indigenous and ten non-Indigenous service providers and users were conducted. These were recorded, transcribed and analyzed, using thematic analysis, based on the wellbeing framework.

Results: Research participants highlighted Indigenous land management as a source of wellbeing, through strengthened identity and empowerment, access to traditional food sources, enjoyable physical activity, and escape from communities where high levels of alcohol are consumed. Participants described how collaboration and partnerships between services, and recognition of Indigenous languages could enhance wellbeing, while competition between services undermines wellbeing. Indigenous land management programs work across different sectors and promote collaboration between services, serving as a source of comprehensive primary health care.

Conclusions: Developing primary health care to reflect distinctive health needs of Indigenous Australians will enhance their health and wellbeing, which includes their communities and Country. Indigenous land management consolidates aspects of comprehensive primary health care, providing both clinical benefits and wellbeing, and can provide a focus for service collaboration.

Keywords: Qualitative research, Focus groups, Interviews, Primary health care, Indigenous Australians, Land management, Conservation of natural resources, Employment, Community

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Background

The health of Indigenous Australians is poor compared with that of other Australians and has been so since data were first collected on Indigenous Australians in the 1960s [1]. Indigenous peoples throughout the world, including in Australia, experience poorer health than the dominant peoples in their countries as a result of colonization, appropriation of peoples' lands and continuing discrimination [2]. Life expectancy, infant mortality, low birthweight, and social determinants of health including education, employment, and incomes for Indigenous Australians are considerably worse than for other Australians, and the differentials are more marked than in comparable countries, such as New Zealand, Canada and USA [3].

Australian Indigenous people are diverse, being contemporary representatives of over 250 language groups throughout a vast nation, whose initial contacts with non-Indigenous colonisation stretched from the late 1700s until the Pintupi people lost their independence from settler society in the mid-1980s [4, 5]. Many socio-economic and health indicators are worse for Indigenous people in more remote regions, particularly literacy, numeracy, income, employment status, many disease risk factors, and mortality [6]. The association between remote residence and poorer health is so strong that some researchers suggest facilitating movement of Indigenous people to larger towns to improve their health [7].

However, the concept of remoteness is not meaningful for many Indigenous people, especially those who remain on the land their communities have occupied over thousands of generations [8]. Australian measures of remoteness were developed to assist in equitable distribution of government services without reference to Indigenous people [9]. For many Indigenous Australians remoteness reflects presence in their own Country, their spiritual and physical home, a place of fulfilment, meaning and identity [8]. "Country" in this sense, and throughout this article, is defined by Indigenous people, and includes land, sea, sky, rivers, sites, seasons, plants and animals; place of heritage, belonging and spirituality [10].

Indigenous Australians in remote regions describe higher levels of wellbeing and life-satisfaction than those in non-remote regions despite poorer health statistics [11]. For example, a measure of wellbeing that is used in Australia is overall life-satisfaction, based on a single question of how well people feel their life is currently going. People respond based on their own goals, perceptions and values, enabling comparisons across time, and in different cultural, age and gender groups [12]. In remote regions of Australia, Indigenous people report mean life satisfaction of 7.6; compared with 7.2 for Indigenous people in urban regions and 7.6 for the total Australian population [13, 14].

Enhancing wellbeing is a function of primary health care, together with responding to individual and community needs, and promoting social justice and leadership for better health. Primary health care includes advocacy for economic, social and community development, and health promotion, to complement clinical services. Indigenous people's specific needs require attention to ensure the effectiveness of primary health care services [15, 16].

Indigenous Australians conceive of health holistically, as an attribute of individuals and their community, which contrasts with narrower individual and clinical understandings of health. Indigenous people's health includes social, emotional and cultural factors, and is a means to wellbeing rather than a goal in itself [17, 18]. Recognizing their distinctive health service needs, Indigenous Australians and their supporters have established community controlled health care services since the 1970s. A range of state and national government sources fund these services, but their dependence on government funding limits their capacity to provide genuinely community controlled services. For example, undertakings such as breakfast for undernourished school children, literacy classes, or transport for bereaved people to attend funerals are not supported by funding arrangements, even though clinical improvements have been demonstrated through such approaches [19]. Despite efforts to achieve Indigenous control of the services, there is a focus on defined clinical activity to account for government funding [20].

The disease focus of primary health care for Indigenous Australians emphasizes monitoring and surveillance of conditions of greatest burden, focusing on people and conditions of highest risk, and prioritizing interventions with evidence of greatest clinical benefit [21]. This epidemiological, disease and risk focused approach is explicated in funding arrangements, which require health services to report their clinical performance indicators to government funding agencies, including behaviours and risk factors such as prevalence of smoking, alcohol use, obesity and diabetes [22].

Indigenous land management

Throughout Australia Indigenous land management (ILM) is increasingly being recognized for its benefits across many sectors, including health. ILM involves employment of Indigenous people to manage lands and seas, using both customary and modern techniques. Aims include harvesting of bush foods; monitoring and protection of threatened species; revegetation; control of fires, weeds and feral animals; and art and craft work. ILM depends on Indigenous people's knowledge and skills, including languages and cultural expertise. Colloquially ILM is known as caring for Country [23]. Since employment rates of

Indigenous people in remote Australia are approximately 30%, ILM is an innovative approach to complex disadvantage and disempowerment [24].

Indigenous Australians have managed Australia's ecosystems over millennia, and on-going human involvement appears critical for ecosystem function. Recognition of the role of Indigenous people in land management has led to the establishment of Indigenous Protected Areas (IPAs) where Indigenous people are supported to undertake conservation activities on their traditional lands in accordance with Australia's international conservation commitments such as to the IUCN (International Union for the Conservation of Nature). IPAs now comprise almost half of Australia's nature reserves [25] so Indigenous people's knowledge and skills are needed for Australia to maintain its conservation estate and meet international environmental commitments [26].

The wellbeing that people experience from involvement in ILM led to Indigenous community leaders asking for research into relationships between their involvement in ILM and clinical indicators. This showed that greater participation in ILM was associated with increased physical activity, better diet, and lower body weight, blood pressure, blood sugar and cholesterol [27].

The Interplay research project explored wellbeing of Indigenous Australians in remote regions who experience high levels of wellbeing despite poor health statistics. In this article, we investigated the role of ILM in wellbeing, through thematic analysis of focus groups and interviews. The Indigenous peoples of Australia comprise both Aboriginal and Torres Strait Islander peoples. For consistency with the term Indigenous land management (ILM) and international implications, we have used the capitalized term "Indigenous people" in this article for Aboriginal and Torres Strait Islander Australians. Without capitalization, "indigenous" refers to indigenous peoples worldwide [28].

Methods: The Interplay project

Research design and methodology

The Interplay project was a wide-ranging exploration of wellbeing for Indigenous people in remote regions of Australia, carried out through the Cooperative Research Centre for Remote Economic Participation [29]. The project brought together Indigenous community members, researchers and government agencies who are responsible for funding decisions. Qualitative methods were used to increase researchers' understanding of wellbeing through exchange of experiences, ideas and values, and particularly to explore cross-cultural differences in understanding of wellbeing [30]. The focus of the Interplay project was on positive experiences and stories, to build a policy approach based on Indigenous people's strengths, and provide an alternative to the negative perceptions of Indigenous people that pervade the literature and undermine Indigenous people's wellbeing [31].

The Interplay project prioritized Indigenous people's research interests and perspectives throughout the process, which began by developing research methodology and a wellbeing framework. This comprised wellbeing priorities for government agencies, namely education, employment and health, and for community members, namely community, culture and empowerment. The framework is shown in Fig. 1 [29].

Focus groups were chosen as the main data collection method, because they enable intercultural communication and understanding, and allow participants to share and build on one another's ideas. Focus groups can empower participants through enabling them to guide the focus of the research, criticize services and provide solutions in a confidential setting [32]. Interviews were conducted for convenience of people who were unable to participate in the focus groups, but whose contribution was considered valuable in providing insights to wellbeing for Indigenous people in remote communities.

Participants, sampling and data collection

Indigenous communities in the jurisdictions of Northern Territory and Western Australia who had previous research experience with the Cooperative Research Centre were invited to participate in the project. Communities were selected to achieve diversity in community geography, population size, proportion of people in the community who are Indigenous, and extent of use of

Fig. 1 Interplay wellbeing framework, showing government priorities in blue and communities priorities in yellow

Indigenous languages. Research capacity enabled four communities to participate.

Indigenous community researchers were employed to conduct research in each of these communities in 2014 and 2015. They recruited participants who could speak English through their interpersonal networks and service organizations. This approach ensured that focus group members knew one another and many worked together as service providers, so within the focus groups, participants could share and compare understandings [32]. Participants were recruited for 14 focus groups, which were facilitated by the Indigenous community researchers in English, after sharing of ideas in English and Indigenous languages, to enable participation regardless of English proficiency [33]. Notes were taken during the focus group to aid the transcribing process.

Focus groups explored participants' views and experiences of wellbeing. Interviews followed similar format to the focus groups, conducted by Indigenous community researchers and guided by interviewees. The focus was on what works well and why. Focus groups and interviews each lasted approximately 1 h, following which participants were offered food and drink but no payment.

Information on focus group members and interviewees' services, role, and demography is summarized in Tables 1 and 2.

Analysis

Focus groups and interviews were audio-recorded, then transcribed, coded, interpreted and analyzed. The priorities of the wellbeing framework, shown in Fig. 1, provided themes for initial coding and inductive analysis. The importance of ILM to wellbeing which had emerged in development of the project provided a coherent central concept [34]. This enabled development of Aboriginal perspectives of health and wellbeing expressed in the focus groups and interviews to be formulated as an approach to health care services through ILM.

Interpretative rigour

Conduct of the research through the Cooperative Research Centre for Remote Economic Participation required mutual understanding to support the on-going relationships which are the basis of the Research Centre, particularly between Indigenous and non-Indigenous researchers. This provided credibility and rigor for all aspects of the research, including transcribing, interpreting, analyzing and reporting the findings [35, 36].

Ethics

Engagement and support from the Indigenous services and organizations involved were fundamental for the project. Northern Territory Department of Health/ Menzies School of Health Research Ethics Committee (Reference 2013–2125), and the Western Australian Aboriginal Health Ethics Committee (Reference 549) provided formal ethical approval.

Results

Wellbeing through indigenous land management

Indigenous land management (ILM) services were the main sector represented by participants in the Interplay focus groups and interviews. ILM emerged as a contributor to wellbeing through participants from many

Table 1 Research participants in focus groups by service, role, Indigenous status and gender

	Service	Participant role	Total participants	Indigenous participants	Female participants
1	Business development	Managers	2	1	0
2	Education	Managers, employees	6	6	6
3	Education	Managers, employees	12	12	9
4	Indigenous Land Management	Participants	4	4	3
5	Indigenous Land Management	Employees	4	4	1
6	Indigenous Land Management	Employees	4	4	4
7	Indigenous Land Management	Employees	7	7	0
8	Indigenous Land Management	Employees	8	8	8
9	Health	Managers, employees	4	1	1
10	Health	Employees, community members	9	9	0
11	Health	Employees	3	1	3
12	Municipal services	Managers, employees	6	6	4
13	Municipal services	Managers	2	1	1
14	Research	Employees	4	4	4
	Total		75	68	44

To maintain privacy, numbers in the Table do not correspond to letters used to identify the focus groups in the text

Table 2 Research participants in interviews by service, Indigenous status and gender

Service provided by interviewee	Total Interviewees	Indigenous interviewees	Female interviewees
Indigenous Art	1	1	1
Business development	1	1	0
Education	2	2	2
Indigenous Land Management	3	1	1
Total	7	5	4

sectors including business development, education, health and municipal services.

Indigenous participants involved in ILM described how the work enhances their wellbeing, through recognizing their identity and relationships with the Country. For example:

> "Makes me feel good going out on country. Looking forward to getting up for work – I want to go back and see that place again and again." (ILM program participant: focus group A).

> "My benefit is the land and the sea… It made me strong and it changed my life to be stronger." (ILM program participant: focus group G).

Indigenous people can experience deep relationships with their Country, as if the Country is part of their family. One participant explained:

> "[The Country is] in your bloodline, you know." (ILM program participant: focus group G).

Participant's identification of Country as a family member, meant that for him ILM or caring for Country is caring for his family.

Empowerment is a community priority of the Interplay wellbeing framework, and ILM supports empowerment through employment, a government priority:

> "It's all about empowerment, you're empowering yourself to go to work every day." (ILM program participant: focus group G).

Health and education through indigenous land management

Participants in the Interplay project described how ILM provides them with direct clinical benefits. These include mental and physical health benefits from exercise and quality diet from harvest of traditional foods.

> "What are the foods that they hunt for?"

> "They go fishing, kangaroo, pigeon, goanna, rock wallaby."

> "Sugar bag, yep, bush honey." (ILM program participant: focus group E).

> "Tons of physical activity – the blokes work really hard – manual labour at parks and wildlife centre and in [the Indigenous Protected Area]." (Non-Indigenous interviewee, ILM program coordinator).

Complementing benefits in nutrition and physical activity, employment in ILM reduces access to alcohol and associated harms, as explained by focus group participants:

> "[Our people are] getting out and away from the community and some of the men said you know 'It's good you know, you're away from alcohol, you're out on the Country.' It's good." (ILM program participant: focus group A).

> "Gets [our people] away from the streets and from alcohol and drugs." (ILM program participant: focus group B).

ILM provides an opportunity for education of young people and transmission of knowledge that Indigenous people value, as described here:

> "Through learning on Country, we are actually … making sure our Country is safe, our next generation of young people get educated, in both ways have a healthy life, healthy community, and healthy people…. It forms a career pathway." (ILM program participant: focus group G).

> "[Indigenous] people came up with this, started exploring the link between health and education the [Indigenous] way." (Indigenous Education program: focus group K).

Community wellbeing and health

Research participants described the value of ILM in supporting community health, as for example:

> "The [ILM] organization's growing because of the unity and the friends …we work together, learn together, being healthy together. Healthy workplace, healthy Rangers. [We are] … empowering our organization to be a strong, and we'll have a sustainable future." (ILM program participant: focus group G).

> "Working on Country … is one of the most important things we have in these communities, as community and land connects everyone together, emotionally, physically, spiritually and culturally. The Country and being in charge of managing it is extremely important to people … across Indigenous communities in Australia." (Non-Indigenous interviewee, ILM program coordinator).

Focus group participants also identified the importance of their languages to their wellbeing:

> "[Indigenous] people want to talk their language … it's like they got their language they speak all the time. Why don't we speak our languages? …. [we] want to be recognized." (ILM program participant: focus group B).

> "They should [use] our language, that [Indigenous] language. We should be there, coz we're the first nations of the land." (ILM program participant: focus group B).

These findings show how ILM contributes to sustaining and promoting Indigenous languages, for the benefit of speakers, their communities, and the land management knowledge communicated through Indigenous languages.

Interplaying services: alternative frameworks for wellbeing

ILM service providers described how their organizations provide integrated services. For example:

> "… [we provide] support across the board like a wrap-around service." (Non-Indigenous interviewee, ILM program coordinator).

Indigenous research participants described frustration at the competition between different organizations for resources. From their perspective, funding from separate government bureaucracies creates barriers to effective service provision. Competition for resources between services is particularly problematic in small communities where service providers and users may be from the same families. Research participants stated:

> "It all comes back to the same thing, the funding competing for each other. It's all in silos still. If you say interplay between education and health that's not how it happens on the ground." (Indigenous Research organization: focus group F).

> "[It's a problem for us] competition. We are talking about people's lives" (ILM program participant: focus group J).

In the remote communities of the research, separation of services through government policy frameworks creates barriers to collaboration and teamwork. Participants described how even within one service sector, such as health, service providers must compete for funds. This can undermine relationships within families and communities which is counterproductive for wellbeing.

> "Some of the NGOs feel threatened by us [Indigenous organization] at times. Like the Red Cross and Anglicare and Centrecare, … they all going for this Indigenous funding… So there is competition for funding." (ILM program participant: focus group E).

Non-Indigenous participants drew attention to bureaucratic barriers to professionals providing effective services in remote Indigenous communities. Specific instances were described of Indigenous health educators and psychologists being barred from providing services outside established settings because of funding or registration restrictions.

In contrast, a collaborative or partnership approach shares Indigenous people's values, as the interviewee here reported:

> "We've had to look at other ways to fund from other avenues and partnerships to pull money in and taking this on like an enterprise rather than a centrally funded idea." (Non-Indigenous interviewee, ILM program coordinator).

Discussion

In the Interplay project, the opportunity for ILM to enhance wellbeing emerged in discussions with service providers and users in a range of sectors. Research participants described how ILM promotes wellbeing through strengthening people's sense of identity and important relationships, empowering people, providing access to traditional foods and physical activity, limiting access to alcohol, and strengthening and promoting collaboration of community organizations.

Indigenous land management enhances wellbeing and provides comprehensive primary health care

Participants in the Interplay project described how ILM builds on their strengths, identity and relationships. This contrasts current service provision for Indigenous people, which focuses on problems perceived in Indigenous people, such as poor health status, unemployment and lack of educational attainment. Services established on the basis of negative comparisons of Indigenous with non-Indigenous Australians contribute to negative perceptions of Indigenous peoples, pejorative stereotypes

and perceptions that Indigenous Australians are intrinsically problematic [37]. In contrast, Interplay research participants described how ILM programs arise from common goals of government and Indigenous community members including improving employment and education outcomes, promoting better diet and physical activity, and reducing access to alcohol.

Misuse of alcohol by Indigenous people is a particularly challenging problem when harmful levels of alcohol consumption are a community norm, so interventions with individuals may be ineffective [38]. Because it services the community, ILM provides a strength-based intervention to reduce alcohol consumption and harm.

Negative statistics on Indigenous people's health are pervasive. Although their use is intended to motivate health care service providers to provide quality health care for Indigenous people, they also contribute to undermining the wellbeing of Indigenous people whose self-perceptions are of pride, strength and survival [31]. More culturally attuned health services for Indigenous people could monitor their performance with indicators based on Indigenous people's own concepts of health and wellbeing. Validated measures of participation in ILM have been developed, and these are associated with clinical indicators [39]. Measures of cultural education and practice, and valuing Indigenous law and ceremony have also been validated as indicators of wellbeing [39, 40]. These could be incorporated into the performance indicators that Indigenous health services report to the Australian government to complement current clinical performance indicators. Greater emphasis on non-clinical aspects of health service provision will drive more culturally attuned health services for Indigenous people, and recognize their distinctive health needs.

Indigenous people in remote communities have lower participation in paid employment than any other group in Australia. This is attributed to prioritization of family and community responsibilities over paid employment, and remoteness [24]. From the perspective of Indigenous people, many employment options require them to separate commitments to work from their community relationships, in exchange for monetary income. None of the participants in the Interplay project mentioned income as a benefit of employment or ILM, pointing to a low priority of financial incentives. However participation in ILM provides employment that can strengthen relationships, build cultural knowledge and skills, and enable people to remain in communities considered by government to be remote [23].

With increasing recognition of the rights of Indigenous Australians to their Country, Indigenous people now manage over half of Australia's total land area, and over 70% of the land protected for conservation [41]. Thus ILM is of growing importance to Australia's international commitments to biodiversity protection and sustainable development. Relationships between environmental sustainability and the wellbeing of Indigenous people, through ILM, have been under-recognised in Australia's policy development, reflecting the separation of government departments [42].

Interplay research participants described how their languages provide a source of identity and wellbeing and their disappointment that their languages are not recognised. Lack of Indigenous language training and use of interpreters by health care service providers appears widespread [43]. Indigenous language use itself is an important determinant of health, which is promoted by ILM [44]. These finding suggest that greater recognition of the need for communication in Indigenous languages would improve health service accessibility for Indigenous Australians. Indigenous language translation or knowledge as a performance indicator for health care services for Indigenous Australian could drive increases in this critical element of health care [45].

Intersectoral contributors to health

Indigenous experts have called for a transformation in health care for Indigenous Australians because of the unacceptable costs of current vertical, disease-focused approaches, and noted that this will require reshaping policies, reinventing organizations, and working across sectors [46].

Considering ILM as health care overcomes the tension between promoting the healthy lifestyle conceptualized by non-Indigenous Australians, which may themselves contribute to on-going colonisation, and the Indigenous disadvantage that is attributable to unhealthy behaviours [47]. ILM involvement improves lifestyle contributors to health, through providing access to traditional foods and physical activity. Indigenous knowledge maintains an holistic perspective on the country including its people, in which people's health depends on the health of the country [48, 49]. Community gardens, like ILM, have also been identified as a source of comprehensive primary health care for Australians [50]. This suggest a broader primary health care movement towards outdoor, productive, collaborative activities may provide health benefits to complement clinical health services.

Re-conceptualising service provision based on the needs of Indigenous people and communities in remote regions could have benefits in many sectors. Interplay project participants provide and receive services through separate government sectors, reflecting decisions about resource allocation based on non-Indigenous priorities [40]. For Indigenous people these decisions can appear arbitrary. The Interplay project showed how government service priorities of education, employment and health

work together with people's priorities in community, culture and empowerment [40].

Interplay research project participants, both Indigenous and non-Indigenous, highlighted the importance of Country to the health and wellbeing of Indigenous people, which suggests the opportunity to conceptualize ILM as a health service. This emphasizes the importance of sectors other than health to people's wellbeing, recognized since primary health care was described in the Alma Ata Declaration of 1978 [15]. ILM is of great value because it provides services in several sectors, including land management, employment, education and health.

The importance of Country for Indigenous people, and caring for Country as a source of economic development provide an alternative basis for service development. Social analysis of four ILM programs that showed a return of $96.5 million for $35.2 million investment over 6 years, or 29% per year. This analysis included benefits of skill development, work satisfaction, employment income and ability to better provide for families, which facilitate economic and community development [51]. Scaling up these interventions to enhance the wellbeing of Indigenous people throughout remote Australia would have widespread benefits.

Interplay project participants drew attention to current relationships between services based on competition and to restrictive employment practices, which appear inefficient in remote communities. Research participants' dislike of competition reflects their values of kinship and community relationships as priorities, rather than cost-effectiveness that is imposed by government funding agencies.

Other researchers have suggested that Australian governments should encourage Indigenous people to leave remote regions, because of the challenges of providing access to services in remote regions and the impacts of limited service access on health [52]. This would not be supported by findings from the Interplay project that Indigenous people derive of health and wellbeing benefits from ILM in remote regions. Longitudinal census and social survey data also show that individual Indigenous people's employment prospects do not improve when they leave remote communities [53, 54]. The Interplay research showed that ILM provides health and wellbeing benefits, which complement environmental and social benefits of participation in ILM. The wellbeing that Indigenous people derive from ILM may explain their attachment to their ancestral lands despite limited employment and educational opportunities in remote regions.

Global perspectives on indigenous land management

Health for indigenous peoples globally has distinctive features, reflecting the distinctive relationships between indigenous peoples and their lands [55]. While each indigenous group is unique, close relationships with their lands are a characteristic of indigenous peoples [56]. Thus findings about the value of land management for Indigenous Australians may be relevant for health and wellbeing of other indigenous populations. Indigenous peoples' expertise is important globally in ensuring that ecosystems are maintained to ensure sustainable development for all of humanity. Thus both lands and peoples benefit from ILM [41, 57].

Study limitations

Indigenous people in remote regions were the focus of this research, and represent about 21% of Indigenous Australians. Nonetheless, 73% of all Indigenous Australians recognize a homeland or traditional Country, and half visit their Country at least yearly [6]. Furthermore, ILM programs have been established throughout Australia including in urban regions, following models from remote regions [58]. Key barriers to urban Indigenous people participating in ILM are limited respect and practical support for Indigenous knowledge and worldviews and limited access to lands and waters, rather than the fact that people are not in remote regions [23].

The research team was led by women, leading to potential bias towards female perspectives and participation. However there was a high representation of male participants particularly in the ILM programs.

Conclusions

For Indigenous Australians, ILM provides opportunities for promoting both individual and community health and wellbeing through empowerment, healthier behaviours, use of Indigenous languages and knowledge transmission across generations. ILM integrates the aims of different services, including education, employment and health, enabling sectors to work together rather than in competition. Collaboration of services through ILM will enhance service productivity and aligns with worldviews of Indigenous people. ILM is unconventional as health care but contributes to the comprehensive primary health care needs of Indigenous Australians.

Abbreviations

ILM: Indigenous Land Management; NATSISS: National Aboriginal and Torres Strait Islander Social Survey; NGO: Non-government organisation

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Availability of data and materials
The datasets generated and analysed during the current study are hosted by Ninti One Ltd. on behalf of participating Indigenous people and communities, and are therefore not publicly available without consent of these organisations and approval of the ethics committees involved. Further analysis and data visualisation are available online: https://old.crc-rep.com/interplay https://old.crc-rep.com/wellbeingframework/.

Disclaimer
Jessica Yamaguchi is an Advisor working for the Australian Government. The views and opinions expressed in this paper are those of the authors and do not reflect the views of the Department of the Prime Minister and Cabinet, the Australian Government and or any State or Territory Governments.

Authors' contributions
SC (non-Indigenous), TA (Indigenous) and JY (Indigenous) collaborated in the design, implementation of the research. SC conceptualised, designed and ensured cultural and scientific integrity, and coordination of the project. TA was responsible for Indigenous cultural integrity, fieldwork coordination and management of Indigenous community researchers. JY mediated the involvement of the Australian Government and policy implications. RS (non-Indigenous) collated, transcribed, analysed and interpreted the data, and led writing of the manuscript. All authors have read and approved the final manuscript.

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Ethics approval and consent to participate
This research underwent formal ethical approval from Northern Territory Department of Health/ Menzies School of Health Research Ethics Committee (Reference 2013–2125), and the Western Australian Aboriginal Health Ethics Committee (Reference 549), in addition to being supported by the Indigenous organisations involved. All participants provided written consent, and guardians provided additional consent for participants under 16 years of age, consistent with Australia's National Statement on Ethical Conduct in Human Research [59].

Consent for publication
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Competing interests
The authors declare that they have no competing interests.

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Appendix 4.5

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EcoHealth

Short Communication

Australian Indigenous Land Management, Ecological Knowledge and Languages for Conservation

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Abstract: Many Indigenous Australians hold cultural, ecological and language knowledge, but common representations of Indigenous Australians focus on social disadvantage and poor comparisons with other Australians in education, employment and health. Indigenous Land Management works with Indigenous people's cultural, ecological and language expertise, employing Indigenous people in activities contributing to biodiversity conservation. The Interplay research surveyed 841 Indigenous people in remote communities. Those employed in land management reported greater participation in cultural activities, language knowledge, and belief that their land was looked after. These related assets provide an opportunity for policy approaches based on Indigenous people's strengths and contribution to Australia.

Keywords: Indigenous land management, Indigenous ecological knowledge, Indigenous languages, Aboriginal Australians, Biodiversity, Disadvantage, Cross-cultural knowledge

Introduction

Australia's national identity and integrity are being undermined by extinctions of endemic species and Indigenous languages, and the health and social disadvantages reported among Indigenous Australians (McDonald et al. 2015; Moseley 2010; Anderson et al. 2016). Representations of Indigenous Australians focus on differences and deficits compared with other Australians, rather than their strengths and status as Indigenous peoples (Walter 2016). However, in remote regions of Australia, Indigenous Land Management (ILM) is being recognised for its potential to restore ecosystems, revitalise languages and enhance health and well-being for Indigenous people (Altman 2012).

ILM includes a range of objectives and activities: management of fire, water, weeds and feral animals; monitoring and protection of threatened species; revegetation; harvesting of bush foods; pastoralism; and artistic work. ILM integrates traditional with modern knowledge and techniques (Hill et al. 2013; Davies et al. 2010). ILM is both leisure and employment; many Indigenous peoples' views of livelihood do not separate these aspects of life (McRae-Williams and Gerritsen 2010).

Over millennia, ILM has contributed to the processes that sustain Australian biodiversity and ecosystems, although the evolution of different species occurred millions of years before Indigenous people settled the Australian

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landscape (Cresswell and Murphy 2016). Cessation of ILM and removal of people from their lands have contributed to biodiversity loss throughout Australia since European colonisation. Indigenous peoples' burning practices create mosaics of small areas burnt at different times, which enhances biodiversity and prevents large, intense, late season fires (Woinarski et al. 2011). Ecological processes interact, so changes in fire regimes facilitate invasion by weeds, damage by feral herbivores such as camels and cattle, and loss of vegetation cover for small animals which are threatened by cats, now one of the leading causes of species loss in Australia (Woinarski et al. 2011).

The vast desert regions of Australia are one of few landscape-scale relatively undisturbed ecosystems globally (Venter et al. 2016). Management of these lands through ILM enables monitoring and enhancing of biodiversity, at scales that are significant to the whole planet. Indigenous Australians are more likely to live in or near desert and other remote areas than non-Indigenous Australians, so Indigenous people have unique opportunities through ILM employment (Traill and Woinarski 2014).

Indigenous Australian languages contain stores of ecological knowledge, which may soon be inexpressible with ongoing language losses (Nettle and Romaine 2000). Australia's rate of language loss is as high as any nation (Moseley 2010). Of Australia's 250 languages spoken at the time of European settlement, only 20 remain strong, as measured by being used by all age groups (Karidakis and Kelly 2017). With language loss, knowledge of ILM is lost (Hill et al. 2013).

Non-Indigenous sciences separate ecosystems from languages, so transdisciplinary and cross-cultural communication are required to quantify their inter-relationships (Wilder et al. 2016). Cross-cultural and transdisciplinary understanding provide a foundation for ILM, which provides wide-ranging benefits for Indigenous people, including promoting two-way learning among Indigenous and non-Indigenous experts (Ens et al. 2015). A review of four ILM projects calculated total social return on investment of 29% per year through environmental, economic, social and health outcomes (Social Ventures Australia Social Ventures Australia 2016).

The Interplay research used a transdisciplinary approach to explore well-being among Indigenous Australians in remote regions. The aim was to guide policy development to enhance Indigenous people's well-being, using methodology developed by Indigenous people. Indigenous researchers, scientists and government advisors undertook the project together, through the Cooperative Research Centre for Remote Economic Participation, a government, industry and university collaboration. Four communities in remote regions of Northern Territory and Western Australia with previous relationships with the Research Centre were selected to participate, based on diversity of geography, population size and proportion Indigenous and levels of Indigenous language use. The research was approved by Indigenous community boards and regional ethics committees (Cairney et al. 2015).

Priority well-being issues were identified. Indigenous communities prioritised culture, empowerment and community, while government representatives prioritised education, employment and health. Aspects of these priorities were quantified through a survey developed by Indigenous researchers, based on questions previously validated for Indigenous people in remote communities. Surveys were administered by Indigenous community researchers to 841 Indigenous people, aged 15 to 34, in 2014 and 2015 (Cairney et al. 2017).

Of 205 respondents who reported being employed (24.5%), 27 were Indigenous rangers, employed to undertake ILM. We compared rangers with respondents in other employment (n =179), and with respondents who reported no employment (n =635), using ANCOVA. Summaries of the results are in Table 1, and Fig. 1. Most of the rangers were male (22/27); we controlled for gender in the analysis after testing for homogeneity of variance. The age distributions of employment and gender groups were similar.

Rangers reported greater participation in cultural activities, measured as a composite of art and craft, caring for country, hunting and gathering, and law and ceremony ($P = 0.019$), and were more likely to believe their country was looked after than those in other or no employment ($P < 0.001$). Rangers spoke more Indigenous languages, with mean 3.2 and up to nine languages spoken ($P < 0.001$). They reported similar knowledge of English language ($P = 0.79$). Several months more schooling was reported by those employed but not as rangers than by both ranger and not employed groups (10.7 vs. 10.4 years schooling; $P = 0.004$). Rangers did not report better functional health at a statistically significant level ($P = 0.11$); nor did they report greater well-being ($P = 0.26$). High levels of well-being were reported among all groups, with respondents' mean well-being 8.1/10.

Overall, the Interplay study's focus was on well-being, enabling the research to reflect the aspirations of Indigenous researchers and participants (Cairney et al. 2017). The

Table 1. Demographic, Language, Cultural Participation and Health and Well-being of Rangers and Other Research Participants

	Rangers n = 27			Other employment n = 179			No employment n = 635			ANCOVA	
	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD	F	P for difference between employment groups
Age (years)	18–33	24.5	4.3	16–35	25.1	5.3	15–35	24.1	4.2	2.9 (2, 838)	0.055
Gender (% male)		81.5%	0.40		44.7%	0.50		39.4%	0.49	10.0 (2, 838)	0.000***
Years of school	7–12	10.4	1.28	5–12	10.7	1.25	5–12	10.4	1.27	5.72 (2, 835)	0.003***
English language	0–16	12.15	4.06	1–16	12.58	3.94	0–16	12.41	3.96	0.440 (2, 751)	0.644
Number of Indigenous languages spoken	1–9	3.15	2.23	1–9	2.58	2.41	0–9	2.03	1.81	6.56 (2, 835)	0.001***
Belief that country is looked after	0–4	3.56	0.97	0–4	2.43	1.37	0–4	2.98	1.18	15.67 (2, 835)	0.000***
Cultural participation	4–16	12.92	3.19	0–16	11.19	4.47	0–16	10.40	5.06	3.96 (2, 835)	0.019*
Functional health	2–16	8.86	5.43	0–16	7.65	5.15	0–16	5.86	4.39	2.29 (2, 119)	0.105
Well-being	5–10	8.00	2.06	3–10	8.27	1.84	1–10	8.01	1.96	1.37 (2, 835)	0.255

English language = total of understanding, speaking, reading and writing in English
Culture total = total of involvement in law and ceremony, caring for country, hunting and gathering, art and craft
Functional health = total of ability to participate in normal activities, energy levels, ability to socialise and capacity for work or study
*$P < 0.05$; **$P < 0.001$; ***$P < 0.0001$

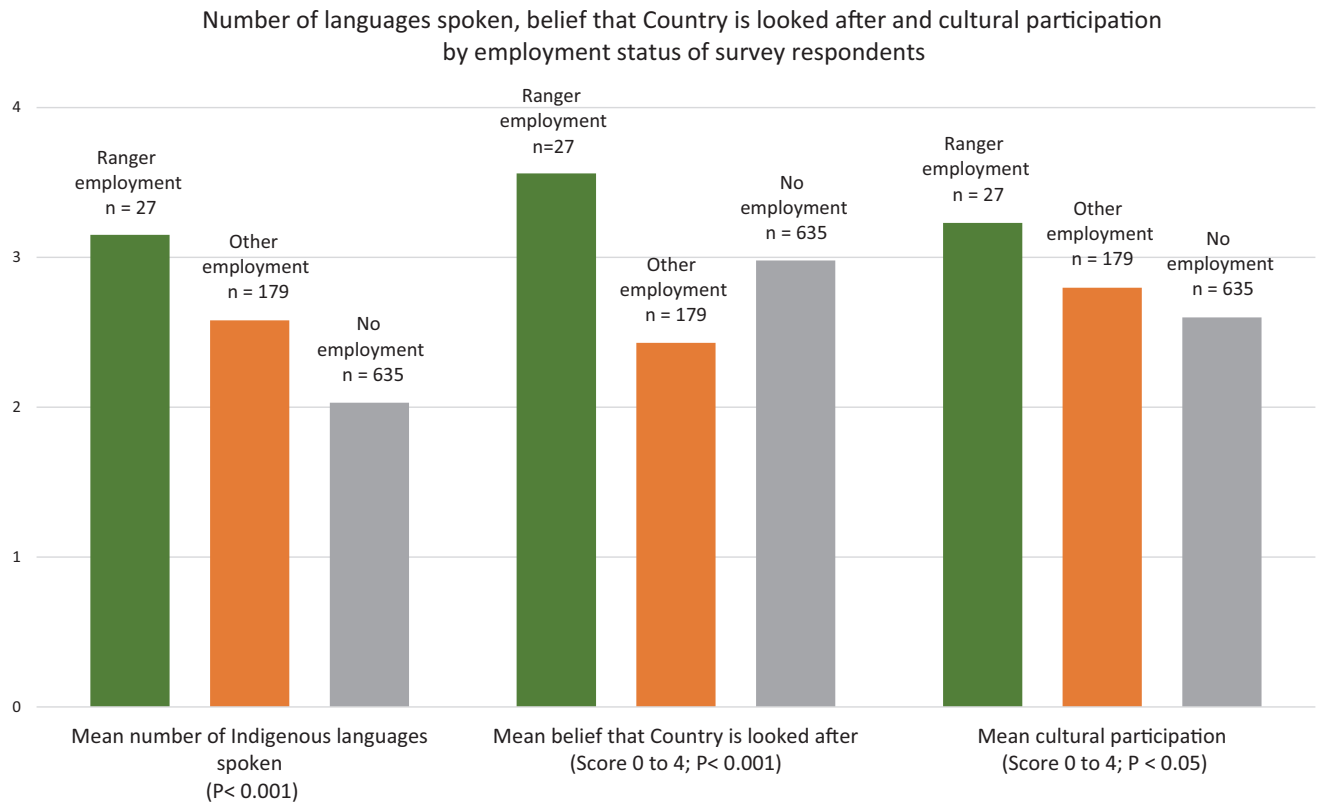

Fig. 1. Number of languages spoken, belief that country is looked after and cultural participation by employment status of survey respondents

high level of well-being of all participants reflects the research focus and participant selection; comparable well-being for all Indigenous Australians is 7.3; and for all Australians 7.6/10; (Australian Bureau of Statistics 2015, 2016). The lack of association between ranger employment and well-being is being explored through further work in the Interplay project; the relationship may be mediated by empowerment and Aboriginal literacy (Cairney et al. 2017). A recent cross-sectional study among rangers in central Australia found rangers experienced higher well-being by some, but not all measures (Jones et al. 2018).

Greater involvement in cultural activities reported by rangers in the Interplay project highlights the integration of ranger employment with Indigenous culture, which connects Indigenous language and ecological knowledge (Hill et al. 2013). There were positive relationships among Interplay respondents between ILM participation, knowledge of languages and belief that land was looked after. Non-Indigenous measures of biodiversity may be related to Indigenous people's belief that their land is looked after, and to ensure sustainability, services must balance Indigenous and non-Indigenous priorities and aspirations (Ens et al. 2015).

In Australia as globally, the languages of Indigenous peoples may be important for their health and well-being, and even survival (Flood and Rohloff 2018). This highlights the importance of ILM for Australia's Indigenous peoples, as does research showing clinical health benefits of ILM including more physical activity, better nutrition; lower BMI, blood pressure, blood sugar and risk of cardiovascular disease; and less psychological distress (Burgess et al. 2009).

Although almost 80% of Indigenous Australians are not in remote regions, 73% recognise a traditional homeland or country (Australian Institute of Health and Welfare 2015). Indigenous Australians in urban areas appear eager to follow models of ILM developed in more remote regions (Williamson 2017, Patterson and Hunt 2012). Furthermore, as in remote regions where the Interplay research was conducted, in urban regions many Indigenous Australians participate in cultural activities and learn Indigenous languages, and this is continuing without decline across generations (Biddle and Swee 2012). ILM has an important role in transmission of knowledge and supporting education for children and young people who would otherwise be disengaged from education (Fogarty 2012).

Through recognising and strengthening culture, providing meaningful employment, limiting access to alcohol and other mechanisms, ILM may also reduce Indigenous imprisonment (Schultz et al. 2018), which contributes to the largest segment of government expenditure for Indigenous Australians (SCRGP 2017).

Indigenous Australians are often depicted as problematic. This reflects the ongoing colonisation, non-Indigenous perspectives, and policies that promote non-Indigenous values, contributing to high rates of welfare dependence and imprisonment of Indigenous peoples (Walter 2016). A decolonised view of Indigenous peoples as holders of valuable knowledge and languages could transform relationships between Indigenous and non-Indigenous Australians (Wilder et al. 2016; Smith 2012). Decolonising Australia's policies in relation to Indigenous peoples would recognise their unique place in the nation, and the value of ILM for Indigenous people, other Australians and global biological and linguistic diversity.

The Interplay project demonstrated positive relationships between employment in ILM, knowledge of Indigenous languages and biodiversity as measured by people's belief that their land is looked after. Wide-ranging benefits for Indigenous and non-Indigenous Australians, and Australia's ecological and linguistic diversity could be achieved through increasing the scope of ILM. Adjusting Australia's approach to Indigenous policies to recognise Indigenous Australians as the custodians of knowledge of the land and its languages could provide leadership in supporting ecological and linguistic diversity.

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Nganggananawili Aboriginal Health Service Community, StrongBala Men's Health Program, Wurli-Wurlinjang Health Service, Yalu Marŋgithinyaraw Aboriginal Corporation and Yolngu Business Enterprises. Rosalie Schultz is supported by a scholarship from Vincent Fairfax Family Foundation, through the Royal Australasian College of Physicians. Jessica Yamaguchi is an Advisor working for the Australian Government. The views and opinions expressed in this paper are those of the authors and do not reflect the views of the Department of the Prime Minister and Cabinet, the Australian Government and/or any State or Territory Governments.

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Appendix 4.6

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Quantification of Interplaying Relationships Between Wellbeing Priorities of Aboriginal Peoples in Remote Australia

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Quantification of Interplaying Relationships Between Wellbeing Priorities of Aboriginal Peoples in Remote Australia

Abstract
Wellbeing is a useful indicator of social progress because its subjectivity accounts for diverse aspirations. The Interplay Research Project developed a wellbeing framework for Aboriginal Peoples in remote Australia comprising government and community wellbeing priorities. This article describes statistical modelling of community priorities based on surveys administered by community researchers to 841 participants from four remote settlements. Constructs for Aboriginal language literacy, cultural practice, and empowerment were identified through exploratory factor analysis (EFA); structural equation modelling (SEM) was used to confirm relationships. Cultural practice was associated with Aboriginal language literacy and empowerment, which were both associated with wellbeing. Aboriginal literacy and empowerment mediated negative direct relationships between cultural practice and wellbeing. Direct relationships were significant only for females for whom empowerment and Aboriginal literacy appear key to enhancing wellbeing.

Keywords
culture, empowerment, gender, Indigenous languages, Indigenous literacy, wellbeing

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Quantification of Interplaying Relationships Between Wellbeing Priorities of Aboriginal People in Remote Australia

Wellbeing is the experience of flourishing and feeling satisfied with life (Adler & Seligman, 2016). Wellbeing is an individual, subjective experience, making it a useful indicator to compare social progress across different cultures and time periods between people and populations who may have different values and goals (OECD, 2017).

Subjective aspects of wellbeing include experiences and perceptions, and these can be measured only by specifically inquiring, for example about life satisfaction (OECD, 2017). Socio-economic indicators are considered objective aspects of wellbeing, since they do not require people to assess themselves (OECD, 2017). However, decisions about which socio-economic indicators to measure and how to measure them reflect culturally influenced values and goals; this means that even if measurement is objective, the indicators themselves reflect subjective assessment about what is important (Tov & Au, 2013). Thus, even notionally objective indicators of wellbeing can reflect cultural bias and negative attitudes towards Aboriginal and other minority people (Cairney et al., 2017).

Aboriginal Australians[1] have occupied Australia for over 50,000 years. They identify themselves as distinct from other Australians and maintain their diverse cultures, languages, and histories (Australian Institute of Health and Welfare, 2015). Many Aboriginal people maintain strong connections to their *country*: their "land, sea, sky, rivers, sites, seasons, plants and animals; place of heritage, belonging and spirituality," and they hold Aboriginal knowledge (Australian Museum, 2017). Aboriginal people are less urbanised than other Australians, with 21% living in the remote regions which make up 85% of Australia's land area, compared with only 1.7% of all Australians (Australian Institute of Health and Welfare, 2014; Walker, Porter, & Marsh, 2012). Aboriginal people in remote regions of Australia may be on their traditional or ancestral lands (Altman, 2007). Many hold significant land assets or rights; yet, 53% experience income poverty (Markham & Biddle, 2018). Compared with other Australians, Aboriginal people are considered disadvantaged based on a wide range of indicators, including education, employment, health, housing, income, and criminal justice, with most indicators for Aboriginal people in remote regions suggesting greater disadvantage compared with urban Aboriginal people (Australian Institute of Health and Welfare, 2015; Commonwealth of Australia: Department of Prime Minister and Cabinet, 2018).

Despite these statistics, Aboriginal people in remote regions report high levels of wellbeing, with their mean general life satisfaction at 7.6 on a scale from 0 to 10. This is equivalent to the mean life satisfaction of all Australians, while Aboriginal people outside of remote regions report lower levels of life satisfaction, with a mean of 7.2 (Australian Bureau of Statistics, 2015, 2016).

Aboriginal people in remote regions often have stronger connections to country and more opportunities to participate in cultural practices than people in non-remote regions, and these factors may contribute to their higher levels of wellbeing (Davies et al., 2010). Cultural practices such as art and craft, ceremony, caring for country, and hunting and gathering contribute to the wellbeing of Aboriginal

[1] Indigenous Australians include both Aboriginal and Torres Strait Islander Peoples. This research involved Aboriginal communities, where people collectively prefer to be identified as Aboriginal, so the term Aboriginal is used throughout, except where Torres Strait Islander people are included and in international contexts where we refer to Indigenous Peoples.

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people throughout Australia including in urban regions (Burgess et al., 2009; Hill et al., 2013; Hunt, 2012). Analysis of the National Aboriginal and Torres Strait Island Social Survey (NATSISS) conducted in 2008 showed that having a cultural identity, speaking Aboriginal languages, and participating in traditional economic activities contribute to people's wellbeing, particularly in remote regions (Dockery, 2012). An economic analysis commissioned for Australia's national government quantified social return on investment in cultural practice for Aboriginal Peoples in remote communities at 29% per year. This analysis identified specific benefits that Aboriginal Peoples gain from participation in cultural activities, including strengthening their skills, confidence, and health, but these were not quantified (Social Ventures Australia, 2016). A case study from the Northern Territory identified health, economic, and social wellbeing benefits of cultural practice for participants in Aboriginal cultural and natural resource management, and recommended quantification of these relationships (Barber, 2015).

Cultural practices contribute to wellbeing and also to empowerment, which is defined as individuals and groups gaining control over their lives, encompassing both personal development and structural change (Wallerstein, 2006). Empowerment reflects cultural, social, and environmental contexts; for Indigenous Australians, spirituality and personal values and strengths are particularly linked to empowerment (Whiteside, Tsey, & Earles, 2010). Empowerment has potential to address broad socio-economic inequalities, such as those borne by Aboriginal Australians, because it enables individuals and communities to participate in and drive structural change (Haswell et al., 2010). The process of empowerment is of particular importance for Aboriginal Peoples because it depends on cultural context and contributes to wellbeing (Pease, 2002; Wallerstein, 2006).

Australian Aboriginal languages are also linked to wellbeing and empowerment and are important as sources of culture, identity, and knowledge (Marmion, Obata, & Troy, 2014). Analysis of the NATSISS illustrated how Aboriginal languages enable people to communicate cultures and worldviews, providing a connection between culture and wellbeing (Biddle & Swee, 2012).

NATSISS showed that Australian Aboriginal men and women report different cultural strengths. Speaking and understanding Aboriginal languages varies by age and gender. More men participate in harvesting cultural practices, and more older men speak and understand Aboriginal languages, while more women participate in cultural production, including arts and crafts, music, dance, theatre and storytelling. Each of these aspects of culture contributes to societal sustainability and wellbeing, and they are stronger for Aboriginal Peoples in remote regions compared to urban areas (Biddle & Swee, 2012).

Wellbeing for Aboriginal Peoples in remote regions of Australia was the focus of the Interplay Research Project, undertaken through the Cooperative Research Centre for Remote Economic Participation (CRC-REP) as part of its broad-reaching investigation into economic development and participation of people in remote Australia (Cooperative Research Centre for Remote Economic Participation, 2017). Government departments responsible for funding programs for Indigenous Australians, researchers employed by the CRC-REP, and community members collaborated in development of the research (Cairney & Abbott, 2014).The project name Interplay was chosen to draw attention to the interplaying relationships between different wellbeing priorities. This article aims to quantify relationships between cultural practice and wellbeing, including through mediating variables (Nitzl, Roldan, & Cepeda, 2016). We hypothesised that cultural practice, literacy in Aboriginal languages, and empowerment each contribute to wellbeing for Aboriginal Peoples in remote communities. Alternatively, there may be

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mediation between variables in their relationships to wellbeing (Cairney et al., 2017). Understanding relationships between wellbeing priorities can enable services to better address the wellbeing needs of Aboriginal Peoples in remote regions.

Methods

The Interplay Research Project was conceived and governed through the CRC-REP, as part of its exploration of issues surrounding economic participation in remote Australia, particularly for Aboriginal and Torres Strait Islander Peoples (Cooperative Research Centre for Remote Economic Participation, 2017). Aboriginal People led governance and management of the project (Cooperative Research Centre for Remote Economic Participation, 2017). Researchers and government agencies responsible for services in remote regions worked closely with Aboriginal community members in the research development. Through a conceptual shared space of knowledge exchange and learning, we aimed to ensure the project met research needs of both government and communities (Cairney & Abbott, 2014). The shared space is shown diagrammatically in Figure 1 (Nguyen & Cairney, 2013).

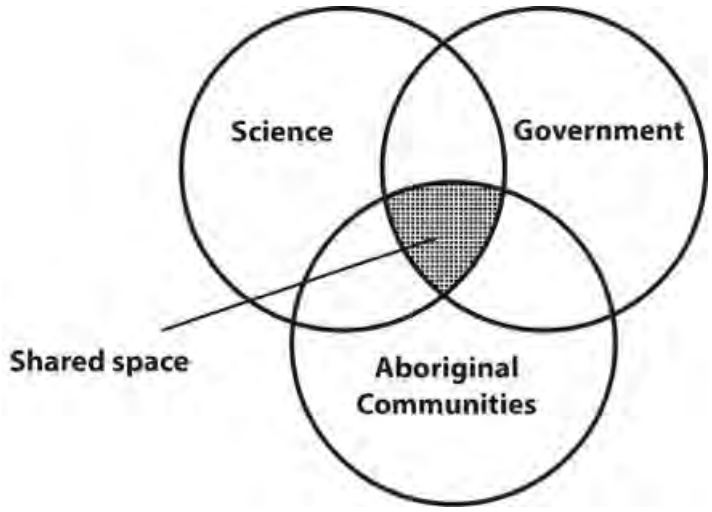

Figure 1. Shared space approach represented diagrammatically where areas of knowledge of each research partner group are brought together to overlap.

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Ethical Considerations

The Interplay Research Project prioritised engagement and collaboration with Aboriginal community organisations, land councils, and local partner organisations to ensure the project fit with the research interests of Aboriginal Peoples, particularly participants in the research. This approach aimed to ensure a fundamentally decolonised and ethical approach to the research (Smith, 2012). The Northern Territory Department of Health/Menzies School of Health Research Ethics Committee (Reference 2013-2125) and the Western Australian Aboriginal Health Ethics Committee formally approved the research (Reference 549). All survey participants gave written consent, in addition to the guardians of participants under 16 years. On-going working relationships, including further research projects, contribute to the integrity of the approach, providing cultural feedback and evaluation to non-Aboriginal researchers (Cairney & Abbott, 2014).

Research Population

Members of Aboriginal communities throughout remote regions of Australia were the population of interest in the Interplay research. Communities were invited through the CRC-REP to indicate their capacity and interest to be involved, and four communities were selected to ensure inclusion of different geographies, levels of remoteness, population sizes and proportions of Aboriginal people, and extent of use of Aboriginal languages. Geography, demography, and participation in the research by each community are shown in Table 1.

Development of the Interplay Wellbeing Framework and Survey

Aboriginal Peoples from the communities in the study collaborated with researchers to develop the Interplay Wellbeing Framework, which emerged through a series of workshops (Cairney, Abbott, & Yamaguchi, 2015). Communities' major priorities for wellbeing, namely community itself, culture, and empowerment, and government priorities of education, employment, and health comprised the basis of the wellbeing framework as shown in Figure 2.

To explore interrelationships between wellbeing priorities, the Interplay Wellbeing Survey was developed. Initially, we conducted a comprehensive search for assessment tools that were statistically and culturally validated to measure aspects of wellbeing for Aboriginal Australians (Cairney et al., 2015). While these tools were broadly suitable, there was concern by Aboriginal community researchers about their appropriateness for people in remote communities. All the tools were in English, while many Aboriginal Peoples in remote regions do not speak English well or at all (Biddle, 2012). Language issues were compounded by concepts in the assessments that were considered difficult to translate or understand. Aboriginal community members and researchers worked with other researchers familiar with the tools to carefully review and refine the words of each question, to ensure a shared understanding of meaning and comprehension across different language groups. Working together to refine the survey questions also contributed to shared ownership of and commitment to the final Interplay Wellbeing Survey. This enabled the Aboriginal community researchers to administer the Interplay survey in their home communities to people from different language groups and levels of English proficiency (Cairney et al., 2015).

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Table 1. Community Geography, Remoteness, Demography, Language, and Research Participation

Community	1	2	3	4
Geography	River	Island	Desert	Coastal
Distance from major population centre	300 km	500 km	1000 km	650 km
Remoteness classification	Remote	Very remote	Very remote	Very remote
Total population	9,207	2,550	1,158	843
Proportion Aboriginal	24.2%	88.6%	24.4%	75.3%
Primary community language	Kriol	Djambarrpuyngu	Martu	Gumatj
Proportion of Aboriginal Peoples who use Aboriginal languages at home	25.7%	98.1%	63.5%	84.3%
Participants in Interplay research	545	104	51	141
Proportion of 15 to 34-year age group who participated	78.8%	13.6%	46.6%	49.1%

Note. Population data (Australian Bureau of Statistics, 2011).

Figure 2. Interplay Wellbeing Framework comprising community priorities in amber and government priorities in turquoise.

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Data Collection

Aboriginal community researchers administered the survey from iPads in their home communities between June 2014 and July 2015 (Cairney et al., 2017). Since the research arose from the CRC-REP, people aged 15 to 34 were selected because it is typically within this age range that people transition from education to employment. We aimed to include 800 to 1,000 participants to provide a sample large enough for structural equation modelling and to achieve broad representation of the Aboriginal Peoples in the communities involved in the study (Cairney et al., 2015; Wolf, Harrington, Clark, & Miller, 2013).

Statistical Methods

Data analysis was conducted using the statistics packages SPSS and AMOS Version 25 (Arbuckle, 2017; SPSS Inc, 2015). Missing data were calculated using multiple imputations, using the median as the most likely value. To reinforce the strength-based approach, items were recoded so that higher response values represented more positive impacts and greater wellbeing.

Exploratory factor analysis (EFA) was performed using maximum likelihood extraction with promax rotation. Factors were selected with eigenvalues greater than one, strong loadings (> 0.4), discriminant and face validity, adequate reliability based on Cronbach's alpha > 0.70, and no cross-loading between survey questions (Williams, Brown, & Onsman, 2010). Constructs were identified for Aboriginal language literacy, cultural practice, and empowerment. Table 2 shows the survey items and Table 3 descriptive statistics for each construct, while Table 4 shows Pearson bivariate correlations between the constructs.

Based on hypothesized relationships between Aboriginal language literacy, cultural practice, and empowerment a structural equation model of wellbeing was constructed (Arbuckle, 2017; Kline, 2016). The model was validated through absolute and incremental fit indices, namely chi-square, RMSEA, SRMR, CFI, TLI, and PNFI (Hooper, Coughlan, & Mullen, 2008). Cook's distance was employed to examine for the presence of influential observations, and variance inflation factors for multicollinearity (Kline, 2016).

The positive association between cultural practice and wellbeing anticipated from the literature and research development were not confirmed in the statistical models, suggesting a more complex interplay of factors (Cairney et al., 2017). To explore this association, mediation analysis of the relationship by Aboriginal language literacy and empowerment was conducted. Bootstrapping was required in the mediation analysis to determine 95% confidence intervals and statistical significance of direct and indirect relationships (Nitzl et al., 2016). From these models, relationships of wellbeing with cultural practice, Aboriginal language literacy, and empowerment were calculated.

Gender and age were considered as possible confounding factors and multigroup analysis was performed. Participants were grouped by gender and age group: under 20, 20 to 24, and over 24. Age 20 was selected to separate the younger age categories because it often marks the division between education and employment, and 24 years was selected as the dividing line between the older age categories because it is the median age of the research participants.

Table 2. Constructs Derived from Exploratory Factor Analysis of Survey Items

Construct	Survey items contributing	Score
Aboriginal language literacy	Reading	0 to 4
	Writing	
Cultural practice	Caring for country	0 to 4
	Hunting and gathering	
Empowerment	Self-efficacy	0 to 4
	Identity	
	Resilience	
Wellbeing	Life satisfaction	1 to 10

Table 3. Descriptive Statistics of Constructs and Wellbeing

Construct	Range	Mean	Standard deviation	Skewness	Kurtosis	Cronbach's alpha
Aboriginal language literacy	0-4	2.33	1.61	-0.31	-1.49	0.96
Cultural practice	0-4	2.99	1.27	-1.11	0.081	0.82
Empowerment	0-4	3.34	0.82	-1.22	0.98	0.84
Wellbeing	1-10	8.07	1.94	-0.65	-0.63	

Note. N = 841. All calculations used the SPSS statistics package (SPSS Inc., 2015).

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Results

Descriptive Data

From the four communities in the research, 841 Aboriginal Peoples completed the survey, 45% of the target age range 15 to 34 years, with community coverage ranging from 13.6% to 78.8%, as shown in Table 1. Mean age of participants was 25.2 years, with standard deviation 5.3 years, while median age was 24 years. All participants identified as either male (n = 352, 42%) or female (n = 489, 58%).

Participants reported high levels of wellbeing with mean score 8.07 out of 10. Males and females reported similar scores (χ^2 = 13.0, df = 9, p = 0.16), while younger people reported higher wellbeing (under 20: M = 8.3; 20 to 24 years: M = 8.2; over 24 years: M = 7.9; χ^2 = 31.3, df = 18, p = 0.027).

Exploratory factor analysis identified three constructs, shown in Table 2. Aboriginal language literacy is comprised of how well people reported they could read and write in their main Aboriginal language; cultural practice is comprised of participation in caring for country and hunting and gathering; and empowerment is comprised of resilience, self-efficacy, and identity. All constructs showed a negative skew. Table 3 shows means, standard deviations, and Cronbach's alpha (a measure of reliability) for each construct.

Bivariate Relationships

Aboriginal language literacy, cultural practice, and empowerment were all statistically correlated with one another, while Aboriginal language literacy and empowerment were correlated with wellbeing. There was no statistical relationship between cultural practice and wellbeing, as shown in Table 4.

Structural Equation Modelling

Based on hypotheses of associations between cultural practice, Aboriginal language literacy, empowerment, and wellbeing, structural equation modelling was used to quantify these relationships and develop the model in Figure 3. All relationships were statistically significant, and the model showed good fit statistics (χ^2 = 49.4, df = 15; χ^2/df = 3.29; RMSEA = 0.052 (0.037, 0.069); RMR = 0.036; CFI = 0.99; PNFI = 0.53; Hooper et al., 2008). Cook's distance maximum was 0.058 indicating that there were no influential outliers, while variance inflation factors showed multicollinearity was not statistically present (VIF < 10).

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Table 4. Pearson Bivariate Correlations for Constructs of Aboriginal Literacy, Cultural Practice, and Empowerment

	Aboriginal language literacy	Cultural practice	Empowerment
Cultural practice	0.29***		
Empowerment	0.19***	0.20***	
Wellbeing	0.23***	0.003 NS	0.14***

Note. *** $p < 0.001$. NS = not significant.

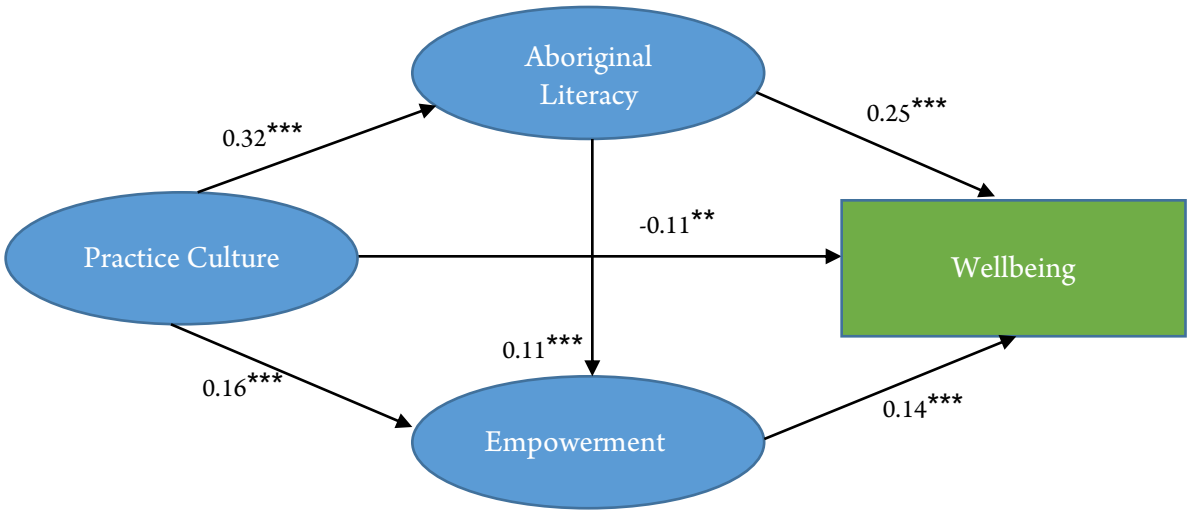

Figure 3. Structural Equation Model of relationships between cultural practice, Aboriginal language literacy, empowerment, and wellbeing for all participants. Goodness of fit: $\chi^2 = 49.4$, $df = 15$; $\chi^2/df = 3.29$, $p < 0.001$; RMSEA = 0.052 (0.037, 0.069); SRMR = 0.036;CFI = 0.99; TLI = 0.98; PNFI = 0.53. ** $p < 0.01$ *** $p < 0.001$

There were direct associations between cultural practice and Aboriginal language literacy (β = 0.32 [0.24, 0.40], $p = 0.005$), and between Aboriginal language literacy and wellbeing (β = 0.25 [0.17, 0.31], $p = 0.020$). Likewise, cultural practice was associated with empowerment (β = 0.16 [0.01, 0.27, $p =$ 0.035), and empowerment with wellbeing (β = 0.14 [0.05, 0.22], $p = 0.007$). Preliminary analysis identified a statistically significant negative relationship between cultural practice and wellbeing (β = -0.11 [-0.18, -0.031], $p = 0.016$), inconsistent with literature and community consultations in the development of the Interplay Research Project and suggesting more complex interplay, which was explored through mediation analysis (Cairney et al., 2017).

Cultural practice was indirectly associated with well-being through Aboriginal language literacy (β = 0.081 [0.049, 0.12], $p = 0.012$), and through empowerment (β = 0.033 [0.015, 0.061], $p = 0.003$), and the total relationship between cultural practice and wellbeing was not statistically significant (β = -0.006 -0.071, 0.058], $p = 0.93$). Thus, the model shows competitive mediation (Zhao, Lynch, & Chen, 2010) whereby positive indirect relationships through both Aboriginal language literacy and empowerment mediate the negative direct relationship between cultural practice and wellbeing.

The effects of age were considered through multi-group analysis. When the pathway between cultural practice and wellbeing was constrained to be equal for each age group, there was no difference between the models for younger and older research participants ($\chi^2 = 0.90$, $df = 1$, $p = 0.34$).

In the multi-group analysis by gender, the relationship between cultural practice and wellbeing was constrained to be equal for males and females. This demonstrated differences between the relationships for males and females ($\chi^2 = 10.8$, $df = 1$, $p = 0.001$), so separate models were constructed for female and male participants, as shown in Figures 4 and 5.

Male and female participants showed different statistical relationships between cultural practice and wellbeing, as shown in Table 5. For males, there was a positive indirect relationship between cultural practice and wellbeing (β = 0.17 [0.10, 0.27], $p = 0.003$) with both direct and total relationships non-significant; while for females, the direct negative relationship between cultural practice and wellbeing (β = -0.25 [-0.37, -0.11], $p = 0.02$) was in competitive mediation with indirect positive relationship (β = 0.11 [0.072, 0.15], $p = 0.007$). The total relationships between cultural practice and wellbeing were non-significant for both males and females (β = 0.008 [-0.049, 0.43], $p = 0.24$; β = -0.078 [-0.18, 0.43], $p =$ 0.23).

Finally, Aboriginal language literacy and empowerment were associated with wellbeing for females (β = 0.39 [0.30, 0.49], $p = 0.004$; β = 0.17 [0.067, 0.29], $p =$ 0.005), but not males (β = 0.079 [-0.030, 0.16], $p = 0.17$; β = 0.11 [-0.015, 0.23], $p = 0.09$), as shown in Table 6, leading to the weaker but statistically significant relationships for all participants.

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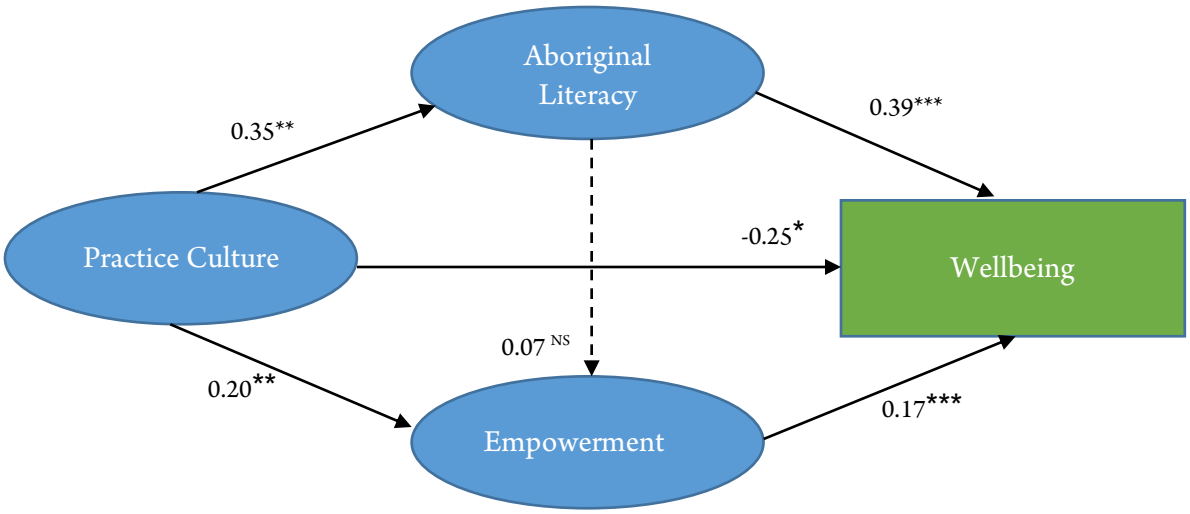

Figure 4. Structural equation model of relationships between cultural practice, Aboriginal language literacy, empowerment, and wellbeing for female participants. Goodness of fit: $\chi^2 = 65.8$, $df = 15$; $\chi^2/df = 4.38$, $p < 0.001$; RMSEA = 0.083 (0.063, 0.104); SRMR = 0.067; CFI = 0.97; TLI = 0.97; PNFI = 0.52.
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ NS = not significant

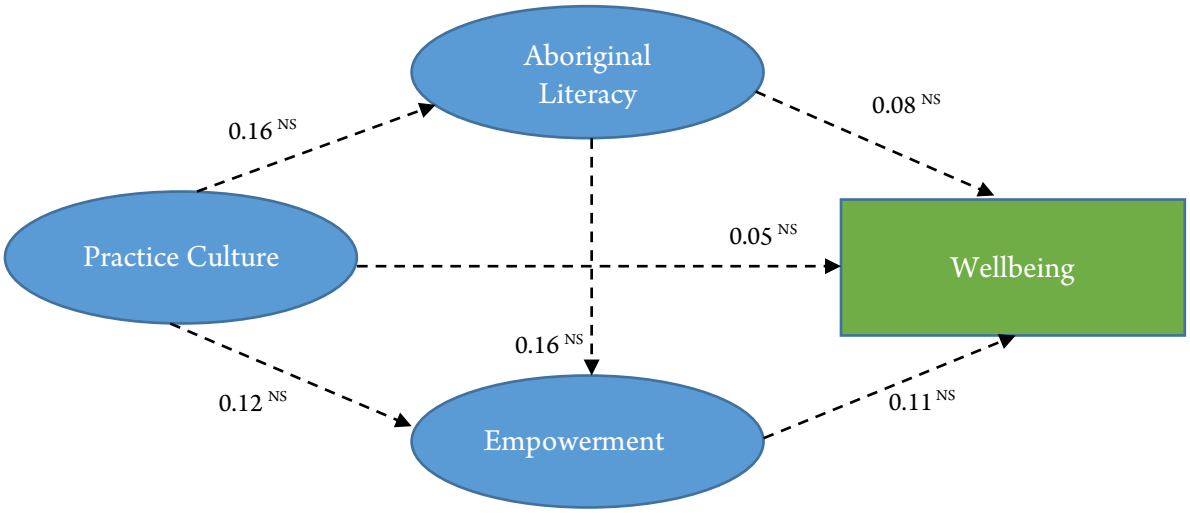

Figure 5. Structural equation model of relationships between cultural practice, Aboriginal language literacy, empowerment, and wellbeing for male participants. Goodness of fit: $\chi^2 = 19.5$, $df = 15$; $\chi^2/d = 1.30$, $p = 0.19$; RMSEA = 0.029 (0.00, 0.062); SRMR = 0.040; CFI = 0.98; TLI = 0.99; PNFI = 0.53
NS = not significant

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Table 5. Relationships Between Cultural Practice and Wellbeing for Males, Females, and All Participants

	Wellbeing		
Cultural Practice	**Males (n = 352)**	**Females (n = 489)**	**All participants (n = 841)**
Direct relationship	0.048 [-0.085, 0.18] p = 0.58	-0.25 [-0.37, -0.11] p = 0.02*	-0.11 [-0.18, -0.031] p =0.016*
Indirect relationship	0.174 [0.105, 0.273] p = 0.003**	0.11 [0.072, 0.15] p =0.007**	0.040 [0.007, 0.105] p =0.004**
Total relationship	0.008 [-0.049, 0.21] p = 0.24	-0.078 [-0.18, 0.43] p = 0.23	-0.006 [-0.058, 0.071] p = 0.93

Note. Relationships shown as β [95% CI], p value.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 6. Relationships Between Aboriginal Language Literacy and Empowerment, and Wellbeing for Males, Females, and All Participants

	Wellbeing		
	Males (n = 352)	**Females (n = 489)**	**All participants (n = 841)**
Aboriginal language literacy	0.079 [-0.030, 0.16] p = 0.17	0.39 [0.30, 0.49] p = 0.004**	0.25 [0.17, 0.31] p = 0.020*
Empowerment	0.11 [-0.015, 0.23] p = 0.09	0.17 [0.067, 0.29] p = 0.005**	0.14 [0.050, 0.22] p = 0.007**

Note. Relationships shown as β [95% CI]; p value
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Discussion

In the Interplay model of wellbeing for young adult Aboriginal Australians in remote regions, practising culture was associated with both Aboriginal language literacy and empowerment, each of which were associated with wellbeing in the model with all participants. However, the effects were significant among women, but not men, in models by gender.

Cultural Practice

The Interplay structural equation model showed no overall relationship between cultural practice and wellbeing for Aboriginal Peoples in remote Australia. Among women, the model identified positive direct relationships between cultural practice and both Aboriginal language literacy and empowerment, which in turn had a positive relationship with wellbeing and counterbalanced the negative direct relationship between cultural practice and wellbeing. These relationships highlight the importance of Aboriginal language literacy and empowerment, and the complexity of interplaying priorities for wellbeing, including differences between men and women.

In the model, relationships between cultural practice and wellbeing, including mediation by Aboriginal language literacy and empowerment, were different for male and female participants. Gender differences in cultural practices for Aboriginal Australians are well known and recognised in some service provision: For example, through the practice of separating Aboriginal men and women in work teams, planning consultations, networking, and conferences (Davies, Walker, & Maru, 2017). Thus, the Interplay research involving young Aboriginal Peoples in remote regions shows that gender should be included as an explanatory variable in future research into wellbeing and related constructs.

Aboriginal Language Literacy

Wellbeing increased by 0.25 for each standard deviation increase in Aboriginal language literacy—the strongest relationship to wellbeing identified within the Interplay framework, driven by the effects among women (Cairney et al., 2017). For women, Aboriginal language literacy also mediated the relationship between cultural practice and wellbeing.

Relationships between wellbeing and Aboriginal language literacy, especially for women, highlight the importance of Aboriginal languages, which affirm cultural identity, self-efficacy, and resilience of Aboriginal Australians (Fogarty, 2012). The NATSISS showed that literacy in Aboriginal languages is associated with higher levels of formal education and paid employment, and with participation in cultural activities. These relationships suggest that people who are literate in both Aboriginal languages and English, which is more often used in employment, are well integrated in both mainstream and Aboriginal societies (Biddle & Swee, 2012). Re-establishing government support for bilingual Aboriginal education will contribute to strengthening languages, thus enhancing rights of Aboriginal Peoples to their language (Nicholls, 2005; Schultz, Abbott, Yamaguchi, & Cairney, 2018).

The relationship between Aboriginal literacy and wellbeing identified in the Interplay project reflects a global phenomenon in which Indigenous language literacy promotes identity, empowerment, and wellbeing (United Nations, 2014). Efforts to enhance Aboriginal language literacy may provide multiple benefits for individuals, communities, and Australia's international reputation. Further research is

required to explore how Aboriginal language literacy impacts Aboriginal men, particularly because men have higher overall levels of Aboriginal language knowledge than women (Biddle & Swee, 2012).

Empowerment

For women, increased empowerment had a direct positive relationship with wellbeing and a mediating effect on the relationship between cultural practice and wellbeing. The direct link between empowerment and wellbeing for women in the Interplay model suggests that the function of health care, education services, Aboriginal organisations, and businesses in contributing to empowerment should be considered (McCalman, 2013; McEwan, Tsey, McCalman, & Travers, 2010).

Relationships between gender and empowerment for Aboriginal Australians reflect how Aboriginal men and women hold different spheres of influence and authority, and this is demonstrated through on-going separation of aspects of men's and women's lives (Fredericks et al., 2017). The findings in the Interplay project that relationships with empowerment differed for men and women are important and novel: Other studies of empowerment for Aboriginal Peoples have not published analyses by gender (McCalman, Bainbridge, Brown, Tsey, & Clarke, 2018). Research on empowerment for Aboriginal Australians has often arisen from non-Aboriginal concepts of power related to male physical and economic power. These differ from Aboriginal understandings of power, where power is related to cultural knowledge authority (Fredericks et al., 2017). Further research is needed to explore constructs of empowerment for Aboriginal Peoples in relation to gender.

Programs that have shown success in addressing empowerment among Australian Aboriginal Peoples are available through health, wellbeing, education, and employment service settings; however, political, ideological, and economic conditions have limited program implementation (McCalman et al., 2018). Currently, Australian health care services are funded to address clinical indicators for Aboriginal Peoples, rather than to contribute to empowerment, despite demonstrated benefits of empowerment interventions (Tsey et al., 2005). Addressing empowerment through health services, especially for women, may be a key element in the transformative change in health care needed to improve both health and wellbeing for Aboriginal Australians (Houston, 2016). For Aboriginal men, there is a need to address barriers to health service access (Canuto, Wittert, Harfield, & Brown, 2018).

Effective empowerment programs based on Aboriginal leadership and relatedness in schools, other educational institutions, and Aboriginal organisations can enhance wellbeing. However, Aboriginal Peoples require greater influence within policy and program circles in order to overcome barriers to the implementation of additional programs that empower Aboriginal Peoples (McCalman, 2013).

Australian Policy Implications

Australian governments have long sought to reduce measures of socio-economic disadvantage for Aboriginal Peoples (Altman, 2009). The current initiative is entitled Closing the Gap and has widespread support for its focus on reducing educational, employment, and health disadvantages of Aboriginal and Torres Strait Islander Peoples, particularly in remote regions (Commonwealth of Australia: Department of Prime Minister and Cabinet, 2017). However, government-defined nationwide targets do not adequately reflect the diversity of Aboriginal Peoples, and Aboriginal Peoples' aspirations are not reflected in government strategies to meet targets. An alternative policy approach

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would recognise the agency of Aboriginal Peoples and facilitate the development of targets and strategies that address their own needs (Altman, 2009). Aboriginal language literacy and empowerment as indicators of education could be considered as additional targets in the Close the Gap initiative, reflecting Aboriginal aspirations and human development in line with findings of the Interplay research.

Australia's Closing the Gap initiative makes repeated references to the importance of Aboriginal culture (Commonwealth of Australia: Department of Prime Minister and Cabinet, 2018), and culture was a priority of the Interplay wellbeing project. However, the complexity of relationships between cultural practice and wellbeing suggests that greater awareness is needed of how policies and services address culture and cultural practice. Policy and services focused on empowerment and Aboriginal literacy in alignment with cultural practice may be more effective in promoting wellbeing.

For Aboriginal Peoples from remote regions, education, employment, and health are not simply goals, but also the means through which to enhance their wellbeing (Cairney et al., 2017). Assumptions from government and other non-Aboriginal sectors of society that education should lead to employment and thereby contribute to the growth of the wider economy are not relevant to many Aboriginal Peoples in remote Australia. Rather, education should support Aboriginal languages and culture, affirm connection to country, and strengthen identities in order to promote wellbeing. The notion of direct transition from education to employment was not supported in the Interplay project, consistent with other work with Aboriginal Peoples in remote Australia (McRae-Williams, Guenther, Jacobsen, & Lovell, 2016; Schultz et al., 2018).

Bureaucratising Aboriginal culture can have negative impacts when culture is built into service plans developed externally, rather than through genuine ongoing engagement and empowerment of the communities involved (Fache, 2014). When the underlying bureaucracy is insensitive to key Aboriginal relationships and knowledge, using Aboriginal Peoples' culture as a tool to promote government policy can disempower people and negatively impact their wellbeing (Nadasdy, 2005). Implementation of cultural practices in unequal settings can reinforce dominant cultural mores that overrule Aboriginal values, methods, and institutions (Ens, Finlayson, Preuss, Jackson, & Holcombe, 2012).When non-Aboriginal Peoples do not recognise their own cultural practices and norms, yet remain the dominant service providers, their efforts to promote cultural practice may not contribute to Aboriginal wellbeing. Refreshment of the Closing the Gap initiative has highlighted the importance of empowerment and strong connections to country, rather than narrow representations of Aboriginal culture (Parter, Wilson, & Hartz, 2019).

The fundamental implication for Australian policy is that culture is a key component of wellbeing for Aboriginal Peoples of remote regions, but implementation of programs based on cultural practices must also entail other components. The Interplay project demonstrates that for women empowerment and Aboriginal language literacy mediate the link from cultural practice to wellbeing, while further research with Aboriginal men is required to quantify the insights that emerged in the development of the wellbeing research framework.

International Implications

Structural equation modelling enabled quantification and comparison of relationships between constructs such as wellbeing and empowerment that are meaningful across different cultures. This

process translates people's stories into numbers to provide the empirical accountability often required by governments.

The Interplay structural equation models developed for Aboriginal Peoples in remote Australia showed the importance of Aboriginal language literacy for wellbeing. The importance of languages for the health and wellbeing of Indigenous Peoples globally is increasingly being recognised (Flood & Rohloff, 2018). Loss of Indigenous languages is contributing to loss of Indigenous knowledge communicated through these languages (Nettle & Romaine, 2000). International bodies have recommended that all governments recognise, strengthen, and re-vitalise Indigenous languages for the benefit of individuals, communities, and nations (United Nations, 2014), and this research highlights the association between Indigenous language literacy and wellbeing.

The Interplay model suggests that for Aboriginal women in remote Australia, empowerment may contribute both directly and indirectly to wellbeing, and this is consistent with international recognition that empowerment for Indigenous Peoples is a critical tool for building equity in human development (United Nations, 2015). However, empowerment strategies must be developed locally for people to be empowered because of the importance of participation in processes of empowerment, which cannot be standardised across populations (Wallerstein, 2006).

Limitations

The research was conducted in Australian Aboriginal communities in regions classified as remote, so generalisation is limited to this Aboriginal population (Australian Bureau of Statistics, 2014). For many Aboriginal Peoples, statistical classifications of remoteness are arbitrary. From their perspective, remoteness can also be seen as a reflection of presence on ancestral lands (Rose, 2004). Participation was limited to people aged 15 to 34, so results may not be relevant to other age groups, both because of how priorities change over the life course and because of the changing Aboriginal policy frameworks that shape people's lives (Altman, Biddle, & Hunter, 2004).

Both the communities and individuals involved in the research were self-selected and, although efforts were made to include diverse communities, the distinctiveness of each Aboriginal community may limit generalisation. Data collection by Aboriginal community researchers in their home communities may have led to information bias. Further, gender-specific concerns and language and communication issues were potential limitations.

The research focussed on positive attributes to counter the pervasive negative representation of Aboriginal Peoples, and this may have contributed to bias in both collection and interpretation of results. Despite efforts to reach common understandings among researchers of each of the questions, translation and interpretation across languages and cultures may have been a limitation. Relationships are associations between variables and do not suggest causation.

Conclusion

Delivery of effective services can improve people's wellbeing. As an outcome measure, wellbeing reflects individual aspirations and priorities, overcoming the cultural bias of other outcome measures. The Interplay project identified and explored wellbeing priorities for Aboriginal Peoples in remote regions of

Australia to guide service provision. For women, Aboriginal language literacy and empowerment showed both direct and indirect relationships with wellbeing, suggesting including Aboriginal language literacy and empowerment in education, employment, and health policy and services may have far-reaching benefits. For men, neither Aboriginal language literacy, empowerment, nor cultural practice were statistically associated and wellbeing. Overall, relationships between cultural practice and wellbeing are a complex interplay of factors, but empowerment and Aboriginal language literacy appear to be important priorities. Further research to explore relationships between Aboriginal language literacy, empowerment, and wellbeing among Aboriginal men and women is required to understand the different needs of each gender.

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Appendix 4.7

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RESEARCH ARTICLE Open Access

Structural modelling of wellbeing for Indigenous Australians: importance of mental health

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Abstract

Background: Australia provides health care services for Indigenous peoples as part of its effort to enhance Indigenous peoples' wellbeing. However, biomedical frameworks shape Australia's health care system, often without reference to Indigenous wellbeing priorities.

Under Indigenous leadership the Interplay research project explored wellbeing for Indigenous Australians in remote regions, through defining and quantifying Indigenous people's values and priorities. This article aimed to quantify relationships between health care access, mental and physical health, and wellbeing to guide services to enhance wellbeing for Indigenous Australians in remote regions.

Methods: Indigenous and non-Indigenous researchers worked with Indigenous people in remote Australia to create a framework of wellbeing priorities. Indigenous community priorities were community, culture and empowerment; these interplay with government priorities for Indigenous development of health, education and employment.

The wellbeing framework was further explored in four Indigenous communities through a survey which measured aspects of the wellbeing priorities. Indigenous community researchers administered the survey in their home communities to 841 Indigenous people aged 15 to 34 years from June 2014.

From the survey items, exploratory factor analysis was used to develop constructs for mental and physical health, barriers to health care access and wellbeing. Relationships between these constructs were quantified through structural equation modelling.

Results: Participants reported high levels of health and physical health (mean scores (3.17/4 [SD 0.96]; and 3.76/4 [SD 0.73]) and wellbeing 8.07/10 [SD 1.94]. Transport and costs comprised the construct for barriers to health care access (mean access score 0.89/1 [SD 0.28]).

Structural equation modelling showed that mental health, but not physical health was associated with wellbeing ($\beta = 0.25$, $P < 0.001$; $\beta = -0.038$, $P = 0.3$). Health care access had an indirect positive relationship with wellbeing through mental health ($\beta = 0.047$, $P = 0.007$). Relationships differed significantly for participants in remote compared with those in very remote communities.

Conclusions: Greater attention to mental health and recognition of the role of services outside the health care sector may have positive impacts on wellbeing for Indigenous people in remote/ very remote Australia. Aggregation of remote and very remote populations may obscure important differences between Indigenous communities.

Keywords: Aboriginal Australians, Indigenous Australians, Functional health, Health care access, Mental health, Physical health, Remoteness, ARIA, Structural equation modelling, Wellbeing

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Background

Australia provides targeted health care and other services for Indigenous people with the aim of reducing their health and socio-economic disadvantage [1]. State, territory and federal Australian governments formally committed to reducing disparities between Indigenous and other Australians in 2008 through the Closing the Gap strategy [2]. Since then, progress has been limited: improvements in measures of Indigenous people's health have stalled, and education and employment gaps are widening [3].

In Australia as globally, movements for Indigenous self-determination recognise that Indigenous communities have different goals and aspirations from those of non-Indigenous populations. Socio-economic indicators developed by and for national populations may not address Indigenous peoples' aspirations [4]. Measuring and monitoring Indigenous community progress requires development of indicators that are meaningful for Indigenous people, and that address the distinct and diverse aspirations of individual communities. These can build on measurements of life satisfaction and wellbeing, which are fundamental to development, relatively simple to measure and monitor, and unbiased by differences in culture [4].

Recognising that Indigenous Australians have distinct social characteristics, the Australian Bureau of Statistics conducts a periodic National Aboriginal and Torres Strait Islander Social Survey (NATSISS); Aboriginal and Torres Strait Islander groups being the two populations of Indigenous Australians. The most recent NATSISS, conducted in 2014–2015, included a question on overall life-satisfaction. Results showed that overall, Indigenous Australians enjoy high levels of life satisfaction, with those in remote and very remote regions reporting mean life-satisfaction of 7.6, and those in non-remote regions 7.2 [5]. Mean life satisfaction score for all Australians in 2015 was also 7.6, despite Indigenous people in remote/ very remote regions showing significant differences from the mean Australian levels in other social measures including income, employment, education and health [6]. This suggests that at a population level, remote residence is associated with increased life satisfaction for Indigenous Australians.

The Access and Remoteness Index of Australia (ARIA) defines five categories of remoteness based on road distance to the nearest urban centre, shown geographically in Fig. 1 [7]. The research described in this article involved communities in areas classified as remote and

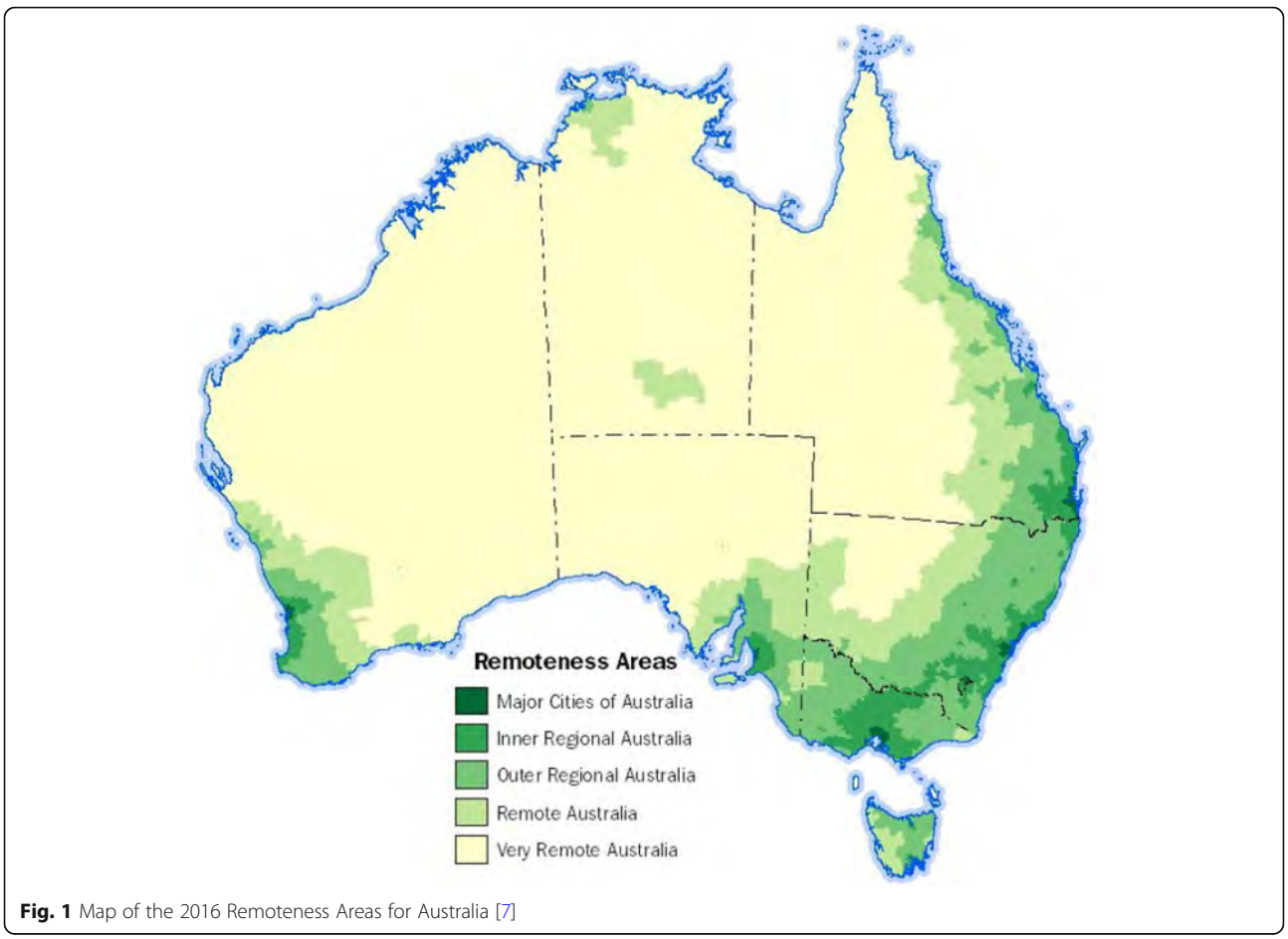

Fig. 1 Map of the 2016 Remoteness Areas for Australia [7]

very remote. More Indigenous Australian live in very remote than remote regions, 95,200 and 53,500 respectively, 11.8 and 6.7% of the total Indigenous population [8].

There is a paradox regarding Indigenous people of remote and very remote Australia, who report high levels of wellbeing despite socio-economic disadvantage as assessed through indicators of education, employment and income [5, 9]. Possible explanations include the strength of identity and culture that Indigenous people maintain through their connections to the land particularly when they have access to their ancestral lands [10]. In other populations, improvements in wellbeing are independently associated with improvements in health, education and productivity, through increases in creativity, cognitive capacity, sociability, cooperation and productivity [11]. Health benefits of increases in wellbeing include reduced inflammation, lowered risk of cardiovascular disease and susceptibility to infections, and increases in health promoting behaviours including choosing healthier foods, exercising more and smoking less [11]. Although such benefits have not been specifically demonstrated for Indigenous Australians, attention to wellbeing may provide opportunities to address complex socio-economic disadvantage where current approaches are inadequate [3].

Wellbeing as a goal of service delivery was the focus of the Interplay research, an initiative of the Cooperative Research Centre for Remote Economic Participation whose overall aim was to guide economic development to meet the aspirations of Indigenous people in remote/ very remote regions of Australia [12, 13]. The Interplay research began by developing a wellbeing framework, which encompassed the government priorities of health, education and employment, together with community priorities of community, culture and empowerment [12]. Social and emotional wellbeing is often used as an alternative term for mental health for Indigenous Australians, but as the construct in this research related to absence of symptoms of mental illness, we use the term mental health [14].

The research presented here aims to quantify relationships between health care access, mental and physical health and wellbeing, assuming that access to health care services contributes to wellbeing both directly and through its impacts on mental and physical health. The hypothesis was that health care access is directly associated with wellbeing for Indigenous people in remote and very remote communities; alternatively, mental and physical health may mediate this relationship. Understanding these relationships can provide direction for services to optimise wellbeing for Indigenous Australians in remote/ very remote regions.

Methods

Research governance

The Cooperative Research Centre for Remote Economic Participation (CRC-REP) which has community connections throughout remote Australia managed the Interplay research [13]. Indigenous leadership and governance of the project prioritised qualitative approaches to understanding wellbeing, based on peoples' stories as sources of knowledge and understanding. Government, university and industry partners in the project sought numerical indicators, so the project also included quantitative analysis of aspects of wellbeing.

Design and development of the research extended over 3 years of consultation with Indigenous communities and researchers. Advisory group meetings, workshops, interviews and discussions, and the employment of Indigenous community-based researchers enabled collaboration between Indigenous community members, researchers and government representatives in all aspects of the research [15]. Considerable effort was made to ensure that the project encompassed both Indigenous and non-Indigenous knowledge and understandings. Following data collection, the research team continues work with communities of the study. This keeps community researchers, participants and other community members informed of the analyses of the study and ensures support for wider reporting and implementation [16].

Study population

Four communities in Northern Territory and Western Australia from the CRC-REP network identified themselves to participate in the research. To achieve broad representation of remote Indigenous communities, we included a range of geographies; population size and proportion Indigenous; and level of Indigenous language use [12]. Table 1 provides information on the communities involved in the study.

Communities of the study together with Indigenous service providers and leaders nationwide contributed to development of a wellbeing framework. The framework

Table 1 Community geography, remoteness, language, and research participation

Community	1	2	3	4
Geography	River	Island	Desert	Coastal
Distance from major centre	300 km	500 km	1000 km	650 km
Remoteness classification	Remote	Very remote	Very remote	Very remote
Total population	9207	2550	1158	843
Proportion Indigenous	24.2%	88.6%	24.4%	75.3%
Primary community language	Kriol	Djambarrpuyngu	Martu	Gumatj
Proportion of Indigenous people who speak Indigenous languages at home	25.7%	98.1%	63.5%	84.3%

Population data from Australian Bureau of Statistics [17]

comprises Indigenous community priorities of community, culture and empowerment and government priorities of health, education and employment [18].

Survey development and data collection

The Interplay wellbeing survey was developed to further explore wellbeing priorities. It included questions on demography, Indigenous status, mental and physical health symptoms and diagnoses, barriers to health care access, and wellbeing. As far as possible questions were developed from instruments which have been validated for Indigenous Australians. Experienced researchers worked closely with community researchers to ensure they shared understandings of the meaning of the survey questions, and that the questions could be translated to community languages if required [12]. The survey was designed to generate valid, reliable and quantifiable measures of contributors to Indigenous people's wellbeing [12].

Through relationships and community networks, Indigenous Community Researchers recruited young adult participants to complete the survey in their home communities over 12 months from June 2014. The surveys were in English, but where necessary the community researchers who had been involved in the development of the survey used community languages to ensure that participants understood the meaning of the questions [12]. The community researchers administered surveys from iPads, taking approximately 1 hour per survey.

Measures

The Interplay research used standard measurement tools as far as possible. To measure physical health, questions involved health as a resource for living, through asking people whether health problems interfered with aspects of their day to day lives [12]. Refined questions from the Strong Souls instrument provided a measurement of mental health [14]. The absence of specific barriers to seeking health care formed the construct for health care access, while current life satisfaction was the measurement of wellbeing [19]. Education and employment measures were completed years of school and employment status respectively, based on questions from the Australian census [17]. Remoteness was determined by the ARIA classification of the community where the participant completed the survey [7].

Statistical analysis

Structural equation modelling enabled factors from the Interplay wellbeing framework to be developed into measurable constructs, to analyse, interpret and report in meaningful ways to both Indigenous and non-Indigenous communities [12]. Data analysis was conducted using SPSS Statistics Software version 24 and AMOS version 23 [20]. Missing data were estimated using multiple imputations taking the median as the most likely value. Exploratory factor analysis (EFA) was used to develop constructs for mental and physical health and health care access from the survey items, using maximal likelihood extraction with promax rotation [21]. Three constructs for health care access and mental and physical health had strong factor loadings (> 0.4), no items with cross-loadings, discriminant and face validity and adequate reliability.

We tested hypothesised relationships between health care access and mental and physical health and wellbeing through confirmatory factor analysis (CFA) using structural equation modelling in AMOS. Bootstrapping enabled mediation analysis to further assess relationships between constructs [22]. Model fit was assessed using a range of types of fit indices, namely χ^2 to degrees of freedom ratio, non-normed fit index (NNFI), comparative fit index (CFI), Akaike's Information Criteria (AIC) closer to saturated model than the independence model and Root Mean Square Error of Approximation (RMSEA) with confidence interval [23].

While participant numbers were not large enough to analyse differences between the communities in the research, multigroup analysis was performed to explore differences between participants in very remote and those in remote communities [7].

Results

Participant demography

Across the four communities of the study, 841 Indigenous participants completed surveys. Mean age was 25.2 years, SD = 5.34, range 15 to 34 years. Females made up 489 (58.1%) of respondents. Based on 2011 census population which was the nearest to the date of the research, participants made up 45% of Indigenous people in the target age group in the study communities [17]. Participants' community, education and employment status, and relationships of these variables with wellbeing are shown in Table 2.

Descriptive statistics

Survey participants described good physical health, with over 88% reporting no interference from health problems with their normal daily activities, energy levels, socialising, or work/ study. However, symptoms of depression and anxiety were common, with nearly half the respondents reporting at least one depression or anxiety symptom. The main barriers to accessing health care were transport (14.0%), cost (8.4%), cultural and language concerns (7.1%) and privacy (4.9%). Participants reported high levels of wellbeing, with mean score 8.1/10 (SD 1.94). Means and standard deviations are summarised in Table 3.

Table 2 Number and percentage of participants by community, education level and employment status reporting levels of wellbeing

Demographic variable	Community number and remoteness	Wellbeing level			
		Low (0 to 4)	Moderate (5 to 7)	High (8 to 10)	Total
Community	1 Remote	21	174	350	545
		3.9%	31.9%	64.2%	100%
	2 Very remote	1	24	26	51
		2.0%	47.1%	51.0%	100%
	3 Very remote	2	28	74	104
		1.9%	26.9%	71.2%	100%
	4 Very remote	4	54	83	141
		2.8%	38.3%	58.9%	100%
Highest level of schooling	Primary school	4	29	21	65
		6.2%	44.6%	41.2%	100%
	Junior high school (years 8 to 10)	21	204	367	592
		3.5%	34.5%	62.0%	100%
	Senior high school (years 11 to 12)	3	47*	134*	184
		1.6%	25.5%	72.8%	100%
Employment status	No paid employment	14	146	251	411
		3.4%	35.5%	61.1%	100%
	Part time employment	8	79	160	247
		3.2%	32.0%	64.8%	100%
	Full time employment	6	55	122	183
		3.3%	30.1%	66.7%	100%
Total		28	280	533	841
		3.3%	33.3%	63.3%	100%

*Indicates value is different from expected based on $P < 0.05$
Relationships of demographic variables with wellbeing
Education: $\chi^2 = 14.1$, df = 4, $P = 0.007$
Employment: $\chi^2 = 1.07$, df = 4, $P = 0.72$
Community: $\chi^2 = 9.74$, df = 6, $P = 0.14$

Exploratory factor analysis

We used maximal likelihood extraction to identify constructs for physical and mental health, and health care access.

Capacity for normal daily activities, work/ study, socialising, and energy levels formed the construct for physical health. There was a high degree of reliability of these factors for the physical health construct (Cronbach alpha reliability 0.92), and participants had mean physical health score of 3.76/4 (SD 0.96).

Symptoms of anxiety (feeling dizzy, feeling shaky, and hard to breathe), and depression (bad moods, quick to anger and difficulty sleeping) formed the construct of mental health. The items showed a high level of reliability (Cronbach alpha reliability 0.88). Mean mental health score was 3.17/4 (SD 0.96).

Costs and transport made up the construct for barriers to health care access, with Cronbach alpha reliability 0.74. Cultural and language barriers and privacy did not load strongly onto the construct (0.42, and 0.28) so the final model did not include these factors.

Distributions and correlations of the constructs in the model are shown in Table 4.

Model development and confirmatory factor analysis

We developed a structural model to quantify relationships between mental and physical health, health care access and wellbeing. Education and employment were considered as covariates, and participants were grouped by the remoteness of their community. We anticipated negative skew and positive kurtosis of the constructs from the descriptive statistics, but the data fitted the model as shown in Fig. 2 with participants grouped into remote and very remote communities.

Health care access was not statistically associated with wellbeing for participants from remote communities, and had a negative association with wellbeing for participants from very remote communities (for participants in

Table 3 Survey questions on mental and physical health, access to health care and wellbeing with mean response and standard deviation

Construct	Survey questions	Mean	SD
Mental health: Have you felt any of these from too many worries in the last few weeks? (0–4, with high scores indicating good health)	Hard to breathe	3.41	1.07
	Dizzy	3.32	1.13
	Shaky	3.42	1.05
	Get angry or wild real quick	2.87	1.33
	Too many bad moods	2.94	1.28
	Trouble sleeping	3.09	1.33
Physical health: Have health problems got in the way of these in the last few weeks? (0–4, with high scores indicating good health)	Normal activities	3.77	0.77
	Work or study	3.85	0.63
	Energy levels	3.75	0.84
	Socialising with family or friends	3.67	0.99
Health care access: Do any of these things make it hard to use health care? (0–1, with 1 being no barrier)	Costs/ money	0.92	0.28
	Transport	0.86	0.35
	Culture/ language	0.93	0.26
	Privacy	0.95	0.21
Wellbeing:	On a scale of 1 to 10 how well is your life going?	8.07	1.94

$n = 841$

remote communities, β = 0.21, 95% confidence interval [− 0.087, 0.14], $P = 0.6$; for participants in very remote communities β = − 0.22, 95% confidence interval [− 0.35, − 0.076], $P = 0.001$). Mental health was associated with wellbeing for both groups (remote β = 0.30, [0.18, 0.41], $P < 0.001$; very remote β = 0.16, [0.053, 0.27], $P = 0.014$) while physical health was not statistically significantly associated with wellbeing for either group (remote β = 0.026, [− 0.08, 0.12], $P = 0.5$; very remote β = − 0.053, [− 0.15, 0.056] $P = 0.4$). Health care access was positively associated with mental health for participants from remote but not very remote communities (remote β = 0.30, [0.15, 0.46], $P < 0.001$; very remote β = 0.06, [− 0.072, 0.22], $P = 0.4$). Table 5 shows standardised regression weights, 95% confidence intervals and P values for direct relationships with wellbeing in the model.

We explored the relationship between health care access and wellbeing further through mediation analysis. Physical health had non-significant relationships with wellbeing so was not further considered, while mental health was positively associated with both health care access and wellbeing for remote communities, so was potentially a mediating variable for health care access on wellbeing in remote but not very remote communities.

We found a statistically significant positive indirect effect of health care access through mental health on wellbeing for participants from remote communities. There was also a positive indirect relationship of health care access on wellbeing, through mental health for all participants. The total relationship of health care access with wellbeing was positive for those in remote communities (Total relationship = 0.12, 95% confidence interval [0.036, 0.21], $P = 0.005$); negative for those in very remote communities (Total relationship = − 0.23, 95% confidence interval [− 0.34, − 0.082], $P = 0.005$) and not statistically significant when all participants were considered together (Total relationship = − 0.03, 95% confidence interval [− 0.12, 0.05], $P = 0.5$). These data are shown in Table 6.

Discussion

Interplay between health care access, mental and physical health and wellbeing

The hypothesis that health care access is associated with wellbeing was not confirmed. The relationship was not statistically significant for participants in remote communities and was negative for participants in very remote communities, signifying that greater health care access was associated with lower levels of wellbeing for participants in very remote communities. Mediation analysis showed an indirect positive effect of health care access on wellbeing through mental health for participants in remote communities, and this contributed to a positive total effect. For participants in very remote communities, the indirect effect was not significant, and the total effect of health care access on wellbeing remained negative. Thus, health care access does not have a positive relationship with wellbeing, and relationships between health care access and wellbeing differ for participants in remote and very remote communities.

Table 4 Constructs of mental health, physical health, health care access, with wellbeing and variate correlations

Construct	Range	Mean	SD	Cronbach α reliability	Skewness	Kurtosis	Bivariate correlations		
							Mental health	Physical health	Health care access
Mental health	0–4	3.17	0.96	0.88	−1.29	1.19			
Physical health	0–4	3.76	0.73	0.92	−3.26	10.21	0.16 ***		
Health care access	0–1	0.89	0.28	0.74	−2.40	4.41	0.23***	0.25***	
Wellbeing	1–10	8.07	1.94	Single item	−0.65	−0.63	0.24***	−0.039 NS	−0.088*

$n = 841$
SD standard deviation
***$P < 0.001$, *$P < 0.05$, *NS* not significant

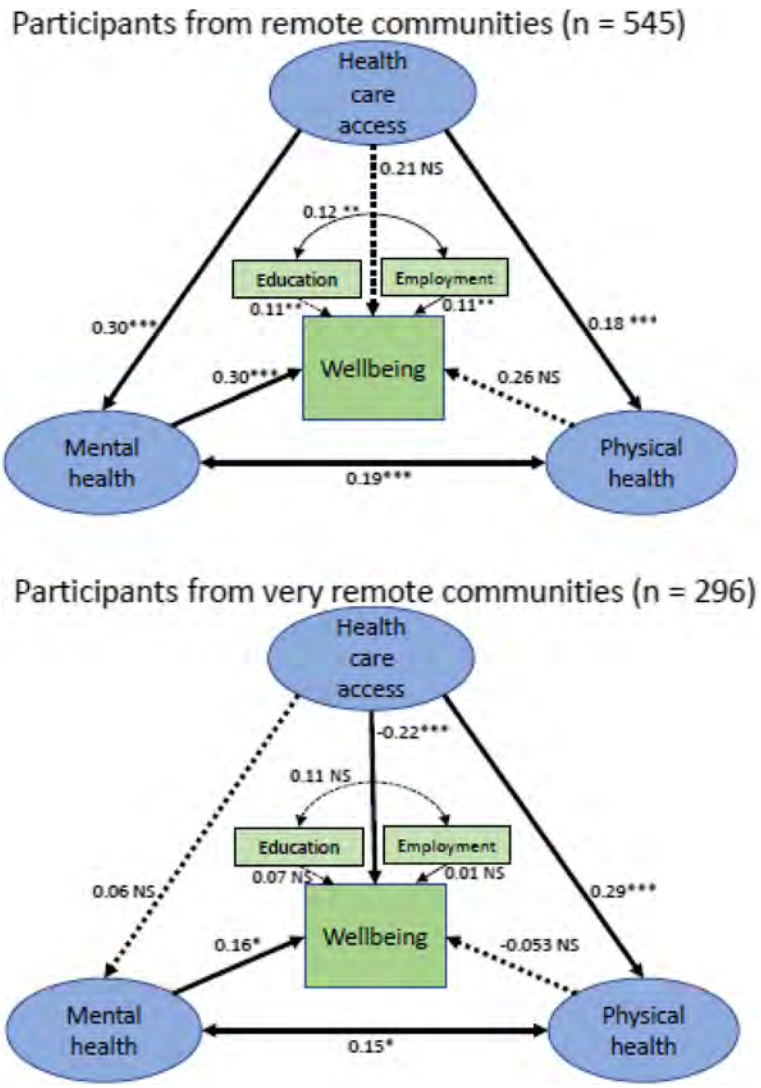

Fig. 2 Structural equation models showing relationships between health care access, and mental and physical health to wellbeing for participants in remote and very remote communities.
***$P < 0.001$; **$P < 0.01$; *$P < 0.05$; NS = not statistically significant. Model fit indices: $\chi^2 = 345.13$; df = 158; $\chi^2/df = 2.18$. NNFI = 0.96, CFI = 0.97, Model AIC = 509, Saturated AIC = 480, Independence AIC = 6548; RMSEA = 0.038, 90% confidence interval [0.032, 0.043]. Non-significant pathways contributing to the hypotheses are included as dotted lines in the diagrams

Table 5 Standardised regression weights for constructs and wellbeing for participants from remote and very remote communities

	Relationship with wellbeing for participants by community		
	Remote community participants	Very remote community participant	All participants
Health care access	0.21 [−0.087, 0.14] $P = 0.6$	−0.22** [− 0.35, − 0.076] $P = 0.001$	−0.077 [− 0.17, 0.004] $P = 0.05$
Mental health	0.30*** [0.18, 0.41] $P < 0.001$	0.16* [0.053, 0.27] $P = 0.014$	0.25*** [0.17, 0.32] $P < 0.001$
Physical health	0.026 [− 0.08, 0.12] $P = 0.5$	− 0.053 [− 0.15, 0.056] $P = 0.4$	−0.038 [− 0.11, 0.041] $P = 0.3$

Relationship, 95% confidence interval, *P* value
***$P < 0.001$; **$P < 0.01$; *$P < 0.05$; *NS* not statistically significant

Table 6 Direct, indirect and total relationships between health care access and wellbeing, for remote and very remote community participants

Health care access relationship to wellbeing	Remote community participants	Very remote community participants	All participants
Direct relationship	0.21 [−0.087, 0.14] *P* = 0.6	−0.22** [− 0.35, − 0.076] *P* = 0.001	−0.077 [− 0.17, 0.004] *P* = 0.05
Indirect relationship through mental health	0.11** [0.043, 0.17] *P* = 0.002	−0.006 [− 0.055, 0.029] *P* = 0.7	0.047** [0.015, 0.087] *P* = 0.007
Total relationship	0.12** [0.036, 0.21] *P* = 0.005	−0.23** [− 0.34, − 0.082] *P* = 0.005	−0.03 [− 0.12, 0.05] *P* = 0.5

Relationship, 95% confidence interval, *P* value
***P* < 0.001; ***P* < 0.01; **P* < 0.05; *NS* not statistically significant

Mental health was positively associated with wellbeing for participants in both remote and very remote communities. For those in remote communities, this indirect effect contributed to a positive overall effect of health care access on wellbeing.

Relationships between health care access and wellbeing are complex. Interactions between Indigenous people and health care providers do not consistently contribute to wellbeing [24, 25]. In Australia, health care in very remote regions is usually provided by non-Indigenous practitioners even where Indigenous people are the majority of the population. Staff turnover is high, this and can reinforce difference and negative attitudes between health care providers and Indigenous people [26, 27]. Different priorities and poor communication between Indigenous people and health care providers can contribute to experiences of disempowerment and alienation, and may undermine improvements in wellbeing that access to health care could provide [26, 28]. While efforts are made to overcome these issues, greater attention to mental health and to services outside the health sector may contribute to wellbeing for Indigenous people, especially in very remote communities [28].

Remoteness

Demographic and socio-economic descriptions of Australians often aggregate remote and very remote populations who together they make up only 1.5% of the Australian people [29]. The separation between remote/ very remote and non-remote populations is also used for Indigenous Australians [9]. However, the concept of remoteness does not exist for many Indigenous Australians, and more Indigenous people live in very remote regions than remote regions. This contrasts with non-Indigenous Australians whose population declines with increasing remoteness [8]. The model presented here suggests that for Indigenous Australians the remote/ very remote aggregation may overlook important differences.

Wellbeing

The high level of wellbeing 8.1/10 reported by Indigenous people in this study is consistent with other data such as the NATSISS [5] which indicates that Indigenous people in remote / very remote regions enjoy greater wellbeing than those in urban regions. There is little in the literature that explores the high levels of wellbeing of Indigenous people of remote/ very remote regions [30]. Instead most research focusses on negative indicators of Indigenous people in remote/ very remote Australia, including disease rates, life expectancy, unemployment, school attendance, literacy and numeracy [3].

Participants in this study also reported experiencing high levels of functional health, despite the high burden of disease of Indigenous people in remote Australia [9]. Mental health symptoms were more common than physical health problems, which may reflect the high burden of suffering among Indigenous communities attributed to stress, racism, and on-going oppression [31]. However the model suggests that recognising and managing the burden of mental health symptoms provides an opportunity for health care providers to significantly enhance wellbeing for people in remote regions [12].

Barriers to health care access

Transport and costs were the factors that comprised the construct of health care access. These barriers to health care access have been identified for Indigenous people in settings across Australia [32–34]. Cultural and language differences were identified as barriers to health care access in the descriptive data in this project, and have been identified as important barriers for Indigenous Australians in other research [2]. However, they had low loadings in exploratory factor analysis and reduced the statistical fit of the model. Privacy was also identified in descriptive data as a barrier to health care access but did not load strongly onto the construct of health care access.

Health and wellbeing for indigenous people

Australian Indigenous people's understandings of health and wellbeing were defined in the 1989 National Aboriginal Health Strategy (NAHS) and remain in the current National Aboriginal and Torres Strait Islander National health plan 2013 to 2023 [2, 35].

> "Health to Aboriginal peoples is a matter of determining all aspects of their life, including control over their physical environment, of dignity, of community self-esteem, and of justice. It is not merely a matter of the provision of doctors, hospital, medicine or the absence of disease and incapacity." [35] page ix.

> "[Health is] not just the physical well-being of the individual but the social, emotional, and cultural well-being of the whole community." [35] page x

The Interplay project identified health as one of six wellbeing priorities, together with community, culture, and empowerment, education and employment. In the model here, mental health, which is freedom from depression and anxiety symptoms, was associated with wellbeing for participants in both remote and very remote regions, and mediated the relationship between health care access and wellbeing for participants in remote regions. Promoting mental health may be an important strategy for enhancing wellbeing for Indigenous people in remote and very remote Australia.

Implications for service provision

The Interplay project provides an integrated framework to understand Indigenous wellbeing, and guide development of effective services. Since mental health is associated with wellbeing, services that contribute to mental health may enhance wellbeing more effectively than health care directed to physical health. This highlights the importance of services outside the health sector to wellbeing, which contribute to comprehensive primary health care, originally conceptualised as an intersectoral undertaking [36].

Services outside the health sector contribute to social and emotional wellbeing, which arise from all aspects of Indigenous people's lives rather than being limited to aspects of health [10, 37]. Services aimed to enhance the strengths of Indigenous people and communities, including commitment to interpersonal relationships, cultural knowledge and language may contribute to the transformative approach required to reduced health and socio-economic disadvantage of Indigenous people [12]. Health services based on caring for ancestral lands, the basis of Indigenous health, rather than clinical imperatives may contribute to improved health and wellbeing outcomes [38].

Within the health sector, there is widespread recognition that interventions that effectively address mental health of Indigenous Australians will improve people's wellbeing [39]. Key elements of interventions likely to be effective include delivery outside clinical spaces; attention to the specific needs of Indigenous peoples including historical policies of removing people from their families; and focus on empowerment and self-determination [39]. Ensuring that Indigenous people maintain control of services to address their mental health needs and that interventions are rigorously evaluated would contribute to improving mental health outcomes [39].

Primary health care for Indigenous Australians is increasingly driven by performance indicators related to physical health, rather than community needs and aspirations [40]. As part of the closing the gap strategy of reducing the disadvantage of Indigenous Australians, a set of numerical indicators of physical health, such as blood pressure, blood sugar and body weight has been defined. Health services are required to report these to government funding agencies annually [41]. How this intense monitoring affects people's wellbeing or health care access has not been considered. The rationale is to drive services to closely monitor people's clinical status and behaviour through the performance of health care services [41]. While it is conceivable that improvement in physical health indicators may contribute to mental health, interventions specifically established to improve mental health for Indigenous people may be more effective [42]. Improvements in mental health and wellbeing may then lead to improved physical health, as suggested in the Interplay structural model and in the literature [43]. Mental health complements other contributors to wellbeing identified in the Interplay project, namely cultural practices, empowerment, identity and spirituality, Indigenous and English literacy, employment, community and freedom from substance use [12].

Australia's Indigenous community-controlled health sector has long-advocated for a broader approach to health but been limited by funding requirements that demand a focus on biomedical services [40]. This limits both the impact of health care on wellbeing, and also the impact of health care on health because the very meaning of health for Indigenous people may not be represented in the biomedical model [12]. Effective community-control of Indigenous health care services and better integration of services may have manifold benefits, through a comprehensive approach including action on the social determinants of health, and through greater levels of employment of Indigenous people [26].

Study limitations

Limitations of this study include its localised scale, providing detailed information about a convenience sample

of participants from four Indigenous communities in remote/ very remote regions rather than a statistically representative sample. Data are cross-sectional so direction of relationships is theoretical rather than experimental. Surveys were conducted by community researchers in their home communities so interpersonal relationships may have led to response bias.

While the survey instrument was developed by experienced researchers working with community researchers, and there was agreement about the meaning of the questions, the accuracy and consistency of interpretations have not been formally established.

Owing to small numbers of participants from individual communities, sample size was inadequate to conduct multigroup analysis by community [44]. The analysis with participants grouped by community remoteness highlights the possible differences between communities, and suggests that this may be an important area of further research.

Lack of clinical data and more specific measures of health care access are limitations. Relationships between health care access, biomedical measures of health and Indigenous people's own experiences of health and wellbeing form an important area for further study [26, 45].

Conclusions

The Interplay project worked with Indigenous people in remote/ very remote regions of Australia to explore wellbeing, which is an outcome of service provision. Structural equation modelling of wellbeing and its relationships with health care access and mental and physical health showed that of these constructs, only mental health is associated with wellbeing. For participants in remote communities, mental health also forms an indirect pathway from health care access to wellbeing. Relationships differed between participants from remote and very remote communities.

Mental health and wellbeing for Indigenous Australians in remote Australia may be enhanced through strengthening and collaboration among services outside the health sector, particularly those that contribute to relationships, empowerment, cultural identity and care of the land. Addressing wellbeing may contribute to alleviation of other aspects of socioeconomic disadvantage faced by Indigenous Australians.

Abbreviations

ACI: Akaike's Information Criteria; AGFI: Adjusted Goodness of Fit Index; CFA: Confirmatory factor analysis; CFI: Comparative Fit Index; CRC-REP: Cooperative Research Centre for Remote Economic Participation; EFA: Exploratory factor analysis; GFI: Goodness of Fit Index; NATSISS: National Aboriginal and Torres Strait Islander Social Survey; NNFI: Non-Normed Fit Index; RMSEA: Root Mean Square Error of Approximation; SD: Standard deviation; SEM: Structural Equation Modelling

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Disclaimer

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Authors' contributions

RS (non-Indigenous) analysed and interpreted the data and led writing of the manuscript. SC (non-Indigenous), TA (Indigenous) and JY (Indigenous) collaborated in the design, implementation of the research. SQ (non-Indigenous) designed and led the statistical analysis. BW (non-Indigenous) contributed to the statistical analysis, interpretation and development of the manuscript. TA was responsible for cultural integrity, fieldwork coordination and management of Indigenous community researchers. JY mediated the involvement of the Australian Government. All authors have read and approved the final manuscript.

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Availability of data and materials

The survey instrument and data that support the findings of this study are held by Ninti One Incorporated. Restrictions apply to their availability, as both were used under license for the current study, and so are not publicly available. Survey Instrument and data are however available from the authors upon reasonable request and with permission of Ninti One.

Ethics approval and consent to participate

Engagement with Indigenous community organisations, government service providers, land councils and local partner organisations underpinned the development and implementation of the research [46]. Ethics Committees of the Northern Territory Department of Health/ Menzies School of Health Research, and Western Australian Aboriginal Health gave formal approval for the research (References 2013–2125 and 549). All participants gave written consent; guardians also gave consent for participants under 16 years. Community researchers have been involved throughout analysis, interpretation and publication of the research, providing a further level of ethical integrity and quality assurance.

This research underwent formal ethical approval from Northern Territory Department of Health/ Menzies School of Health Research Ethics Committee (Reference 2013–2125), and the Western Australian Aboriginal Health Ethics

Committee (Reference 549), in addition to being supported by the Aboriginal organisations involved. All participants provided written consent, with guardians providing additional consent for participants under 16 years of age.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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Publisher's Note

Appendix 4.8

The excess burden of severe sepsis in Indigenous Australian children: can anything be done?

To the Editor: The excess burden of severe sepsis among Indigenous children[1,2] reflects poorly on Australia's image of itself as a prosperous and fair nation. Indigenous children are entitled to the opportunities afforded to non-Indigenous children. The high rates of infection in Indigenous communities also have implications for the entire Australian community, because of the risk of spread of multidrug-resistant organisms.[3]

Palasanthiran and Bowen in their *MJA* editorial,[1] and Ostrowski and colleagues in their related research article,[2] describe a biomedical approach to the problem of severe sepsis in Indigenous children. Biomedical approaches focus on responding to clinical signs and laboratory markers to diagnose and treat disease. Although such approaches may explain disease and lead to rational treatments, they can dominate perspectives to such an extent that they construct our understanding of health, making it seem that there is no alternative approach.[4] However, the goal of reducing sepsis in Indigenous children appears elusive with a biomedical approach.[1]

Indigenous Australians describe health as "not just the physical wellbeing of the individual but … the social, emotional and cultural wellbeing of the whole Community".[5] Aboriginal community controlled health services (ACCHSs) were established to approach Indigenous people's health needs holistically.[5] Holistic health services include advocating for appropriate housing, supporting literacy programs, providing fresh fruit and vegetables to families in need, and assisting children to attend school through breakfast programs.[6] A holistic approach to Indigenous health includes culture and language, and relationships among people and their country.[5]

Indigenous health emerges from Indigenous people's place in Australian society, through social determinants; biomedical approaches may therefore have limited impact. Also, because ACCHSs remain primarily accountable to government funding agencies, they are limited in their capacity to overcome structural impacts on Indigenous health.[6]

Working with Indigenous people's approaches to health provides opportunities to promote wellbeing.[6] Such an approach may not only reduce sepsis in Indigenous children, and the likelihood of spread of resistant pathogens, but could also contribute to a more equitable Australian society and enhance the wellbeing of all Australians.

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Appendix 4.9

Tackling antimicrobial resistance globally

To the Editor: Your publication of a review on global approaches to antimicrobial resistance is timely.[1] We especially note that antibiotic-resistant pathogens are not limited by borders, have greater impact on disadvantaged communities, and will require coordinated, high level government commitment to minimise their threat.[1]

In Australia, Indigenous communities bear a disproportionate burden of infectious diseases. This burden arises on a background of overcrowding, poorly built and maintained water and sanitation infrastructure, and colonisation of companion animals by human pathogens. The delivery of biomedically oriented health services leads to frequent use of broad spectrum antibiotics, promoting the development of multiresistant pathogens.[2]

The prominent multiresistant pathogen methicillin-resistant *Staphylococcus aureus* first emerged in hospitals, but, in Australia, it was soon identified in remote Indigenous communities.[2] Health services have been unable to control its development and spread. As a consequence, community-acquired methicillin-resistant *S. aureus* is now the dominant strain of this bacterium in Central Australia, where Indigenous people are one-quarter of the population, but bear three-quarters of the *S. aureus* disease burden in Alice Springs Hospital.[3]

Primary health care is founded on full community participation and an intersectoral approach, incorporating education, housing and other sectors to complement health services.[4] Housing for Indigenous communities remains inadequate, and government responses deficient, particularly in remote regions.[5] As a result, even high quality health services have limited impact on Indigenous people's health and wellbeing. Safe, secure, functioning housing that is appropriate for its occupants is a building block to manage other areas of Indigenous disadvantage.[5] The deficit in appropriate housing contributes to bacterial colonisation, infection and development of antimicrobial resistance among Indigenous Australians.[2]

"Illness is a weapon" was intended as a metaphor for the resistance of Indigenous people to their ongoing colonisation.[6] However, the threat of antibiotic resistance evolving through the neglected conditions in which some communities find themselves could make this metaphor more real than was likely intended.

The spread of antibiotic-resistant pathogens in Indigenous communities and elsewhere is a global threat, which highlights the need to transform services for Indigenous people using approaches driven by communities and focused on their strengths.

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Absolute cardiovascular disease risk and lipid-lowering therapy among Aboriginal and Torres Strait Islander Australians

To the Editor: Calabria and colleagues[1] report that, overall, 9.8% of Aboriginal and Torres Strait Islander adults are at high absolute cardiovascular disease (CVD) risk, reflecting how poorly Australia supports the social and cultural determinants of health for the First Australians. However, this is a different nuance from their statement: "Absolute CVD risk is high among Aboriginal and Torres Strait Islander people". Aboriginal and Torres Strait Islander people have median age of 23 years,[2] and only 1.1% of those in the 18–24 age group are at high risk.

The authors note undertreatment with lipid-lowering therapies of Aboriginal and Torres Strait Islander people at high CVD risk; many Aboriginal and Torres Strait Islander people who would benefit are not offered best practice care. However, 13% of people at low CVD risk are on lipid-lowering medication,[1] which may be unnecessary treatment, with costs and side effects.

As health professionals we need to beware of tendencies to emphasise pathology and risk among Aboriginal people.[3] Many health professionals hold ideas of "the passivity, dependency, and non-compliant nature of [the Aboriginal] mob … The perception of Aboriginality as … a health risk, and predictor of unhealthy behaviours … reinforces stereotypical ideas of Aboriginality… and disconnects Aboriginal people from their own identities … [and] stories of strength and survival".[3]

There is a tension between our desires to prescribe behaviour to reduce risk and enabling and empowering people to make decisions for themselves. Well intentioned efforts to manage Aboriginal and Torres Strait Islander people may have iatrogenic side effects. For example, health professionals may develop assumptions about people's behaviour and worthiness to receive treatment,[4] while Aboriginal and Torres Strait Islander people themselves may be disconnected from their sense of self-efficacy and community and cultural strengths and identity, contributing to disengagement from health care.[3]

Like other procedures in health care, absolute CVD risk assessment has costs as well as benefits. Educating community members about absolute CVD risk would promote health literacy and enable people to give informed consent to assessment of this statistic. Numbers hold both face and cultural values, so it is important that Aboriginal and Torres Strait Islander people have control of their statistics.[5]

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Implementation of policies to protect planetary health

Subhrendu Pattanayak and Andy Haines's important Comment[1] outlined the inadequacy of progress towards planetary health, and noted the opportunity provided by the Sustainable Development Goals to confront challenges to planetary health. The authors argued that evidence from high-income settings cannot be directly transposed to low-income or middle-income settings, and this issue contributes to inadequate progress towards implementation of planetary health policies.

Missing from the Comment was consideration of transference of evidence from low and middle-income settings to high-income ones in efforts to attain sustainable development. Action by all countries is needed to reach the Sustainable Development Goals, and some low and middle-income countries are leading in promotion of sustainable development. Examples are Bhutan, Costa Rica, Maldives, and Tuvalu in their progress towards being carbon neutral, and Ecuador whose new constitution includes the rights of nature and fostering of a good life with harmony between people and nature.[2] The need to transfer evidence from low and middle-income settings to high-income settings is an important omission from the Comment. Without this consideration the opportunities for development towards planetary health are limited.

Within the health sector the notion of reverse innovation, from low and middle-income countries, is emerging, and challenging the discourse that high-income countries alone lead innovation.[3]

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Appendix 5: Conference presentations

Conference presentations are listed from most recent to earliest during my PhD studentship.

1. Schultz Rosalie, Tammy Abbott. *Exploring and improving wellbeing for Indigenous people of remote Australia through the Interplay of priorities*. Lowitja Indigenous Health and Wellbeing Conference. 2019 June 20; Darwin.
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4. Schultz, Rosalie. *Re-imagining services with Aboriginal people in the backbone*. Indigenous Health Staff Forum Research Showcase. 2018 Nov 13; Adelaide.
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6. Schultz, Rosalie. *Liveability aspirations for Aboriginal people in remote regions in northern Australia.* Developing Northern Australia Conference. 2018 Jun 18; Alice Springs.
7. Schultz, Rosalie. *Sustaining Aboriginal wellbeing through sustainable research.* Knowledge Intersections Symposium II: A forum for exploring the interdisciplinary and intercultural research of central Australia. 2018 May 17; Alice Springs.
8. Abbott, Tammy, Jessica Yamaguchi, Schultz Rosalie, Sheree Cairney. *Using Aboriginal research to inform policy and practice in Aboriginal health development: Panel presentation.* AIATSIS National Indigenous Research Conference: Impact, engagement, transformation. 2017 Mar 21-23; Canberra. https://aiatsis.gov.au/publications/presentations/interplay-wellbeing-framework-building-

evidence-pathways-wellbeing-community-indicators-aboriginal-and-torres-strait-islander-people-remote-australia

9. Schultz, Rosalie, Tammy Abbott, Byron Wilson, Stephen Quinn, Sheree Cairney. *Culture, and the Interplay of services for bodies and minds improves wellbeing.* The Lowitja Institute: International Indigenous Health and Wellbeing Conference. 2016 Nov 8-10; Melbourne.

Appendix 6: Recommendations

6.1.1 Research leadership, commitment and planning

1. To meet the needs of Aboriginal people it is recommended that research be led by Aboriginal people. This can respond to the interests and questions of Aboriginal people, change research power structures and increase the scope and relevance of the research.

2. It is recommended that researchers anticipate and plan for changes in scheduling to ensure that these do not prevent milestones being met. Regarding delays and other challenges as contributors to the quality of the research provides a strengths-based perspective on this aspect of research involving Aboriginal people.

3. Collaboration between people and organisations in Aboriginal health research is recommended, allowing time-frames long enough to build interpersonal relationships. This can ensure that Aboriginal people benefit throughout the research development and implementation, and from implementation of the research findings.

4. Employment of Aboriginal Community Researchers is recommended for their in-depth and experiential knowledge and expertise, including language and Aboriginal research processes and design contributions.

6.1.2 Research foci and language

It is recommended that in research with Aboriginal people the foci and language of the research reflect Aboriginal people's worldviews and lifeways, and build on strengths and expertise.

6.1.3 Sharing of benefits of research

It is recommended that researchers ensure benefits of research are shared with participants of the research.

6.1.4 Research methods

To provide meaningful findings and outcomes for Aboriginal researchers and research participants, it is recommended that Aboriginal people lead the design of research methods.

6.1.5 Research communication

1. Research methods that enable people to tell their own stories are recommended for the important insights held in personal experiences.

2. It is recommended that effective research communication tools for each group of stakeholders be developed. These tools contribute to a model of sharing research understandings, processes and findings, and can provide greater understanding, collaboration and impact.

6.1.6 Research feedback from participants

It is recommended that genuine respect of all research findings for research participants and their aspirations be ensured.

6.2.1 Health and wellbeing

1. It is recommended that policy makers and service providers increase Aboriginal people's opportunities to be involved in Indigenous Land Management and caring for Country, as there is now strong evidence of direct and indirect health benefits of caring for Country.

2. It is recommended that health interventions recognise and build on Aboriginal people's strengths. An example is promoting the use of Aboriginal sign languages. These offer an over-looked opportunity for children and communities where ear disease and hearing impairment are common.

3. Models for funding in Aboriginal communities that promote equity are recommended. The current emphasis on entitlements for service providers to facilitate recruitment and retention contributes to social inequality and health disparity, with little evidence of improvements in staffing. Service providers committed to improved wellbeing for Aboriginal people are recommended to acknowledge the role of social inequity in Aboriginal disadvantage and reflect on their entitlements.

4. It is recommended that health services prioritise interventions for mental health of Aboriginal people as a means to increase wellbeing.

6.2.2 Empowerment and wellbeing

1. It is recommended that policy makers and service providers implement interventions that empower Aboriginal people. This can improve outcomes across all wellbeing priorities, including health, education and employment. For example, the Family Wellbeing Program has been demonstrated to empower Aboriginal people and enhance wellbeing in a range of settings (Whiteside, Tsey, and Earles 2010).

2. It is recommended that service providers pay attention to Aboriginal people with respect to issues of gender. Both research and practice should be aware that the importance and implications of gender for Aboriginal people may be different from those for other Australians.

6.2.3 Work, employment and wellbeing

1. It is recommended that policy makers and service providers be aware of distinctions between work and employment for Aboriginal people.

2. Wider implementation of Aboriginal land management programs is recommended to provide employment opportunities for Aboriginal people. Expected positive impacts include recognising cultural strengths, promoting education of children and young people, direct health benefits, preventing interpersonal violence and criminal justice consequences.

6.2.4 Culture and wellbeing

1. Further research, led by Aboriginal people is needed to explore relationships between culture and wellbeing, and enhance wellbeing and associated outcomes.

2. It is recommended that cultural indicators of wellbeing be used in policy and service monitoring and evaluation to complement other indicators. This will increase focus on wellbeing as an outcome.

3. Aboriginal languages are key to Aboriginal wellbeing, and it is recommended that policy makers and service providers recognise the importance of language and promote the use of Aboriginal languages under the guidance of Aboriginal people.

6.2.5 Education and wellbeing

1. It is recommended that Aboriginal knowledge and expertise be more widely recognised in educational curricula.

2. It is recommended that policy makers be aware of pathways from education to desired employment and livelihoods for Aboriginal people. This will engage children in education, both in and out of school.

3. Educational assessment based on Aboriginal people's strengths and cultural values is recommended to provide meaningful measures of educational progress.

4. Increased investment in Aboriginal language literacy in schools is recommended. Aboriginal language literacy empowers Aboriginal people, strengthens Aboriginal identity and facilitates English language literacy which is pivotal in educational achievement in contemporary society.

5. It is recommended to increase investment in Aboriginal languages, beyond school and other formal educational institutions. Aboriginal languages are vital to Aboriginal educational outcomes, providing communication, connection to community and Country, and knowledge of land management practices.

6.2.6 Community and wellbeing

It is recommended that services within Aboriginal communities be better integrated. This can overcome negative impacts of competition between services. Land management programs provide an ideal focus for service integration because of their contribution to each priority of the wellbeing priority framework.

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