Behavioural addictions and stigma:

The nature and predictors of negative attitudes towards digital technology-related problems

By

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BBehavSc(Psych); BPsychSc(Hons)

Thesis Submitted to Flinders University for the degree of Doctor of Philosophy

Doctor of Philosophy

College of Education, Psychology, & Social Work

11th August 2025

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Abstract

Addictive disorders are among the most stigmatized health conditions, with as many as 71% of individuals with an addictive disorder reporting that they had received negative comments from others. Stigma can lead to prejudice, discrimination, and negatively impact on help and treatment-seeking behaviour. A growing focus of addiction research has been on the emerging class of behavioural addictions. This interest has been propelled by the World Health Organization's recognition of gaming disorder in the International Classification of Diseases (ICD-11), along with clinical and public health concerns about the effects of continuously evolving and increasingly accessible digital technologies on users. Problem use of these devices has been the subject of two major areas of debate: (1) the need for policies regulating the use of digital technology in governments around the world, and (2) whether diagnostic categories may generate or exacerbate stigma for both problem and recreational engagement with these technologies.

As a new field of research, the academic literature on stigma related to problem use of digital technology is at an early stage of development. Key issues for research include the conceptualisation and measurement of stigma across different behavioural addictions. Therefore, this thesis sought to contribute to our understanding of stigma related to behavioural addictions, with a focus on digital technology-related problems. This project sought to (1) summarize what is known about addiction stigma and consider whether research on stigma related to substance-based addiction can be applied to behavioural addictions; (2) investigate the psychometric qualities and suitability of measures of stigma in behavioural addictions, and; (3) increase our understanding of the nature and origins of behavioural addiction stigma, including (a) how the introduction of gaming disorder in the ICD-11 and an addiction formulation for gaming behaviours might impact stigma towards gaming and problem gaming, and; (b) as a case example, the impact of government policy restricting mobile phone use in schools on stigma towards mobile phone use problems.

Study 1 in this project was a systematic review which identified 99 studies of addictions and stigma. This review indicated that neurobiological explanations (as opposed to non-addictive explanations) of behavioural addictions tended to reduce blame, and familiarity with behavioural

addictions tended to reduce stigma. Of the 21 stigma measures reviewed, few measures were developed for behavioural addictions. Study 2 used a qualitative framework analysis to examine written responses from non-gaming adults and problem gaming. Most (82%) participants endorsed that problem gaming can be considered an addictive disorder and many thought that a diagnostic category would increase the availability of help. Gaming-related stigma was associated with negative stereotypes about gamers (e.g., 'lazy', 'childish', 'toxic') and gaming as an activity (e.g., 'waste of time', 'dangerous for children'). Study 3 investigated the predictors of perceived mobile phone use stigma by recruiting adolescents from South Australian public schools for a survey involving a range of social and psychological factors. Lack of social capital (or, social support or resources) was the strongest predictor of stigma. Study 4 engaged high school students for a quasi-experiment involving two surveys administered as schools transitioned to a mobile phone ban. The no ban group reported significantly more stigma toward problem phone use than the ban group, however, there was no significant change in stigma over time. This thesis indicated that stigma towards digital technology-based problems may be influenced by social factors and personal experience with digital technology.

Stigma is a complex psychological phenomenon that intersects with social, clinical and political domains. This thesis informs current policy, debates, and research for examining stigma towards behavioural addictions. Study 1 suggests that predictors of stigma may apply differently to behavioural addictions than compared to substance-based addictions. Study 2 suggests that views of on problem gaming as a public health issue and mental disorder are linked to perceptions of the availability and accessibility of resources and interventions. Study 3 suggests that predictors of stigma and stereotypes may be important to address in anti-stigma programs, including, for example, the specific groups who may benefit from these measures. Study 4 suggests that policies relating to restricting digital technology, primarily mobile phones, are unlikely to influence students' views of how mobile phone use problems are seen in society; for the majority, these views are shaped by broader factors, including the social context of the policy. Future research should examine how stigma can be addressed in practice, to ultimately help the populations who experience behavioural addictions to seek and receive help with respect, dignity, and self-worth.

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. and the research within will not be submitted for any other future degree or diploma without the permission of Flinders University; and

3. 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.

Christina Galanis

Date 02.04.25

Acknowledgements

Thank you to my supervisor, Daniel King, for your collaboration and mentorship over the past four years. I appreciate the opportunities you have given me to develop my skills and profile as a researcher and for always challenging and encouraging me to produce the best work that I can. This thesis would not have been possible without your support.

Thank you to all my coauthors, Nathan Weber, Paul Delfabbro, Nerilee Hing, Toshitaka Hamamura, David Hodgins, Tracey Wade, and Blake Quinney, for your invaluable contributions. I am thankful to Morgan Leske and Marcela Radunz for your contributions to this project and your friendship over the past few years, it has been a privilege to be able to work with you both.

To the wonderful people that I have been fortunate enough to share an office with over the last few years, Larissa, Caitlin, Molly, and the rest of the Generations Lab, thank you for making the office space a warm and welcoming place. I am very lucky to have had your friendship and encouragement during this time. Thank you to my first friends at university, Laura, Georgia, Danielle, and Jess, for making university more enjoyable and for your ongoing encouragement.

Thank you to my family, especially my mother, and my good friends Emile, Michaela, and Peter, for your unwavering support over the past three years. Completing this project would not have been possible without your patience, understanding, and support. Thank you to Scott and Shannon for listening to me practice before presentations, it has made one of the most intimidating parts of completing this PhD easier.

I am grateful for the people who took the time to participate in these studies and to the Department for Education for assisting our research team in identifying and recruiting eligible schools for participation. I acknowledge the important contribution of the Australian Research Training Program Scholarship for the financial assistance I received while I completed this thesis.

Publications From Thesis

Galanis, C. R., & King, D. L. (2025). Stigma and other public perceptions of recreational gaming and gaming disorder: A large-scale qualitative analysis. *Computers in Human Behavior Reports, 17,* 100581. https://doi.org/10.1016/j.chbr.2024.100581

Galanis, C.R., Leske, M., Hamamura, T., Weber, N., Hing, N., Delfabbro, P., & King, D. L. (2025). Stigma in substance-based and behavioral addictions: A systematic review. *Journal of Behavioral Addictions.* https://doi.org/10.1556/2006.2024.00072

Galanis, C. R., Hodgins, D.C., & King, D. L. (accepted). Behavioural Addictions and Stigma. In A. Nogueira López, J. Billieux, A. R. Boubeta, & F. Pascual (Eds.), *Untitled Non-substance addictive behaviours Handbook.*

Galanis, C. R., Radunz, M., Quinney, B., Wade, T., & King, D. L. (Manuscript). Stigma towards problem phone use in the context of a statewide school phone ban: A natural policy experiment.

Galanis, C. R., Radunz, M., Quinney, B., Wade, T., & King, D. L. (Manuscript). Social and psychological predictors of perceived stigma towards adolescent problem phone use.

Presentations

Galanis, C.R., & King, D. L. (2022, Nov). Gaming disorder and stigma-related perceptions of problem and non-problem gamers. *NAGS 30th Annual Conference: From Responsibility To Accountability: Putting Principles Into Action.* Concurrent Session 6A. Sydney, New South Wales, Australia.

Galanis, C., & King, D.L. (2022, July). Gaming disorder and stigma-related perceptions of problem and non-problem gamers. *7th International Conference on Behavioral Addictions.* Session S-2F4. Nottingham, United Kingdom.

Galanis, C., & King, D.L. (2023, Aug). Stigma in substance-based and behavioral addictions: A systematic review. 8th *International Conference on Behavioral Addictions.* Session S-4H2. Incheon, South Korea.

King, D.L., & Galanis, C.R. (2023, Sept). Gaming Disorder in Australia: The state of the Game. *Australian Gaming and Screens Alliance Symposium*. Canberra, Australia.

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Chapter One:

Introduction and Literature Review

Publication

Excerpts of an accepted book chapter have been included in the introduction:

Galanis, C. R., Hodgins, D.C., & King, D. L. (accepted). Behavioural Addictions and Stigma. In A. Nogueira López, & J. Billieux (Eds.), *Untitled Non-substance Addictive Behaviours Handbook*.

Authors' Contributions to Publication. CRG (80%) and DLK (20%) planned the chapter. CRG (90%) reviewed the literature in preparation for this chapter with input from DLK (5%) and DCH (5%). CRG (85%), DLK (10%), and DCH (5%) completed writing and editing for this publication.

Overview

Stigma is defined as a socially discrediting attribute and can involve prejudice, devaluation, and discrimination (Yang et al., 2007). Stigma is a common experience of people suffering from a range of mental illnesses, including behavioural addictions, which can have clinical implications for their likelihood of seeking or receiving treatment and negative consequences for their wellbeing (Angermeyer & Matschinger, 2003; Carroll et al., 2013; Feldman & Crandall, 2007; O'Connor et al., 2022; Teachman et al., 2006; M. G. Weiss et al., 2006). In this way, stigma can impact on a person's likelihood of engaging in pro-recovery behaviours, evidence-based practice, and the pursuit of life goals (Corrigan et al., 2009). Stigma can impact self-worth and self-efficacy (Corrigan et al., 2009) and cause social rejection (Feldman & Crandall, 2007). As many as 87% of adults aged 40 years and over in the United States of America reported that addictions are stigmatised in society (Elflein, 2021). Substance use disorders, such as alcohol use disorder or other drug addictions, are known to generate more stigma than a range of other physical and mental health conditions (Elflein, 2021; Kilian et al., 2021). Therefore, it is important to investigate whether behavioural addictions also generate high levels of stigma similar to substance use disorders as part of the broader addiction category. Consequently, this PhD thesis was interested in stigma towards behavioural addictions as an emerging and topical area of research.

The issue of stigma related to behavioural addictions has featured in academic discussions about the validity of these recognised disorders and proposed categories (Higuchi et al., 2017; Király & Demetrovics, 2017; S. Y. Lee et al., 2017; Quandt, 2017; Van Den Brink, 2017). A point of contention regarding the diagnostic categories for behavioural addictions, particularly gaming disorder (Aarseth et al., 2017; Galanis et al., 2021; van Rooij et al., 2018), is whether these categories might affect attitudes towards the associated non-problematic involvement with these activities. Many academics have suggested that the impact the category would have on stigma is an unnecessary harm on gamers and

this is a reason to be cautious about the introduction of gaming disorder to diagnostic classification systems (Aarseth et al., 2017; Dullur & Starcevic, 2017; Király & Demetrovics, 2017; Wang et al., 2019). Comparatively other researchers have taken the position that the benefits of its recognition for improving treatment access and support from health insurance to receive treatment outweigh these costs (Higuchi et al., 2017; S. Y. Lee et al., 2017; Van Den Brink, 2017).

Most research on stigma towards behavioural addictions has focused on gambling disorder but there is growing research into emerging categories, particularly food addictions, with some research beginning to investigate gaming disorder (Casale et al., 2023; Galanis et al., 2023; Hing, Russell, Gainsbury, & Nuske, 2016; Peter et al., 2019; Ruddock et al., 2019). This encompasses some predictors of stigma (Hing & Russell, 2017a, b; Lau et al., 2020), the impact of diagnostic categories (Galanis et al., 2023; Ruddock et al., 2019), and the relative strength of stigma towards different disorders or control conditions (Casale et al., 2023; Peter et al., 2019). However, there is still a paucity of research on stigma towards digital technology-based problems as many of these problems have only recently begun to be discussed relative to many other disorders. In particular, the issue of stigma became a focus following the inclusion of gaming disorder in the International Classification of Diseases (ICD-11).

This thesis explores several issues of stigma related to behavioural addictions. The project focuses on gaming disorder and mobile phone use problems as these problems have been the subject of changing diagnostic categories and increasing policies in governments worldwide which restrict students' access to phones during school hours. This thesis was interested in examining what past research on addiction stigma can be applied to behavioural addictions and increasing our understanding of the nature and predictor variables of stigma towards gaming and phone use problems. The significant changes in the way in which gaming and mobile phones are addressed in society pose an opportunity to improve our understanding of what factors impact stigma towards

problem use of these technologies. Therefore, a key interest of this project was understanding the impact of gaming disorder's inclusion in the ICD-11 and the impact of mobile phone bans in schools.

Recognition of Behavioural Addictions: Expanding the Concept of Addiction

Many changes have occurred to the formulation of the addiction category preceding the formal inclusion of behavioural addictions in diagnostic classification systems. Substance-related addictions, such as alcohol use disorder were first recognised in diagnostic classification systems as personality disorders, and later changed to focus on physical health issues listing it as a behavioural disorder (S. Y. Lee et al., 2017; Mold, 2024). In the 1970s addictive disorders began to be conceptualised as a lack of control over the consumption of these substances (Mold, 2024). Although there are some reports of addictive behaviours, such as gambling, having historical origins in all cultures (France, 1902), the 1970s formulation of addiction coincides with the emergence of a range of proposed behavioural addictions in academic literature, such as eating, exercising, video gaming, sex, and Rubik's cubes (M. Griffiths, 1996). M. D. Griffiths et al. (2016) emphasize the move away from definitions of addiction that focus on ingestion following the inclusion of gambling disorder in the Diagnostic and Statistical Manual for Mental Disorders (DSM-5) and allow the consideration of other behavioural addictions.

Behavioural addictions have been growing in recognition over the last three decades. Although gambling problems have been recognised by diagnostic classification systems since 1980 (Delfabbro, 2013), the inclusion of problem gaming in the ICD-11 in 2019 (World Health Organization, 2018b) has raised questions about the possibility of whether other normal and recreational activities can lead to problematic or addictive use (Aarseth et al., 2017; Dullur & Starcevic, 2017; van Rooij et al., 2018). Proposed or considered categories have included a range of behaviours such as compulsive shopping, pornography use, and food addiction (Hebebrand et al., 2014; Stein et al., 2020). Many other behavioural addictions have begun to be discussed which are associated with the rapidly evolving

digital technologies, such as problem gaming, problem use of the internet, problem phone use, and problem use of social media (M. D. Griffiths et al., 2016).

Digital Devices in Everyday Life

Digital technology is an increasingly defining feature of everyday life in modern society. Recent data suggest that 2.87 billion people globally have played video games (Clement, 2025), over 5 billion people use social media (Dixon, 2024), and there are over 7 billion network subscriptions for smartphones worldwide (Taylor, 2024b). An estimated 24 GB of data is used per mobile each month in 2025 (Taylor, 2024a). The usage of video games, social media, smartphones, and phone data are predicted to continue to increase in their uptake and usage (Clement, 2024; Dixon, 2024; Taylor, 2024a, 2024b). The highest prevalence estimates for addiction to digital technologies is reported for problem use of smartphones which is estimated to affect more than one in four (27%) of people worldwide (Meng et al., 2022). This is followed by 17% of people who experience social media use problems, 14% who experience internet use problems, and an estimated 6% with video gaming problems (Meng et al., 2022). The review by Meng et al. (2022) reports that digital technology-related problems have been increasing over time but that this increase was more substantial during the Covid-19 pandemic.

Digital technologies often provide a range of benefits for their users. Video gaming can be a normal, enjoyable, and personally beneficial hobby that can foster and strengthen bonds between family and friends (Aarseth et al., 2017; Dullur & Hay, 2017; Dullur & Starcevic, 2017; Granic et al., 2014; King & Delfabbro, 2020; Van Rooij et al., 2018). Similarly, smartphones are noted as having potential benefits for improving the provision of healthcare (Bakker et al., 2016) and aspects of cognition such as attention and working memory (Klimova & Valis, 2018; Liebherr et al., 2020). A study which used qualitative interviews with adolescents to investigate the benefits of digital technologies reported that these technologies support them by providing a source of information and education,

self-development, leisure and a safe-space, social interaction and connection to social networks, and a tool for aiding other tasks (Bitto Urbanova et al., 2023).

However, excessive use of digital technologies is also associated with negative ramifications. These consequences include interference with important commitments, bodily pain and repetitive strain injuries, poorer sleep and diet, loss of productivity, relationship conflict, social isolation, eye strain, and depression and anxiety (Ayenigbara, 2017; Enez Darcin et al., 2016; Mahapatra, 2019; Saunders et al., 2017; Sheppard & Wolffsohn, 2018; Sublette & Mullan, 2012). A review by Dienlin and Johannes (2020) found that although some research reported digital technology use as positively related to depression and anxiety, other research indicates that reductions in wellbeing occur only among those who engage in low or excessive use of digital technologies but improves wellbeing among those who engage in moderate use. Additionally, Vuorre et al. (2021) reported that depression is not as strongly related to technology use as it was ten years ago. However, social media use has increased in the strength of its positive relationship with emotional problems overtime (Vuorre et al., 2021). A review of the impact of digital technology on cognition reported that multi-tasking associated with online media is associated with poorer task-switching and sustained attention (Firth et al., 2022).

Diagnostic Classifications for Gaming Problems

There has been growing evidence in recent years that excessive use of digital technologies can cause problems for users. Recognising the problems of excessive digital technology use, academic discussions have ensued regarding the possibility of a range of possible behavioural addictions related to problem use of digital devices and media (M. D. Griffiths, 2012; Sherer & Levounis, 2022). However, the most recent revision of the ICD-11 concluded that only problem gaming (i.e., Gaming Disorder) had enough evidence to be introduced as an official diagnosis (Stein et al., 2020). Specifically, these criteria include: over-prioritisation of gaming, impaired control over gaming, gaming despite awareness of the resultant harms (King & Delfabbro, 2020), continuing pattern over 12 months, and leading to distress or

impairment (World Health Organization, 2025). Differential diagnoses include hazardous gaming where persistent patterns of gaming or gambling behaviour occur and which lead to an elevated risk of negative or adverse consequences but fall short of the criteria for a disorder (World Health Organization, 2025).The ICD-11 distinguishes between online and offline gaming and has included additional features including: unsuccessful attempts to control their gaming behaviour, tolerance or a tendency to increase the intensity of games played over time, craving, withdrawal associated with dysphoria or aggression, social pressures to play video games as a group, and recognising comorbid disorders (e.g., mood disorders, substance-related disorders, anxiety disorders, attention deficit hyperactivity disorder, and sleep-wake disorders) (World Health Organization, 2025).

The additional features listed in the ICD-11 for gaming disorder bring the category more in line with proposed category of internet gaming disorder in the DSM-5. Internet gaming disorder is only recognised as a condition for further study by the American Psychiatric Association (2013) and proposes the following criteria: tolerance, withdrawal, preoccupation, loss of control, loss of other interests, continuation despite negative ramifications, deceiving others to continue with the activity, using gaming as a coping mechanism, and interference or conflict due to its use. For parsimony, this thesis uses the term *gaming disorder* to refer to both the ICD-11 and DSM-5 diagnostic classifications.

Diagnostic Classifications Applied to Other Behavioural Addictions

The criteria for gaming disorder closely align with those for gambling disorder (World Health Organization, 2025). However, gambling disorder emphasizes financial losses due to gambling behaviour, which is not a criterion specified for gaming disorder (World Health Organization, 2025). The categories for gaming and gambling disorder use substance addiction models to formulate the criteria (King & Delfabbro, 2020). The criteria proposed for problem gaming have been applied to other digital technologies, such as problem phone use, internet use problems, and social media use problems. Specifically, the conceptualization of these problems has included features such as

functional impairment, physical health consequences, tolerance, seeking to modify their mood, cognitive salience or preoccupation, withdrawal, loss of control, conflict, stability over time, and relapse (Fournier et al., 2023; M. Griffiths, 2000; Panova & Carbonell, 2018). Some scholars have noted that among these criteria, functional impairment should be one of the most important features for differentiating between clinical and non-clinical samples (Billieux et al., 2017).

Given the controversies associated with the gaming disorder category, and the lack of formal recognition of other proposed behavioural addictions, *problem use* is often used by researchers to refer to engagement with digital devices that is associated with significant negative consequences. This thesis uses the term '*digital technology-related problems'* to refer to issues with digital technology which are associated with significant negative consequences. Comparatively, '*behavioural addictions'* is used in this thesis to refer to the broader category (i.e., inclusive but not limited to digital technology) and research area. This considers any behavioural issues resulting in significant impairment that are studied in an addiction framework and, therefore, includes disorders that are formally recognised in diagnostic classification systems and informally discussed or proposed in academic literature.

Evidence of Problem Phone Use as an Addiction

A review by Panova and Carbonell (2018) reported that current evidence favours 'problem use' rather than addiction in the context of mobile phone use problems, as these issues do not meet the severity required to define it as an addiction. Panova and Carbonell argue that excessive use of phones, impulse control, and negative consequences due to phone use is not sufficient to define an addiction without severe impact on a person's physical and psychological health. This argument is rooted in concerns that some studies or screening questionnaires: conflate tolerance with loss of enjoyment of their phone use or an increase in the time spent using their devices; do not consider usage of phones in the context of how essential they are to work or social commitments; and a lack of studies investigating relapse, physical injury, or stability of the condition (Panova & Carbonell, 2018). Although

there is some evidence of negative psychological impacts from mobile phone use problems (Elhai et al., 2017; Mahapatra, 2019; Sapacz & Clark, 2016), Panova and Carbonell argued that physical injuries tend to be minor. However, recent studies have reported increases in head and neck injuries due to mobile phone use while driving or walking among people aged 13 to 19 years (Povolotskiy et al., 2020).

Although not formally recognised in diagnostic classification systems, De-Sola Gutiérrez et al. (2016) argue that there is consensus that people can be addicted to their phones. However, contention remains around what criteria and conceptualisation to employ for phone addiction. A review by Kuss et al. (2014) reported that most conceptualisations of internet addiction have used substance use or gambling disorder conceptualisations with few to no considerations for criteria specific to internet use. This is a similar argument made about mobile phone use problems, with some researchers asserting that features of portability and accessibility which make mobile phones unique to other technologies or phenomena should be considered in the way these problems are conceptualised (Elhai et al., 2017). For example, some researchers contend that the content or application being accessed is a more relevant feature of internet use problems than how they access that content (Montag et al., 2021). This is particularly relevant to mobile phone use problems, as smart phones can be used to access content or activities that are often associated with problem use themselves (e.g., video games or social media; Montag et al., 2021). While the formulation of mobile phone use problems focusses on the method for accessing content, gaming disorder focusses on the content being accessed.

Stigma: Origin, Concept, Dimensions, and Impact

Stigma originated from the Greek word ‘stigmata’ referring to physical mark or wound on a person’s skin but was later adopted as a way of referring to any socially discrediting or undesirable attribute (Link & Stuart, 2017). Despite ancient origins of the term stigma, scientific literature and theories related to stigma towards mental illness did not emerge in academic literature until the middle of the 20th century (Rössler, 2016). Additionally, Grinker (2021) describes how the emergence of

the modern conceptualisation of *normal* in the 1940s leads to excluding people who are considered not normal for a given group. Diagnostic labels for mental illness are thought to support this process of differentiating others and provide a basis for stereotyping which leads to their stigmatization (Corrigan, 2007). Understanding stigma is important as it relates to the experiences of people living with a behavioural addiction, its impact on psychological distress (Ahorsu et al., 2020; Fung et al., 2021), and as a barrier to help-seeking (Rolando et al., 2023; L. T. Wu et al., 2011).

Stigma has multiple dimensions including self-stigma, stigma by association, public stigma, and structural stigma (Bos et al., 2013; Overton & Medina, 2008). Table 1.1 provides a summary of the definitions of different types of stigma (Bos et al., 2013; Overton & Medina, 2008). These types of stigma relate to how micro to macro level social systems can influence the way a person with mental illness experiences stigma. Stigma is a broad spectrum that can encompass prejudices among people with a mental illness towards oneself (i.e., self-stigma), prejudice or discrimination by members of the public towards people with a mental illness (i.e., public stigma) and those close to them (i.e., stigma by association), or institutional biases against people with a mental illness (i.e., structural stigma) (Bos et al., 2013; Overton & Medina, 2008).

Critics have opined that the gaming disorder classification promotes a negative view of gaming, that is, as an activity that is inherently risky or harmful. Central to these criticisms has been the argument that the gaming disorder diagnosis generates stigma about gaming in any form and may exacerbate moral panic (Aarseth et al., 2017; Dullur & Starcevic, 2017; Markey & Ferguson, 2017; Van Rooij et al., 2018). This argument could be applied to problematic use of other digital media such as mobile phones, social media, and internet use. Further, it is claimed that the concept of problem gaming as ‘addictive’ promotes a stigmatising view of mostly minor gaming-related problems, such as procrastinating by gaming, through an overly pathological lens (Dullur & Starcevic, 2017; Ferguson &

Colwell, 2019). Research has suggested that the supposed medicalisation of technology, such as gaming, could be applied to a range of online behaviours (B. Quinn, 2001).

Table 1.1.

Definitions of Types of Stigma Applied to Behavioural Addictions

Stigma Type	Definition	Example
Self-Stigma	Negative attitudes held by a person with a behavioural addiction towards themself.	"'I currently respect myself less because I…" have a gambling problem (Horch & Hodgins, 2015).
Stigma by Association	Experience of negative reactions from others due to associating with someone with a behavioural addiction.	Choosing to avoid or feeling anger towards someone because they are related to a person who has a gambling problem (Bos et al., 2013).
Public Stigma	Community members have negative attitudes or behaviours towards people with behavioural addictions.	Choosing to avoid or feeling anger towards someone because they have a gambling problem (Peter et al., 2019)
Structural Stigma	Laws and institutions have biases that support discrimination against people with a behavioural addiction.	*Responsible Gambling* campaigns to promote healthy gambling may serve to increase blame towards people who have gambling problems (Quigley, 2022).

Impact of Stigma on People with Mental Illness

Negative public perceptions can have an adverse impact on stigmatized groups (Markowitz, 1998; M. G. Weiss et al., 2006). This includes family conflict, job discrimination, and social rejection (Feldman & Crandall, 2007). Recognition of others' negative perceptions of oneself or recognition of stigmatised

status can lead to social withdrawal, keeping treatment a secret, and low self-esteem (Bos et al., 2013; Link et al., 1989; Peter et al., 2019; Markowitz, 1998; Teachman et al., 2006; M. G. Weiss et al., 2006). Of greater concern is that stigma can lead to an exacerbation of a persons' illness or make them vulnerable to additional comorbid illnesses or episodes of their illness (Link et al., 1989). Stigma can also impact a person's willingness to seek treatment for fear of being diagnosed with a mental health condition or experiencing stigma from other people (Corrigan & Wassel, 2008). Self-stigma is also theorized to affect whether people with a mental illness are likely to engage in treatment and evidence-based practice that will aid their recovery (Corrigan et al., 2009). Therefore, a greater understanding of how diagnostic classification systems can potentially affect stigma-related perceptions will help to ensure support and treatment are received by individuals who are unwell. This is of particular interest given that the broader addiction category of which behavioural addictions belong, includes disorders which experience particularly high rates of stigma compared to other diagnoses (Kilian et al., 2021).

The Development of Stigma Theories

Stigma has been researched in psychology since the 1950s with labelling theory being one of the early theories to focus on stigma towards mental illness (Economou et al., 2020). Labelling theory delineates that people take on the social roles that they are assigned, and that mental illness may, in part, be the fulfillment of a social role that someone is assigned (Scheff, 2017). Scheff (1974) suggests that it is unclear whether marginalised groups have higher rates of mental illness or whether social reactions to these groups are more negative or extreme than towards other people. These reactions may come from a place of greater power leading to the social role related to having a mental illness being reinforced for members of marginalized groups (Scheff, 1974). In some ways, labelling theory compares to contemporary concerns among academics about the potential for gaming disorder diagnosis to cause over-pathologizing or mislabelling, and moral panics about gaming as both relate to

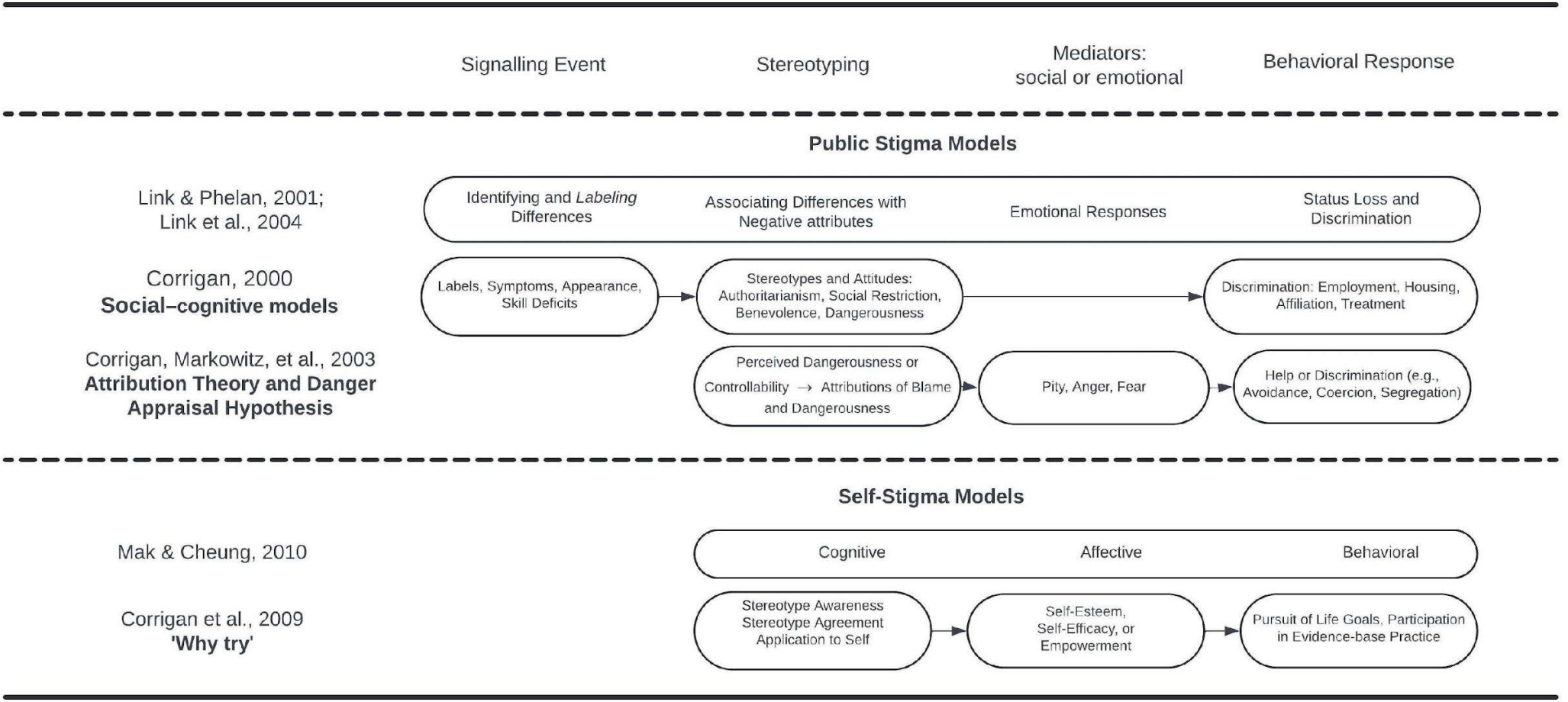
concerns about diagnoses leading to stigma and imply unnecessary over-treatment of mental health diagnoses (Kardefelt-Winther, 2014; Markey & Ferguson, 2017; van Rooij et al., 2018).

More contemporary theories involving the work of Corrigan and Watson, and Link and Phelan have conceptualised the process and components of stigma (Economou et al., 2020). Corrigan (2000) emphasizes processes where public *stereotypes* about people with mental illness lead to *prejudice* when a person *agrees* with those stereotypes, and subsequent *discrimination*. Comparatively, Link and Phelan (2001) conceptualise stigma towards a person with mental illness as components of labelling a person with a mental illness, identifying differences between oneself and them, and status loss, as well as stereotyping and discrimination. Link and Phelan's conceptualisation of stigma more closely aligns with Goffman's (1963) prominent definition of stigma which refers to the differences associated with stigmatized identities and being viewed as 'tainted'.

The work of Corrigan and colleagues have led to several social–cognitive models of stigma towards mental illness. These adaptations describe more specific attributions compared to the original model and how emotions such as pity can influence helping responses in addition to anger or fear influencing discriminatory responses (Corrigan et al., 2003). This is known as Attribution Theory and the Daner Appraisal Hypothesis (Corrigan et al., 2003). Theories have continued to develop to explain how *awareness* of public stigma can be *applied* to oneself, if the person *agrees* that the stereotypes about their mental illness are true (Corrigan et al., 2009). This processing of applying stereotypes to oneself can impact their self-esteem and willingness to engage in treatment (Corrigan et al., 2009).

Figure 1.1.

Comparison of Theoretical Models of Stigma



Theories of Public, Self, and Structural Stigma Applied to Behavioural Addiction Research

Although there are four types of stigma, this chapter focusses on theories related to public and self-stigma as these two types of stigma feature in academic research about stigma. Structural stigma is also discussed as a possible negative consequence of policies regulating digital technology and an interest of this thesis. Figure 1.1 summarizes the common features (Corrigan, 2000) of five models of stigma, including a process and co-occurring component model of stigma for both public and self-stigma, and an additional public stigma model, Attribution Theory and the Danger Appraisal Hypothesis, that provides processes related to more specific stereotypes (Corrigan et al., 2003). Social–cognitive models of stigma are commonly employed in stigma research and theorize stigma processes and the relationship between public and self-stigma (Corrigan et al., 2009). In public stigma models, Corrigan (2000) has described diagnostic labels or other indicators of mental illness as providing a basis for stereotyping and prejudice. This prejudice can lead to negative behaviours, such as hostility, discrimination (e.g., housing, employment, treatment), and most notably, avoidance (Corrigan, 2000). Other researchers have proposed that the social–cognitive models can also be theorized as co-occurring components rather than a process model (Link & Phelan, 2001; Link et al., 2004).

Self-Stigma. In social–cognitive models, self-stigma describes how stereotyping of people with a behavioural addiction can cause reductions in self-esteem and self-efficacy (Corrigan et al., 2009). These models can be described as interrelated cognitive (i.e., thoughts like negative stereotypes), affective (i.e., emotions like anger or shame), and behavioural features (e.g., treatment seeking or treatment avoidance) (Mak & Cheung, 2010). Self-stigma processes involve a person with a behavioural addiction becoming *aware* of public stereotypes about their disorder, *agreeing* with these stereotypes, and then *applying* the stereotypes to themselves (Corrigan et al., 2009). Applying stereotypes to oneself can cause poor self-esteem and self-efficacy or empowerment, and subsequently lead to behavioural outcomes. Some individuals can feel empowered to challenge the stereotypes and are motivated to engage in treatment, whereas those

who experience a negative impact on their self-esteem may be less likely to engage in treatment; this phenomenon is referred to as the 'why try' effect (Corrigan et al., 2009).

Studies have investigated the impact of awareness or perceptions of public stigma on self-stigma related to behavioural addictions by surveying people who experience gambling problems. One study reported that expectations of public stigma towards people who experience problem gambling was positively related to self-stigma including feelings of shame, inadequacy, or weakness (Hing & Russell, 2017a). Another study reported that perceptions of public stereotypes and experiences of stigma were associated with a lower likelihood of seeking treatment for gambling problems (Andrà et al., 2021). These studies support the relationship between awareness of public stereotypes and application of stereotypes to oneself and impact on behavioural outcomes such as treatment engagement which are parts of the self-stigma process. Additionally, C.-W. Chang et al. (2023) surveyed people with substance use disorders and reported that cognitive, affective, and behavioural stigma of their substance use disorder were positively related to one another. The cognitive, affective, and behavioural aspects of self-stigma related to their substance use disorder had positive relationships with problem smartphone, social media, and gaming use (C.-W. Chang et al., 2023). This suggests that technology-based problems are related to components of self-stigma of other conditions, such as substance use disorders.

Structural Stigma. Structural stigma refers to rules, laws, or institutional policies which are biased or systematically discriminate and disadvantage certain groups of people (Bos et al., 2013; Hemeida & Goldberg, 2022). The conceptualization of structural stigma includes stigmatizing newspaper articles focussing on violence and dangerousness related to mental illness (Corrigan, Watson, Gracia et al., 2005), laws that systematically discriminate against mental illness (Corrigan, Watson, Heyman et al., 2005), or policies in the education system that lead to punishments or exclusion from classes rather than rehabilitative supports for an addiction (Hemeida & Goldberg, 2022). Structural stigma can have negative effects on wellbeing and educational outcomes for people who are affected. For example, banning same-sex marriage has been associated with poorer

wellbeing and mental health outcomes among people who identify as lesbian, gay, or bisexual (Hatzenbuehler et al., 2010). Additionally, school suspensions can have a negative impact on attendance, course completion, test scores, and increases as a student's likelihood of dropping out of school (Chu & Ready, 2018). School suspensions are also associated with an increase in antisocial behaviour (Hemphill et al., 2006).

As problems associated with digital devices are increasingly recognised, policies affecting how students interact with these devices continues to become increasingly commonplace (Global Education Monitoring Report, 2023). Although an attempt to protect students from the associated harms of these devices, exclusion from class for problems that students are unable to control, such as mobile phone use problems, may be an unintended consequence of these policies. Similarly, gaming restrictions, like those imposed on adolescents in China, may have similar consequences which disproportionately increase risks for those who have gaming problems rather than providing support. A study by Zhou et al. (2024) recruited people aged 9 to 18 years that played video games for 2 to 15 hours per day, to investigate minors' behavioural responses to the gaming restrictions. Although problem gaming was not specifically measured, Zhou et al. did report that those who gamed more often prior to the policy were less likely to adhere to the restrictions (Zhou et al., 2024). In order to continue gaming, some minors have reportedly interacted with people on the dark web or been scammed while trying to rent or purchase gaming account logins (Zhangshao et al., 2024). However, Zhou et al. (2024) notes that only 3% of their participants reported renting accounts, while more evaded restrictions by using a family member's details (14%), and most adhered to the restrictions (85%). Whether people with digital-technology related problems are being appropriately supported or subjected to policies which may result in other harms is increasingly relevant in the context of an impending social media ban among adolescents in Australia (Nogrady, 2024).

Measuring Stigma

Three major types of research are used to investigate behavioural addiction related stigma, this includes qualitative studies, cross-sectional surveys, and vignette-based experiments. Qualitative investigations have assessed attitudes among specific groups, such as people who experience gambling disorder (Carroll et al., 2013; Karlsson et al., 2023). However, most research has employed quantitative research that involving vignette-based experiments (Casale et al., 2023; Galanis et al., 2023; Latner et al., 2014; Li & Whelan, 2024; Montemarano & Cassin, 2021; Peter et al., 2019; Ruddock et al., 2019). Some cross-sectional surveys have considered the types of stereotypes that are relevant to behavioural addictions or the predictors of stigma (Kowert et al., 2012, 2014; Lau et al., 2020). Even observable behavioural outcomes for stigma require knowledge of the intangible thought processes of the individual to be sure that the response is due to stigma. Therefore, all of these approaches for researching stigma have depended on self-report methodologies.

One of the challenges in this area is directly observing or measuring stigma. Survey-based research can be susceptible to biases and limitations, such as being limited in its able to determine cause and a greater susceptibility to social-desirable responding compared to experimental research. Therefore, one of the main ways in which studies have attempted to measure stigma is using vignette-based experimental designs, where participants are asked to respond to a brief description of someone with a gambling or gaming problem to examine features of stigma (Casale et al., 2023; Galanis et al., 2023; Latner et al., 2014; Li & Whelan, 2024; Montemarano & Cassin, 2021; Peter et al., 2019; Ruddock et al., 2019). Vignette-based studies provide a controlled way to compare how different stimuli influence stigma in-lieu of real-world research which is logistically challenging to conduct in many circumstances.

Past Research on Stigma in Behavioural Addictions

Research on stigma towards behavioural addictions has focussed on comparing the relative amount of stigma that different diagnoses receive; what stereotypes are prominent; the predictor

variables or impact of different descriptions, labels, or information; the frequency of stigma; and possible stigma-reduction interventions (K. L. Brown & Russell, 2019; Caroll et al., 2013; Casale et al., 2023; Galanis et al., 2023; Karlson et al., 2023; Kowert et al., 2012, 2014; Latner et al., 2014; Lau et al., 2020; Li & Whelan, 2024; Montemarano & Cassin, 2021; Peter et al., 2019; Ruddock et al., 2019). This past research provides insight into the state of stigma in behavioural addictions, the extent of its harm, and indicates who would benefit most from stigma intervention programs and what beliefs need to be addressed by interventions.

Studies Investigating the Nature of Stereotyping Towards Gaming and Gambling Problems

Research has identified negative public stereotypes towards people who game (Kowert et al., 2012, 2014). An online survey by Kowert et al. (2012) in which participants were asked to rate how applicable certain traits were to people who play online games, reported that they were viewed as unattractive, unpopular, lazy, and having poor social skills. Kowert et al. (2012) noted that views did vary and that this reflected that negative attitudes towards gamers may be shifting. A review of media portrayals of people who play games noted that they are depicted on television shows as eating poorly, unkempt, and being homophobic (Bergstrom et al., 2016). These findings regarding attitudes towards people who play games highlight how negative stereotypes about non-problematic involvement in an activity can arise and that this stigma may compound in the context of addiction (Bergstrom et al., 2016; Galanis et al., 2023; Kowert et al., 2012, 2014).

Interview-based qualitative research has reported that people with gambling problems experience feelings such as shame, blame, stupidity, inadequacy, feeling weak, and fears of others learning about their problems (Carroll et al., 2013). In this study, participants had the opportunity to provide insights into their condition, lived experiences, and the nature of self-stigma in gambling disorder. Denial of problems due to shame was reported to be a considerable barrier to receiving treatment (Carroll et al., 2013). However, people with gambling problems did not conceptualize their experiences of shame and denial as self-stigma (Carroll et al., 2013). Similarly, qualitative research involving interviews with women with gambling disorder reported that these women

experienced shame and feeling like a failure, as well as guilt, feeling like they are a burden, and being disgusted with themselves (Karlsson et al., 2023).

Vignette-Based Research on the Nature and Predictors of Gaming and Gambling Disorder Stigma

Research in behavioural addictions is beginning to identify and measure some of the public perceptions of these conditions. The specific indicators of stigma vary across vignette-based studies but often include ratings of the degree that the person depicted is responsible for their condition, is dangerous, and should be socially avoided. Participants in these vignette studies tend to report higher blame and a desire to avoid interactions towards individuals described as experiencing gaming or gambling problems compared to descriptions of people non-clinical problems (Galanis et al., 2023; Li & Whelan, 2024; Peter et al., 2019). Other perceptions have included dangerousness, devaluation, fear, anger, and discrimination (Galanis et al., 2023; Li & Whelan, 2024; Peter et al., 2019). A vignette-based study of problem and non-problem gaming reported that addiction explanations of gaming had only small effects on stigma (Galanis et al., 2023). However, participants' blame ratings reduced, and other stigma ratings increased, as descriptions of gamers shifted from recreational to more problematic gaming (Galanis et al., 2023).

Other vignette-based research has reported that participants rated vignettes of individuals who engaged in casino gambling, eSports gambling, and online gaming more highly on measures anger, avoidance, and support for coercive treatment strategies as compared to individuals with subclinical distress due to financial crisis (Li & Whelan, 2024; Peter et al., 2019). A study by Peter et al. (2019) also reported the gambling and gaming vignettes were associated with more blame and willingness to help compared to the financial crisis vignette. The gambling vignettes were associated with more danger and fear than the vignette described as experiencing a financial crisis; specifically, the casino gambler generated fewer help responses, and the eSports gambler generated more support for segregation, than the individual in a financial crisis (Peter et al., 2019). These studies demonstrate that participants tend to report more desire to avoid individuals with

behavioural addictions compared to people with subclinical problems, but participants have had varied emotional attributional reactions across studies.

Vignette-Based Research on Stigma towards Other Digital Technology-Related Problems

Research has investigated problematic use of social media, problem smartphone use, and gaming disorder. In their study, Casale et al. (2023) reported that gaming disorder evoked more desired social distance compared to problem phone or social media use, and was seen as more dangerous than problem use of social media. However, problem use of social media was seen as more likely due to vanity and personal responsibility than either gaming or phone use problems (Casale et al., 2023).

Vignette-Based Research on Food Addiction: Predictors of Weight-Related Stigma

Similar vignette-based experiments have been used to investigate stigma related to food addiction. Two studies reported addiction explanations of over-eating reduced blame and other aspects of weight-related stigma towards a vignette described as either normal weight or overweight, compared to non-addiction explanations of overeating (Latner et al., 2014; Montemarano & Cassin, 2021). However, vignettes described as having a higher body mass index received more weight-related stigma than those with a lower body mass index (Montemarano & Cassin, 2021). Comparatively, Ruddock et al. (2019) reported that vignettes described as being overweight received more weight-related stigma if they had a medical and self-diagnosis of food addiction compared to vignettes which made no reference to this diagnosis. This suggests that although the explanation of food addiction might abate stigma, the diagnosis without context or education may increase weight-related stigma.

Predictors of Stigma Towards Digital Devices

A survey-based study investigated the relationship between the Illness Perception Questionnaire and stigma towards gaming disorder (Lau et al., 2020). In this study, stigma towards gaming disorder had small to medium positive correlations with negative emotions, perceptions of gaming disorder as: cyclical, being able to be controlled by treatment, having negative

consequences, and being chronic (Lau et al., 2020). Stigma towards gaming disorder was also negatively correlated with illness coherence and unrelated to personal control over gaming disorder (Lau et al., 2020).

Summary of Research

In summary, past research has indicated that behavioural addictions like gaming and gambling attract negative public perceptions and responses like perceived dangerousness, blame, devaluation, fear, anger, discrimination, avoidance or being unattractive, lazy, unpopular, poorly kempt, and having bad social skills (Galanis et al., 2023; Kowert et al., 2012; Li & Whelan, 2024; Peter et al., 2019). Additionally, problem use of social media was also viewed as the result of vanity and attributed to personal responsibility (Casale et al., 2023). People who experience gambling problems have also reported feelings of shame, guilt, and inadequacy (Carroll et al., 2013; Karlsson et al., 2023). Predictors of stigma included the experience of more compared to less problems or consequences due to gaming (Galanis et al., 2023; Lau et al., 2020), the framing of problems as due to gaming or gambling compared to a financial crisis (Li & Whelan, 2024; Peter et al., 2019), or framing weight problems as due to food addiction compared to no mention of a diagnosis (Ruddock et al., 2019). Addiction explanations of overeating may reduce weight-related stigma (Latner et al., 2014; Montemarano & Cassin, 2021). However, addiction explanations of gaming had only a negligible effect on perceptions of impairment and distrust towards people who game (Galanis et al., 2023). Although these studies depend on self-report methodologies, their robust methodologies provide compelling evidence about stigma towards behavioural addictions.

Current Policies and Discourse Related to Restricting Digital Technology Access

Behavioural addictions have been the focus of policy decisions worldwide. This has included longstanding legislation in many countries which regulates or bans gambling (Sulkunen et al., 2021; A. M. Wu & Lau, 2015). While some countries merely ban electronic gambling machines or regulate game features and age limits, other countries ban gambling in all or most commercial forms (Sulkunen et al., 2021; A. M. Wu & Lau, 2015). As other forms of behavioural addictions have

become recognised, such as gaming disorder, laws have been used in some countries to protect adolescents from the harms associated with video gaming. For example, China, South Korea, Thailand, and Vietnam, have implemented gaming curfews people for minors where gaming providers have been compelled to restrict their access to online gaming servers during specific hours of the night (Király et al., 2017). China amended their gaming curfews in 2021 to restrict online gaming for minors to just one hour (i.e., 8pm to 9pm) on Fridays, Saturdays, Sundays, and public holidays (Zhou et al., 2024). However, there are reports that some people have been able to get around these restrictions by using the identification of older relatives to make gaming accounts or purchasing logins from the black market in order to be able to play video games during these restricted hours (Zhangshao et al., 2024; Zhou et al., 2024). Thailand and South Korea have tried other gaming regulations including limiting minors from accessing internet cafes at night or enabling people under the age of 18 and their guardians to request a service block or limit their access to a platform (Király et al., 2017).

As a response to concerns about the impact of mobile phones on student learning and wellbeing, many schools across the world have started introducing mobile phone bans in schools (Beneito & Vicente-Chirivella, 2022; Kessel et al., 2020; Kopecký et al., 2021; Selwyn & Aagaard, 2021). Similarly, state governments in Australia have begun implementing mobile phone bans in public schools (Global Education Monitoring Report, 2023), and in South Australia this ban encompasses all personal digital devices requiring that these devices be turned off and put away during the school day (DECD, n.d.). Further to this policy, the federal government in Australia has passed law for a ban on social media for all people under the age of 16 which is due to come into effect towards the end of 2025 (Nogrady, 2024; Truu, 2024). Similar bans have been announced in Florida in United States of America and Norway (G. Conroy, 2024). France has also announced their intention to implement social media bans for people under the age of 15 unless they have permission from a parent or guardian (G. Conroy, 2024). Although intended to protect and benefit the wellbeing of children and adolescents, these mobile phone and social media bans may face

similar changes with ensuring that they are effectively implemented and complied with as the video gaming restrictions have in China (Zhangshao et al., 2024).

These restrictions on adolescent use of technology tend to receive a great deal of support among the general public, with an estimated 77% of Australians in favour of the social media ban for people under 16 years of age (YouGov, 2024). However, there are also some concerns about these digital technology bans including the impact on those who have more social capital based on online communities rather than friends at school; that the ban will not be enforceable; creating a market for children or adolescents to illegally obtain logins for social media or video gaming accounts; privacy of age verification, and; not improving the safety of these platforms (Australian Child Rights Taskforce, 2024; G. Conroy, 2024; Zhangshao et al., 2024). Additionally, there are concerns that by making social media illicit, it could increase their appeal to adolescents, making it counterproductive as a way of trying to protect them from these technologies (J. Conroy et al., 2025).

Gaps in Past Research

Gap 1. Inclusion of Behavioural Addictions in Reviews of Stigma

The field of behavioural addictions has grown rapidly in the past couple of decades with the emergence of digital technologies, such as smartphones, becoming commonplace and providing constant connectivity to the internet, social media, and video games on a device that many people carry on their person at all times. As a new field of research, the literature on stigma related to problem use of these devices is scarce but topical as the focus of debates and a growing research area. However, past reviews on addiction stigma have not included studies of behavioural addiction (Bielenberg et al., 2021; Kilian et al., 2021; Meyers et al., 2021). Therefore, we are yet to synthesize current understanding of the experiences of stigma towards behavioural addictions and understand how research on stigma related to the broader addiction category can be applied to behavioural addictions. This means that there is a gap in the literature related to summarizing past knowledge which can be addressed by a review of research on stigma towards addictions which includes behavioural addictions.

Gap 2. Psychometric Properties of Stigma Measures in Behavioural Addiction Research

The themes identified by Caroll et al.'s (2023) qualitative research have informed a specific measure for gambling disorder related stigma (Hing & Russell, 2017a). However, specific measures for other behavioural addictions are scarce and literature on food addiction stigma has tended to focus on weight-related stigma (Latner et al., 2014; Montemarano & Cassin, 2021; Ruddock et al., 2019). Consequently, it is unclear what the psychometric properties of currently available stigma measures are for behavioural addiction research. Currently there are no reviews examining the psychometric properties of available measures for examining stigma towards behavioural addictions.

Gap 3. Qualitative Exploration of Behavioural Addiction Stigma

Past research has begun to examine the impact of diagnostic labels or categories and how this influences the way in which a person's level of impairment is viewed and stigmatized (Galanis et al., 2023; Latner et al., 2014; Montemarano & Cassin, 2021; Peter et al., 2019; Ruddock et al., 2019). Additionally, some studies have reviewed (Bergstrom et al., 2016) or quantitatively (Kowert et al., 2012, 2014) measured attitudes and stereotypes towards gamers. However, these studies did not consider problem gaming and do not provide the chance for participants the opportunity to elaborate on their attitudes or mention concepts that are not listed in a forced choice survey. The past literature provides some qualitative exploration of stereotypes, emotional and behavioural responses that are specific to gambling disorder (Carroll et al., 2013; Karlsson et al., 2023) but many other behavioural addictions are yet to be qualitatively investigated. Therefore, there is a gap in the literature where qualitative research has not explored the nature of problem gaming stigma and the impact of the addiction formulation of gaming disorder on public perceptions.

Gap 4. Predictors of Behavioural Addiction Stigma

Several studies investigating digital device-related problems considered self-stigma in the context of other health conditions such as weight stigma (Fung et al., 2021), or in populations who experience substance-based disorders (C.-W. Chang et al., 2023; Chen et al., 2022) or attention-deficit hyperactivity disorder (K.-Y. Lee et al., 2023). Some research has begun to examine predictors

of stigma towards gaming disorder, such whether the observer perceives it as being cyclical, chronic, treatable, and having negative consequences (Lau et al., 2020). Other quantitative research on stigma towards behavioural addictions has predominantly focussed on the relative strength of stigma towards the behavioural addiction and other disorders or control conditions (Casale et al., 2023; Li & Whelan, 2024; Peter et al., 2019; Ruddock et al., 2019). This leaves a gap in our understanding of the predictors of stigma towards these digital devices, such as mobile phone use problems.

Gap 5. Impact of Policy Restricting Digital Device Access in Schools on Behavioural Addiction Stigma

There are a growing number of policies being implemented in relation to digital device use (e.g., Selwyn & Aagaard, 2021; Zhou et al., 2024). The implementation of these policies provides the unique opportunity to investigate the impact of these major institutional decisions on psychosocial outcomes such as stigma, without the typical challenges of creating stimuli to represent different sets of circumstances. Digital technology related restrictions may also be conceptualised as a possible form of structural stigma where those who experience problems with digital device use may be more likely to experience consequences if lack of control over their technology use leads to poor adherence with the device restrictions. However, research is yet to examine the impact of these digital technology-related restrictions on stigma or consider structural stigma with respect to digital technology. Therefore, the regulations on the use of digital technology among adolescents which are yet to be assessed pose a gap in stigma research. The implementation of a mobile phone ban in South Australian public schools in 2023 occurred during this PhD project and provides an example of digital technology regulations which can be assessed in the context of its impact on stigma towards mobile phone use problems.

The Present Thesis

Past research has identified public stereotypes towards gamers like unpopular or lazy (Kowert et al., 2012) and that self-stigma among people with gambling problems encompasses feelings like

shame and inadequacy (Carroll et al., 2013; Karlsson et al., 2023). Behavioural addictions have been reported to be more stigmatized than no-diagnosis control conditions with comparable impairment (Li & Whelan, 2024; Peter et al., 2019; Ruddock et al., 2019) and that stigma increases as problems increase (Galanis et al., 2023; Latner et al., 2014; Montemarano & Cassin, 2021). This thesis aims to contribute to the presently limited body of knowledge on stigma towards behavioural addictions. It will provide insight into the rates at which stigma occurs, target populations that are at risk of experiencing the consequences of stigma, and those who are more likely to stigmatise others. Furthermore, this thesis seeks to understand the impact of policies regulating digital technology and the inclusion of gaming disorder in diagnostic classification systems. The proposed studies will address the following questions:

- What is the current state of knowledge about stigma related to behavioural addictions?
- What are the psychometric qualities of stigma measures and what is their suitability for studying behavioural addictions?
- What are the nature and origins of behavioural addiction stigma?
    - What is the impact of the diagnostic category of gaming disorder and its addiction formulation on public perceptions towards gaming and gaming problems?
    - What is the impact of policies restricting mobile phone access at schools on stigma towards problem phone use?

This thesis sought to expand our understanding of stigma in behavioural addictions. The first study is a systematic review of 99 studies of addictions that used an outcome measure of stigma to investigate what past research tells us about addiction stigma and the psychometric properties of available measures. The second study uses a qualitative framework analysis to examine written responses from non-gaming adults. This study informs our understanding of the nature of stigma related to problem gaming and the impact of a formal diagnostic category. The third study in this thesis investigates the predictors of mobile phone use stigma by recruiting adolescents from South Australian public schools for a survey investigating a range of social and psychological factors. Study

four engaged adolescent high school students for a pre-post study where surveys were completed as schools transitioned to a mobile phone ban. This study investigates the impact of the phone ban on perceived stigma of mobile phone use problems.

Chapter Two: Study One

Stigma in substance-based and behavioural addictions: A systematic review

Publication

The following chapter (with minor changes) has been published in in the Journal of Behavioral Addictions [CC BY-NC 4.0]:

Galanis, C.R., Leske, M., Hamamura, T., Weber, N., Hing, N., Delfabbro, P., & King, D. L. (2025). Stigma in substance-based and behavioral addictions: A systematic review. *Journal of Behavioral Addictions.* https://doi.org/10.1556/2006.2024.00072

Authors' Contributions

Authors CRG (80%) and DLK (15%) designed the study with input from NW (5%). Authors TH (10%) and ML (10%) assisted CRG (80%) in data collection and analysis. Authors CRG (70%) ML (5%), TH (5%), NH (5%), PD (5%), and DLK (10%) contributed to writing and editing.

Role of Funding Sources

This work received financial support from the Breakthrough Mental Health Grant Research Foundation. The funding body had no influence on study design; collection, analysis, and interpretation of data; writing of the report; and decision to submit the article for publication.

Abstract

Background and Aims: The study of stigma contributes greatly to our understanding of individuals' experiences of mental disorders. Addictive disorders are often associated with public misconceptions of the disorder, which can contribute to shame, discrimination, and reticence to seek help. This review aimed to: (1) evaluate the nature, frequency, and prevalence of addiction stigma; (2) identify the correlates of addiction stigma; and (3) examine the psychometric qualities of addiction stigma measures. *Methods:* A search of Web of Science, PubMed, Scopus, PsycINFO, and PsycNet, had 5,515 results which were screened for eligibility using Covidence. Eligible papers were quantitative, peer-reviewed studies, which reported an outcome variable of stigma related to an addiction. *Results:* A total of 99 studies were included in the review, including 70 studies of substance-based addictions, 19 studies of behavioural addictions, and 10 studies which examined both. Thirteen of the 20 studies examining the impact of familiarity with addiction reported that greater familiarity was associated with lower public stigma. Studies comparing substance and behavioural addictions (n = 5) typically reported greater public stigma towards vignettes depicting substance-based addictions than for behavioural addictions. Between 22% and 40% of individuals with an addictive disorder identified stigma as a significant barrier to seeking help; however, the relative importance of stigma among other barriers was unclear. Discussion and *Conclusions:* Evidence for countermeasures to prevent and/or reduce stigma is currently limited. Further research on the nature and prevalence of addiction stigma is needed to inform the development of effective clinical and public health countermeasures.

Keywords: stigma, addiction, systematic review, measurement, prejudice, frequency, gambling, gaming.

Introduction

Stigma is a frequently reported and negative experience for people with a mental illness (Angermeyer & Matschinger, 2003; Corrigan, 2007; Feldman & Crandall, 2007; Norman et al., 2008; Teachman et al., 2006). Stigma is characterized by devaluation, status loss, and discrimination (Goffman, 1997; Yang et al., 2007), which can lead to psychological distress, low self-esteem or self-efficacy, secrecy about treatment seeking, isolation, poor life satisfaction, or increase vulnerability to comorbid health conditions (Bos et al., 2013; Link et al., 1989; Markowitz, 1998; M. G. Weiss et al., 2006). Alcohol use disorder (AUD) and other substance-based addictions, reportedly generate more stigma than many non-substance-related mental illnesses and are therefore of particular interest in stigma research (Kilian et al., 2021). As behavioural addictions have gained increasing recognition (American Psychiatric Association, 2013; Derevensky et al., 2019; Petry et al., 2018; World Health Organization, 2018), a question arises as to whether everyday activities, particularly those involving digital media such as social media and gaming (Galanis et al., 2021, 2023), may increasingly attract stigmatized perceptions (Aarseth et al., 2017; Dullur & Starcevic, 2017; Gearhardt & Hebebrand, 2021; Rasmussen, 2014; Ruddock et al., 2019; Van Rooij et al., 2018).

The main types of stigma for people with mental illness, which can be used to understand the experiences of people with an addiction, include: 1) Public stigma referring to negative social and psychological responses towards people with mental illness, and 2) Self-stigma referring to negative perceptions and attitudes held by people with a mental illness towards themselves (Bos et al., 2013; Overton & Medina, 2008). Stigma research often refers to perceived stigma, whereby people report what they perceive others think about a stigmatized group. Henceforth, the term ‘perceived’ is used in relation to both self-stigma and public stigma, and the term person-specific stigma is used to refer to measures that ask participants to respond to a specific per son (e.g., a vignette). Socio-cognitive models of stigma are commonly adopted and propose greater stigma should be expected when a person’s addiction diagnosis is known than when it is not known, as the diagnostic label leads to stereotypes and prejudice when negative stereotypes are endorsed (Corrigan, 2007).

Several reviews have examined mental illness and substance use stigma. Bielenberg et al. (2021) examined 15 intervention studies for bias, stigma, and discrimination among treatment providers of substance use disorders. Studies using experiments, quasi-experiments, or pre-post designs reported that education and contact interventions improved attitudes and perceived role adequacy among healthcare workers towards people with substance use disorders. These findings are consistent with the contact hypothesis which states that positive contact with members of stigmatized groups reduces stigma perceptions when those experiences are generalized towards the rest of the out-group (Couture & Penn, 2003; Desforges et al., 1991; Islam & Hewstone, 1993). However, Bielenberg et al.'s review reports few studies that used contact independently of other interventions such as education.

Kilian et al. (2021) reviewed 24 studies comparing public attitudes towards AUD with other mental illnesses. Kilian et al. (2021) reported that AUD was stigmatized more than other mental illnesses such as depression, dementia, and obsessive-compulsive disorder. However, AUD did not often differ to other substance use disorders in terms of the severity of stigmatizing responses and was similar to schizophrenia with respect to the discriminatory responses elicited (Kilian et al., 2021). Kilian et al. suggests that these differences could be due to AUD being perceived as more dangerous and more blameworthy than other mental illnesses. O'Connor et al. (2022) reviewed 22 studies using vignette-based experiments relating to all mental illness, including two studies about substance addictions. O'Connor et al. (2022) aimed to address concerns around the categorical nature of diagnostic classification systems as they relate to labelling and stigma effects. They reported no difference in attitudes or social distance of labelled and unlabelled symptoms for substance use disorders (O'Connor et al., 2022). The effects of labelling were not universal across different mental health conditions, indicating that associations with the label may be unique to each condition and that other factors may mediate the relationship between mental illness labels and stigma (O'Connor et al., 2022).

A review by Meyers et al. (2021) reported a lack of consensus across quantitative studies on the impact of gender on the public stigma of drug use, but largely no differences in self-stigma. However, qualitative research identified issues relating to drug use stigma that specifically affect women, such as: holding woman to higher moral standards; stereotypes about the association between drug use and promiscuity; gender-based violence associated with drug use; and systemic discrimination (Meyers et al., 2021). Meyers et al. (2021) highlighted that the additional stigma experienced by women who use drugs is also evident by significant challenges in recruiting this population in drug use research. Taken together, these reviews provide some insights into different facets of addictions, however, no review has critically evaluated studies spanning substance-based and behavioural addictions.

The Present Study

The present review aims to summarize the empirical literature on predictors and measurement of addiction stigma from the last 20 years. Stigmatizing attitudes have been reported to change over time (Earnshaw et al., 2022), therefore, limiting studies by date sought to minimize the inclusion of studies which are no longer culturally relevant. To our knowledge, no recent reviews have assessed the literature on predictors of stigma associated with addictions with the inclusion of behavioural addictions. Recent reviews on stigma suggest that labelling does not have a consistent effect on stigma across diagnoses (O'Connor et al., 2022) and that education and contact with people with substance use problems improves health provider's attitudes towards them (Bielenberg et al., 2021). Reviews also report that AUD tended to be more stigmatized than other mental illnesses although comparable to other substance use disorders (Kilian et al., 2021) with little evidence that stigma varies by gender (Meyers et al., 2021). Previous reviews have either been specific to disorders related to alcohol or other drug use (Bielenberg et al., 2021; Kilian et al., 2021; Meyers et al., 20211), or limited to a particular study type, such as vignette studies (O'Connor et al., 2022). This review aims to examine the frequency of stigma, predictors, correlates, and assess available measures of addiction stigma. The review was guided by the following research questions:

(1) What is the nature and frequency of addiction-related stigma? (2) What are the main predictors and correlates of addiction-related stigma, and do these differ according to type of addiction (i.e., substance-based vs. behavioural)? (3) How is stigma measured and what are the psychometric qualities and conventions of available measures?

Method

Study Identification and Assessment

Eligibility Criteria. This review aimed to include all studies published between January 2002 and August 2024 that involved empirical investigations of addiction-related stigma. Eligible studies were quantitative, peer-reviewed studies, which reported an outcome variable measuring stigma related to an addiction, including addictions not formalized in diagnostic manuals. Addictions without formal diagnostic categories were included to consider disorders that may be accepted later or for which concerns are raised about stigma. Studies were excluded if they (1) did not report stigma related to an addiction, (2) were not published in a peer reviewed journal (e.g., dissertations), (3) used qualitative analysis only, or (4) were only published in a non-English language.

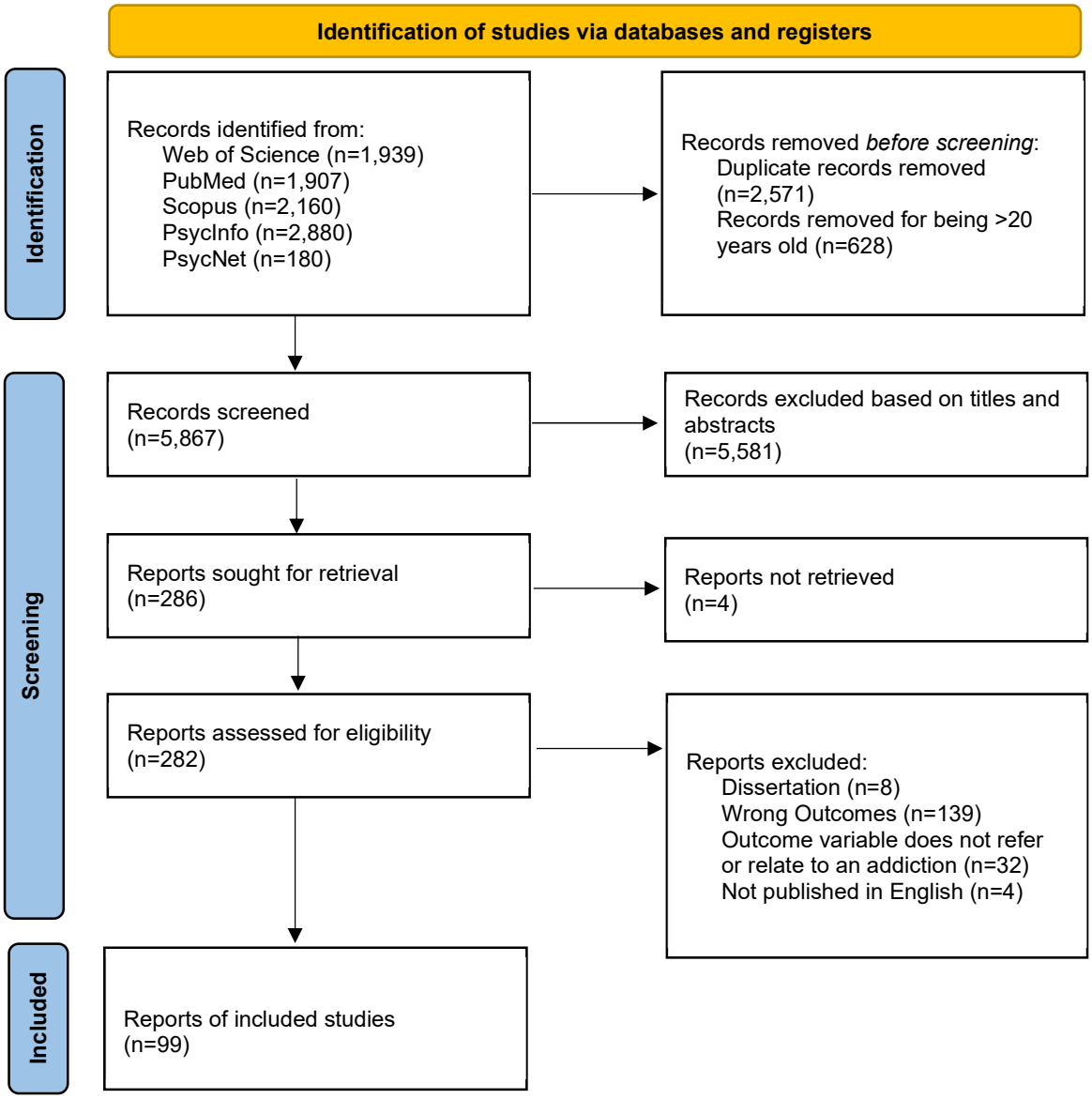
Search Strategy. The search strategy was based on O'Connor et al.'s (2022) protocol and adapted to be specific for addiction studies. The following key words and search logic were used: (diagnos* OR label* OR "explanatory model*" OR criteri* OR formul* OR distress* OR impair*) AND(addict* OR gambl* OR gamer* OR gaming OR "video gam*") AND (abuse* OR disord* OR problem* OR misuse* OR addict*) AND (survey* OR questionnaire* OR experiment*) AND ("social distance" OR attitude* OR stigma* OR prejudice OR discriminat* OR stereotyp* OR perception* OR impression* OR "social respon*"). This search was performed in August 2024 in five databases: Web of Science, PubMed, Scopus, PsycInfo, and PsycNet. A copy of all search results is available on request.

Figure 2.1 summarizes the flow of papers through screening (Page et al., 2021). Potentially eligible studies were stored and organized using Covidence. One reviewer (CG) conducted a title and abstract review of all papers and potentially eligible texts were retrieved. All full texts were reviewed

by one researcher (CG) and a random sample of 50 papers were reviewed by a second reviewer (TH). Initial independent screening of text indicated an 86% (n = 43; Cohen's Kappa 5 0.71) agreement regarding whether to include or exclude a report. All disagreements were resolved in discussion and only two studies differed from the first reviewer's (CG) original allocation. This indicates that the first reviewer had a 96% accuracy rate.

Figure 2.1.

Search Results and Study Selection According to PRISMA Guidelines[1]



[1] Diagram retrieved from: PRISMA (2020). PRISMA flow diagram. https://www.prisma-statement.org/prisma-2020-flow-diagram
[CC BY 4.0]

Data Extraction. One reviewer (CG) searched each full text and recorded study information, including: sample type and size, country, stigma (i.e., public, self, perceived) and addiction type (i.e., substance or behavioural addictions, or both); stigma measures; other measures; analysis plan and main stigma findings in relation to stigma. A 10-item quality assessment was conducted based on the methods and results section of the Journal Article Reporting Standards (JARS; Appelbaum et al., 2018). A score of 0, 0.5, or 1, was given for each item of the quality assessment to make a total score out of 10, where 10 indicates comprehensive reporting and 0 indicates minimal reporting. A second reviewer (ML) extracted data for 20 studies to determine inter-rater reliability. No major discrepancies were noted between reviewers for data extraction, including no semantic differences in the interpretation of results and similar patterns were reported for the quality of reporting assessments. The quality of reporting assessment showed an average difference of 1.24 and a recommended adjustment to scores of –0.74.

Stigma Measurement Tools: Selection and Assessment

Eligibility Criteria. Stigma measures were eligible for review if used by one or more studies in the first phase of the re view; had been cited in other peer-reviewed journal articles (i.e., more frequently used or referred to measures); were not composite measures; and the measure was theory-based or psychometrically evaluated.

Selection of Measures. Measure selection involved generating a list of every measure of stigma used in each study (n = 99). A total of 21 measures were eligible and included for data extraction.

Data Extraction. Data extraction involved reviewing papers which used the measure or parts of the measure and recording relevant information: (1) number of items; (2) scoring information; (3) health conditions evaluated in relation to stigma; and (4) the measure's reference point for stigma: (a) self-referential; (b) another specific person (e.g., a vignette); (c) the illness, (d) or their view of how others' perceive them or an illness; (5) number of citations; (6) number of studies in the review

that used the measure; and (7) evidence of convergent (i.e., correlation with other stigma measures) and discriminant validity (i.e., scoring for addiction versus control groups).

Components of Stigma Addressed by Stigma Measures

Development of a Conceptual Framework. Models of stigma used in the studies were reviewed to develop a framework that summarizes the important conceptual underpinnings of addiction stigma studies. Forty-five studies (45.5%) cited papers referring to Attribution Theory or other Social Cognitive models of stigma (Corrigan et al., 1999, 2000, 2002, 2003, 2009; Corrigan, 2000; Link & Phelan, 2001; Link et al., 2004; Weiner, 1985, 1988, 1995; Weiner, Perry, & Magnusson, 1988).

Review of Theories. Figure 2.2 summarizes the main components of stigma theories identified and then synthesized in this review. Eleven categories were generated based on Attribution Theory and the Danger Appraisal Hypothesis (Corrigan et al., 2003) and were guided by additional papers on the broader Social–Cognitive models of stigma (Corrigan, 2000; Corrigan et al., 2001, 2009; Link & Phelan, 2001; Link et al., 2004). Four main components appear across these theories which typically follow a linear process of stigma: *Signalling, Stereotypes, Affective Responses, Behaviour (Discrimination or Helping/ Empowerment)* (Corrigan, 2000; Corrigan et al., 2001, 2003, 2009; Link & Phelan, 2001; Link et al., 2004).

Signalling refers to a feature of someone's behaviour, appearance, or a diagnosis or label that indicates they have a mental illness (Corrigan, 2000). Although attribution theory and the 'why try' model of self-stigma require awareness of a person's mental illness, the signalling event is not emphasized (Corrigan et al., 2003, 2009). Therefore, only the broad category of 'signalling event' was used rather than referring to specific subcategories used by Corrigan (2000). The second component, *Stereotypes*, involves awareness of negative cultural perceptions of people with mental illness and endorsement of those beliefs, as well as application of stereotypes to oneself in self-stigma (Corrigan, 2000; Corrigan et al., 2009). Stereotyping acts as a mediator between signalling events

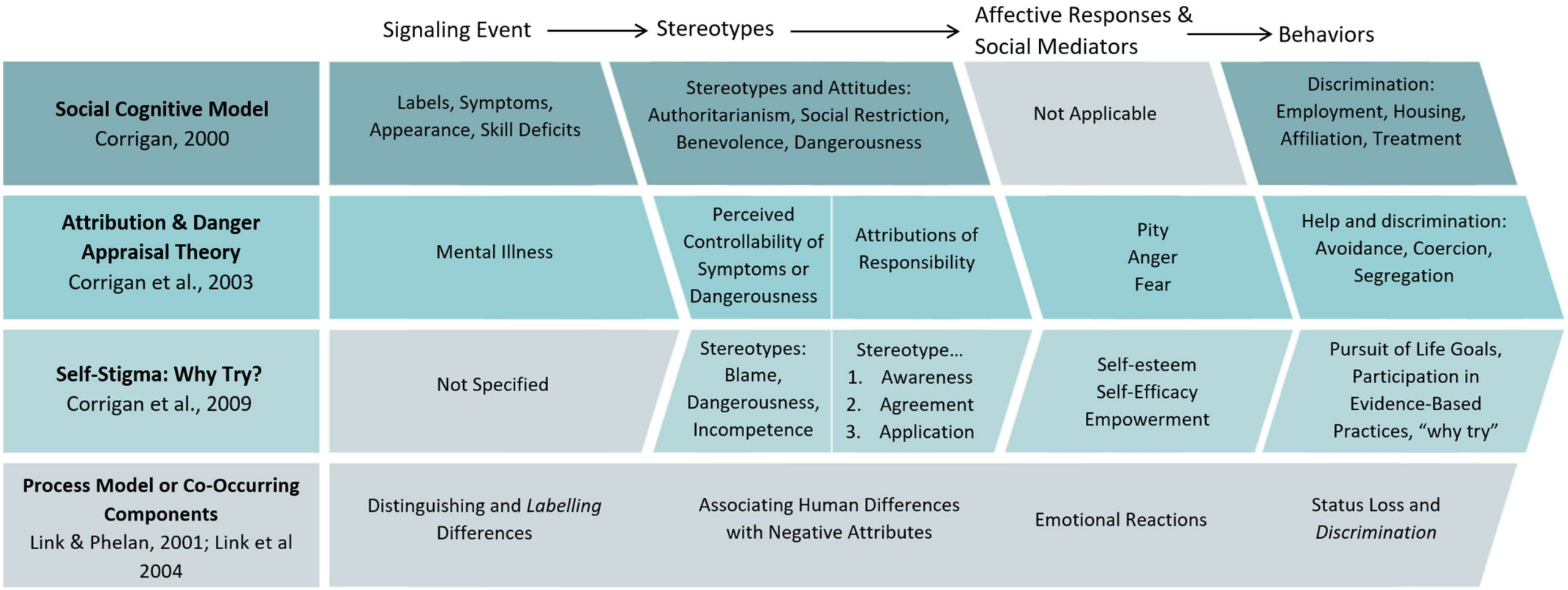
and affective or behavioural reactions in which endorsement of negative stereotypes engenders more negative emotional and behavioural responses (Corrigan, 2000).

Two subcategories of stereotypes were identified from attribution theory and the danger appraisal hypothesis; *Responsibility* for the illness and *Perceived Dangerousness* to others due to the condition (Corrigan et al., 2003). *Perceived Controllability* was not included as it is conceptually related to Responsibility in many measures, despite being distinct ideas (Corrigan et al., 2003). Corrigan (2000) also proposes stereotypes such as authoritarianism, referring to support for coercive intervention strategies; social restriction, believing in segregating mentally ill people; and *benevolence*, relating to parental-like kindness towards a child, which are summarized by the emotional and behavioural responses highlighted in Attribution Theory. *Affective Responses* are emotions linking stereotyping and behavioural responses in Attribution Theory and the Danger Appraisal Hypothesis with three subcategories: *Pity, Anger,* and *Fear* (Corrigan et al., 2003). The final two components refer to behavioural responses in the form of *Discrimination* such as *Avoidance* or supporting *Segregation* or *Coercion* related policies for people with mental illness, or *Helping* and Empowering behaviours referring to positive treatment (Corrigan et al., 2003).

Data Extraction. Data extraction involved one reviewer (CG) comparing each of the 21 measures to the conceptual framework of stigma detailed above to assess if each component of stigma was evaluated by the measure.

Figure 2.2.

Common Components and Processes of Four Theories of Stigma



Results

Characteristics of Studies

A comprehensive tabular summary of the 99 included studies can be found in Supplementary Table 1. The table is provided in a supplementary file due to its size and scope exceeding print limits. Studies had an average score of 7.6 out of 10 on the quality assessment, indicating moderately high standards of reporting. Public stigma was examined in more than two thirds of studies (n = 64, 64.6%), and self-stigma was assessed in 23 studies (23.2%). Twenty (20.2%) studies examined perceived stigma, regarding their beliefs about the stigma-related attitudes of people other than themselves. Nearly half (40.0%) of the studies that examined perceived stigma also assessed self or public stigma.

A total of 70 studies (70.7%) focused on substance use addictions, 19 studies (19.2%) examined behavioural addictions, and 10 studies (10.1%) examined both substance and behavioural addictions. Nineteen of the 29 studies on behavioural addiction stigma were published since 2017, and the oldest in 2008. Studies were survey-based (n = 51, 51.5%), experimental (n = 47, 47.5%), or both (n = 1, 1.0%). Experiments tended to employ vignettes or manipulations of diagnosis and/or symptom labelling (n = 41, 87.2%), with one study using video-based vignettes (Morgiève et al., 2019). Only six experiments (12.8%) evaluated an intervention for reducing stigma. One study evaluated alcohol treatment on self-stigma (Ertl et al., 2021), whereas other interventions examined public stigma relating to gambling disorder (K. L. Brown & Russell, 2019), drug and alcohol addiction (Crapanzano et al., 2014; Yashikhina et al., 2023), pregnant smokers (David et al., 2024), or substance use problems (Cleary et al., 2009).

Most studies were conducted in the USA (n = 39, 39.4%), followed by Australia (n = 13, 13.1%), Canada (n = 8, 8.1%), France (n = 6, 6.1%), and Great Britain (n = 5, 5.1%). A total of 94,314 respondents participated across all studies, with an average sample of N = 953. Survey and experimental studies both tended to have large samples; survey-based studies had an average of 838 participants; experimental studies had an average sample of 1,083 participants. Gender of

participants showed a slight overrepresentation of people identifying as female (55.1%; n = 51,000) compared to participants identifying as male, and only a small proportion of participants across studies reported their gender as other or prefer not to say (0.2%; n = 230).

Nature and Frequency of Stigma

The frequency of stigma was seldom reported and had considerable variance across the 14 (14.1%) studies that included estimates. Two types of frequency estimation were evident. Studies either used a single question asking whether stigma was a barrier to treatment seeking or used a measure involving criteria or threshold scores (in continuous measures) to classify the presence or absence of stigma.

Six (6.1%) studies reported on stigma as a barrier to treatment seeking from surveying people with a substance addiction about their engagement with treatment (Balan et al., 2023; Jackson & Shannon, 2012; Jullian et al., 2023; Probst et al., 2015; Salameh et al., 2021; L. T. Wu et al., 2011). The highest proportion of participants who reported stigma as a barrier to treatment seeking was 40.0% in a sample of people who had delayed seeking treatment for substance use problems (Balan et al., 2023), followed by 28.6% of people with AUD (Probst et al., 2015), 22.0% of adolescents with opioid use disorder (OUD) (L. T. Wu et al., 2011), and the lowest was 12.0% of responses to a question about the main barriers to treatment seeking for physicians with substance use disorders (Jullian et al., 2023). In samples of pregnant women with substance addiction, stigma as a barrier to treatment seeking varied from 15.3% (Jackson & Shannon, 2012) to 38.1% (Salameh et al., 2021) of participants. Additionally, Miquel et al. (2018) reported that 16.5% of general practitioners did not screen for AUD for stigma-related reasons.

Five studies evaluated the proportions of participants who have public stigma towards people with an addiction (Deng et al., 2020; Hing, Russell, & Gainsbury, 2016; Hing, Russell, Gainsbury, & Nuske, 2016; Morgiève et al., 2019; Peretti-Watel, 2003). These studies included adult participants recruited using convenience sampling (Morgiève et al., 2019), random sampling of rural and urban communities in China (Deng et al., 2020), quota sampling to represent residents in

Victoria, Australia (Hing, Russell, & Gainsbury, 2016; Hing, Russell, Gainsbury, & Nuske, 2016), or a nationally representative sample of France (Peretti-Watel, 2003). Two studies (40%) examined a behavioural addiction, specifically problem gambling (Hing, Russell, & Gainsbury, 2016; Hing, Russell, Gainsbury, & Nuske, 2016). A survey found that 58.0%–66.3% thought people who have a gambling problem would experience discrimination (Hing, Russell, & Gainsbury, 2016). Similarly, in a vignette-based experiment, 51.7% of respondents stigmatized people experiencing problem gambling compared to 59.1% for people with AUD (Hing, Russell, Gainsbury, & Nuske, 2016). Morgiève et al. (2019) reported that 50% of participants desired social distance from people with AUD. Comparatively, Deng et al. (2020) reported that 76.5% of participants had negative stereotypes about heroin users and were unwilling to associate with them. Similarly, Peretti-Watel (2003) reported that 73% of participants perceived heroin users as dangerous and 28% were hostile towards them.

Three studies reported frequencies of self-stigma among people with substance use disorders (K. C. Chang et al., 2019; Cunningham et al., 2023; Khalid et al., 2020). K. C. Chang et al. (2019) reported that 81.7% of participants with opioid use disorders endorsed high levels of self-stigma. Components of enacted stigma (i.e., the experience of negative treatment from others), self-stigma, and unwillingness of others to associate with them were rated as being experienced by 40%–90% of people who use substances (Khalid et al., 2020). Comparatively, unfair medical treatment, not being listened to or treated with respect, or substance use distracting from physical health was endorsed as occurring most or all of the time by 18–35% of participants with an addiction when seeking physical health treatment from primary care practitioners (Cunningham et al., 2023).

Predictors and Correlates of Stigma

The 99 studies extensively examined various predictor variables related to stigma. The most common predictors included the diagnosis or label of the addictive disorder, familiarity with the condition, and psychological distress.

Diagnosis. Twenty-seven studies (behavioural addiction studies 54, 14.8%; substance-based addiction studies 5 17, 63.0%; or both substance-based and behavioural addiction studies 5 6, 22.2%) involved a manipulation of the diagnosis to assess public stigma. Five studies reported that behavioural addictions generated less stigma than substance addictions (DePierre et al., 2013; Hing, Russell, Gainsbury, & Nuske, 2016; Horch & Hodgins, 2008; Lang & Rosenberg, 2017; Quigley et al., 2020). However, three studies reported some similarities in stigma between gambling disorder and AUD (Horch & Hodgins, 2008; Lang & Rosenberg, 2017; Quigley et al., 2020). Lang and Rosenberg (2017) reported that pornography addiction was less stigmatized than heroin and alcohol addiction, with large effects ($\eta^2 = 0.17$), but porn addiction did not significantly differ from marijuana use. DePierre et al. (2013) reported similar effect sizes for differences between behavioural and substance addictions on social distance measures ($\eta^2 = 0.20$), but small effects on attitudinal measures ($\eta^2 = 0.02–0.04$). These studies indicate that substance addictions tend to be more stigmatized than behavioural addictions, although there were some similarities across conditions. Addictions to stimulants or heroin experienced more stigma than alcohol, or opioid use problems (Krendl & Perry, 2022). However, addiction to stimulants, opioids or alcohol was associated with more pity or concern, but less blame and negative emotional responses than marijuana addiction (Johnson-Kwochka et al., 2021).

Five studies evaluated the effect of behavioural addiction diagnosis on public stigma (Bannon et al., 2009; Galanis et al., 2023; Klein et al., 2019; Peter et al., 2019; Ruddock et al., 2019), finding that diagnosis tended to increase stigma compared to control conditions. The effect of diagnosis on stigma occurred for food addiction even when it was a self-diagnosis (Ruddock et al., 2019) or for gaming and gambling disorder when the control condition had comparable impairment (Peter et al., 2019). Fifteen studies compared substance addictions with other health conditions. More public stigma was observed towards alcohol and drug addictions than towards anxiety, panic disorder, depression, PTSD, bipolar disorder, bulimia, schizophrenia, autism, dementia, intellectual disability, hypertension, diabetes, mental illness in general, anorexia, OCD, and subclinical distress

(Boysen et al., 2014, 2020; Deng et al., 2020; Elliott et al., 2024; Fernando et al., 2010; Luty et al., 2006; Mannarini & Boffo, 2015; McGinty et al., 2015; Morgiève et al., 2019; Pennington et al., 2023; Perry et al., 2020; Rundle et al., 2021). However, in four studies, schizophrenia was stigmatized as much or more than AUD (Francis et al., 2020; Luty et al., 2006; Marie & Miles, 2008; Noblett et al., 2015).

Labels. Five studies (n = 1 out of 5, 20.0% behavioural addiction studies) considered the effect on stigma of different labels or terminology used to describe the same illness (Ashford et al., 2019; Goodyear et al., 2018; Kelly et al., 2021; Pennington et al., 2023; Quigley et al., 2020). One study examined self-stigma (Ashford et al., 2019), whereas three examined public stigma (Goodyear et al., 2018; Kelly et al., 2021; Quigley et al., 2020). Ashford et al. (2019) reported no statistically significant difference in internalized stigma between participants who used "person with a substance use disorder", "addict", no label, or both labels to describe themselves. However, Goodyear et al. (2018) reported more public stigma for someone described as a "drug addict" than a person with "opioid use disorder". Kelly et al. (2021) and Pennington et al. (2023) reported that opioid use and drug use received higher blame scores when presented as a disease or a problem compared to 'chronically relapsing brain disease' or 'brain disease'. The use of 'problem' terminology was associated with lower dangerousness, greater recoverability, and lower need for continuing care compared to 'chronically relapsing brain disease'. Notably, Quigley et al. (2020) reported that the labels of problem gambling, pathological gambling, gambling disorder, and gambling addiction did not differ in terms of public stigma.

Familiarity. Familiarity with people with addiction or associated activities (e.g., drug use) was assessed in 20 studies of public stigma (Adlaf et al., 2009; Avery et al., 2013; K.L. Brown & Russell, 2019; S.A. Brown, 2011; Dey et al., 2020; Goodyear et al., 2018; Hing, Russell, & Gainsbury, 2016; Hing, Russell, Gainsbury, & Nuske, 2016; Horch & Hodgins, 2008; Johnson-Kwochka et al., 2021; Kloss & Lisman, 2003; Lang & Rosenberg, 2017; Loyal et al., 2022; Mahmoud et al., 2021; Marie & Miles, 2008; Peter et al., 2019; Van Boekel et al., 2014; Washburn et al., 2023; Wild et al.,

2021; Wyler et al., 2022). Eleven studies (n = 2 out of 11, 18.2% behavioural addiction studies) indicated that greater familiarity, exposure, or expertise reduced or improved stigmatizing perceptions towards the condition (Adlaf et al., 2009; Avery et al., 2013; S. A. Brown, 2011; Goodyear et al., 2018; Hing, Russell, & Gainsbury, 2016; Hing, Russell, Gainsbury, & Nuske, 2016; Johnson-Kwochka et al., 2021; Loyal et al., 2022; Van Boekel et al., 2014; Washburn et al., 2023; Wild et al., 2021). Interestingly, Adlaf et al. (2009) reported that peer and own drug use had strong negative relationships with stigma, indicating that familiarity reduces stigma. However, peer drug use was a stronger predictor than own drug use on perceptions of public stigma (Adlaf et al., 2009).

Four studies (n = 2 out of 4, 50% behavioural addiction studies) showed no relationship between familiarity and stigma (Dey et al., 2020; Horch & Hodgins, 2008; Lang & Rosenberg, 2017; Wyler et al., 2022). Five studies (n = 2 out of 5, 40.0% behavioural addiction studies) reported mixed results (K. L. Brown & Russell, 2019; Kloss & Lisman, 2003; Mahmoud et al., 2021; Marie & Miles, 2008; Peter et al., 2019). For example, Mahmoud et al. (2021) found that exposure to problems through work or family reduced stigmatizing perceptions, whereas exposure via friends or self-exposure to the problem had no effect. Only one study experimentally manipulated contact with the stigmatized group by using video content of people with a gambling addiction (K. L. Brown & Russell, 2019). This study reported that the contact intervention increased perceptions of dangerousness, pity, and desired social distance towards people with a gambling addiction (K. L. Brown & Russell, 2019). However, contact did reduce fear towards people with a gambling addiction (K. L. Brown & Russell, 2019).

Psychological distress and wellbeing. Fourteen studies (n = 3 out of 14, 21.4% behavioural addiction studies) included measures relating to psychological distress, general well-being, or quality of life. All studies that measured the relationship between psychological distress and self-stigma reported positive relationships (Cooper et al., 2018; Hing & Russell, 2017a; K.-Y. Lee et al., 2023; Moore et al., 2020; Pérez-Pedrogo et al., 2022), including two studies that identified weak relationships only (Ahorsu et al., 2020; Opsal et al., 2016). A positive relationship was also found in a

study investigating psychological distress and public stigma (Dey et al., 2020). Studies investigating the relationship between self-stigma of substance addictions and quality of life had mixed findings, where one study reported a negative relationship (Sarkar et al., 2019) and the other reported no relationship (Brown-Johnson et al., 2015). Psychological flexibility (i.e., being present in the moment, and accepting of thoughts and feelings) (Uygur et al., 2020) and self-esteem (C. C. Chang et al., 2020) were negatively related to self or perceived stigma among people with substance or alcohol use disorders. Perceived discrimination among people with substance use problems was positively associated with executive dysfunction (Razeghian Jahromi et al., 2023). Additionally, the study by Ashford et al. (2019) examined self-esteem but did not report outcomes with respect to self-stigma of substance use. Overall, most studies reported that higher distress and lower wellbeing were related to greater self and public stigma.

Neurobiological explanations of addiction. Five experimental studies examined the effect of promoting the biological processes of addiction on public stigma (Galanis et al., 2023; Kelly et al., 2021; Latner et al., 2014; Montemarano & Cassin, 2021; Racine et al., 2017). Most found that using terminology that described the problem and/or its associated neurological processes (e.g., 'chronically relapsing brain disease') reduced stigma or blame (n = 3 out of 4, 75.0% behavioural addiction studies) (Galanis et al., 2023; Kelly et al., 2021; Latner et al., 2014; Montemarano & Cassin, 2021). However, two of these studies also reported increases in other aspects of stigma (Galanis et al., 2023; Kelly et al., 2021). Furthermore, Racine et al. (2017) reported no significant effect of brain disease explanations of cocaine addiction on stigma. The experimental manipulation of neurophysiological descriptions in these studies indicate directionality of the effect of these explanations on stigma (i.e., pre-existing stigma is not causing the participant to view the addiction as less of a biological process) and controls for possible confounding effects. By comparison, five correlational studies (n = 2 out of 5, 40.0% behavioural addiction studies) have demonstrated mixed (Kloss & Lis man, 2003; Ruddock et al., 2019; Rundle et al., 2021; Wild et al., 2021) and inconclusive (Bannon et al., 2009) results.

Stigma Measurement

Summaries of the 21 reviewed stigma measures are reported in Supplementary Table 2. Nine measures assessed substance addiction stigma; seven measured behavioural addiction stigma; and five measured both. Six of the behavioural addiction measures were developed for weight stigma which were commonly used in reference to food addiction, and one was developed for problem gambling stigma (SS-PG). Only one measure was specifically for children and assessed public stigma (Watson et al., 2004).

Stigma Types. There were 8 public stigma measures, 8 self-stigma measures, and 5 measures assessing public stigma relating to a specific person (e.g., a vignette). Item totals ranged from 6 (IA-RSS) to 47 (AFAT), with a mean of 18.9 items. Most measures (n = 19) used a Likert scale with 4–9 points. Only 1 scale had a dichotomous agree/disagree coding (IA-RSS), and the remaining measure used semantic differential scales (FPS-S). The DDS was the only measure to provide cut-off scores which indicate devaluation and discrimination of people with mental illness past the midpoint of the scale (Horch & Hodgins, 2008; Quigley et al., 2020).

Validation. Two types of validation were considered: comparison of stigma scores for an addiction versus a control condition (discriminant validity) and comparing the measure to other stigma measures (convergent validity). Five measures (IA-RSS, SSMIS, r-AQ, AQ-20, DSS) did not have any validation reported by the studies in this review (Brener et al., 2022; Francis et al., 2020; Harnish et al., 2016; Horch & Hodgins, 2008; Van Boekel et al., 2014). The AQ-27 has the strongest convergent and discriminant validity for both behavioural and substance addiction. The AQ-27 consistently correlated with related measures, such as lower motive to work with opioid users (Mahmoud et al., 2021), and higher social distance (Peter et al., 2019), and was the only measure with any strong correlations with other relevant measures (i.e., the AMIQ (Luty et al., 2006)). Most of the AQ-27 subscales indicated greater stigma for gamers and gamblers compared to someone experiencing a financial crisis with comparable impairment (Peter et al., 2019). A ‘physically disabled’

label generated less stigma than a cocaine addict, food addict, or smoker on the AQ-27 subscales (DePierre et al., 2013).

The BSDS (Ledford et al., 2021), MCRS (Van Boekel et al., 2014), ISMI (Can Gür et al., 2022), and SSS-S (C. C. Chang et al., 2020; Chen et al., 2022) showed adequate convergent validity with other measures. Conversely, the FPS-S (DePierre et al., 2013), WBIS and AFA (Burmeister et al., 2013) measures of weight stigma, relating to food addiction, did not have significant correlations for all their subscales or with all subscales of related measures. The self-stigma measures, PSQ (Ertl et al., 2021), SS-PG, WBIS (Ahorsu et al., 2020), and WSSQ (Meadows, Nolan, & Higgs, 2017) appear to have adequate discriminant validity. The remaining weight stigma measures, AFA (Burmeister et al., 2013; Latner et al., 2014; Ruddock et al., 2019), FPS-S (Ruddock et al., 2019), and AFAQ-R (Meadows et al., 2017) were inconsistent in that not all subscales detected stigma differences between vignettes with and without food addiction.

Components of Stigma

Table 2.1 summarizes the components of stigma in each measure as identified by Attribution Theory, the Danger Appraisal Hypothesis, and Social–Cognitive Models of stigma (Corrigan et al., 2001, 2003, 2009; Link & Phelan, 2001; Link et al., 2004). Overall, the AQ-27, AQ-21, and r-AQ provide the most comprehensive assessment of stigma, with at least 8 of the stigma components being assessed, followed by the SSS-S, DSS, and the MCRS, which cover 6 stigma components. Avoidance was the most frequently measured component of stigma (n = 13, 61.9%), followed by attributions of blame and responsibility (n = 12, 57.1%), and affective responses (n = 11, 52.4%) and stereotypes (n = 11, 52.4%) which mostly occurred in self-stigma measures. Coercion appeared the least frequently (n = 2, 9.5%).

Table 2.1.

Components of Stigma Addressed by Stigma Measures

Measure	Signals	Stereotypes	Ster: Blame & Responsibility	Ster: Dangerousness	Affective Response	Emot: Pity	Emot: Anger	Emot: Fear	Discrimination	Discr: Avoidance	Discr: Coercion	Discr: Segregation	Helping/Empowerment
Person-Specific Stigma													
Medical Condition Regard Scale (MCRS)		✓			✓	✓	✓			✓			✓
Social Distance Scale for Substance Users (SDS-SU)										✓			✓
Attribution Questionnaire – 27 (AQ-27)			✓	✓		✓	✓	✓		✓	✓	✓	✓
Attribution Questionnaire Short Form (r-AQ)			✓	✓		✓	✓	✓		✓		✓	✓
Attribution Questionnaire – 21 (AQ-21)			✓	✓		✓	✓	✓		✓	✓	✓	✓
Public Stigma													
Bogardus (1933) Social Distance Scale (BSDS)										✓			
Perceived Devaluation-Discrimination Scale (PDDS)		✓	✓						✓	✓			✓
Mental Illness Stigma Scale (MISS)	✓	✓			✓			✓		✓			
Depression Stigma Scale (DSS)	✓		✓	✓	✓				✓	✓			
Shortened Fat Phobia Scale (FPS-S)	✓	✓	✓										
Antifat Attitudes (AFA/AFAQ)			✓		✓								
Antifat Attitudes Test (AFAT)	✓		✓							✓			
Anti-Fat Attitudes Questionnaire Revised (AFAQ-R)			✓		✓								
Self-Stigma													
Weight Bias Internalization Scale (WBIS)	✓	✓			✓							✓	
Weight Self-Stigma Questionnaire (WSSQ)		✓	✓		✓				✓				
Perceived Stigmatization Questionnaire (PSQ)	✓					✓			✓	✓			✓
Self-Stigma of Mental Illness Scale (SSMIS)		✓			✓								
Self-Stigma of problem gambling (SS-PG)		✓	✓		✓								
Internalized Aids-Related Stigma Scale (IA-RSS)	✓	✓	✓		✓								
Internalized Stigma of Mental Illness Scale (ISMI)		✓							✓	✓		✓	✓
Self-Stigma Scale-Short (SSS-S)	✓	✓			✓	✓	✓			✓			

Note. Ster: Stereotypes, Emot: Emotions, Discr: Discrimination

Discussion

This review summarizes the literature on addiction stigma in relation to its frequency, predictors, correlates, and measurement. Most of the 99 reviewed studies focused on stigma related to substance-based addictions, with 29 studies on behavioural addictions which are becoming increasingly recognized in clinical and public health. Behavioural addiction studies have tended to focus on gambling disorder and food addiction, and half of all stigma studies on gaming disorder were published in the last two years (C.-W. Chang et al., 2023; Galanis et al., 2023; K.-Y. Lee et al., 2023). Frequency estimates of stigma varied across studies. In the lowest estimated frequency of addiction stigma, 12% of people endorsed stigma as a barrier to treatment seeking for people with an addiction (Jullian et al., 2023). The highest estimate indicated that 90% of individuals experiencing substance use problems reported experiences of stigma (Khalid et al., 2020). Consistent with experiments comparing diagnoses (Krendl & Perry, 2022), certain groups emerged as more frequently experiencing stigma, such as individuals with heroin-related problems (Deng et al., 2020) and adults with substance use problems (Balan et al., 2023). However, large variations in stigma estimates may reflect a lack of representative samples or lack of consistency in the definition and measurement thresholds for stigma. For example, dichotomous measurement of stigma varied in definition from negative stereotyping to hostility towards someone with an addiction (Deng et al., 2020; Peretti-Watel, 2003).

Studies reported that substance addictions tend to receive more public stigma than most physical or mental illnesses, this is consistent with a past review of AUD (Kilian et al., 2021). Substance addictions also tend to be more stigmatized than behavioural addictions. Greater stigma for substance addictions could relate to perceptions of the condition as being due to a biological cause and therefore more dangerous, less likely to recover, and more inherent (Loughman & Haslam, 2018). This finding is supported by past research which has reported a relationship between endorsing biogenetic causes of substance addictions and discrimination (Kilian et al., 2021). Theories related to biogenetic explanations of mental illness suggest that these causal models may reduce

blame by making the problem seem more inherent, but this explanation can also increase perceived dangerousness and desired social distance (Kvaale et a., 2013; Loughman & Haslam, 2018). A review by Angermeyer et al. (2011) reported that perceived responsibility for a person's mental illness was largely unrelated to discriminatory outcomes, which could explain the paradoxical effects of biogenetic explanations. However, stigma research is yet to compare rates of endorsement of biogenetic causes between substance and behavioural addictions.

Both substance and behavioural addiction diagnoses were more stigmatized compared to no diagnosis or suffering a non-clinically defined problem or impairment. However, it is not clear how much public stigma based on diagnosis might be internalized by people with an addiction or affect their willingness to seek help. These findings inform continuing debates on stigma affecting activities referred to in diagnostic categories for behavioural addictions such as gaming disorder and food addiction (Aarseth et al., 2017; Dullur & Starcevic, 2017; Gearhardt & Hebebrand, 2021; Rasmussen, 2014; Ruddock et al., 2019; Van Rooij et al., 2018). Further studies are needed to determine the conditions under which regular and harmful engagement in everyday activities is negatively perceived.

Large survey studies suggest that psychological distress is a strong predictor of stigma. Both public and self-stigma are positively correlated with psychological distress (Ahorsu et al., 2020; Dey et al., 2020; Fung et al., 2021; Moore et al., 2020; Opsal et al., 2016) and self-stigma was negatively related to concepts like self-esteem (C. C. Chang et al., 2020) and psychological flexibility (Uygur et al., 2020). These findings are consistent with the Displaced Aggression hypothesis which describes that negative moods can prime people to make more negative judgements of otherwise ambiguous cues (Ottati et al., 2005).

Another important finding was that studies reported a negative relationship between familiarity with addiction and public stigma (Adlaf et al., 2009; Avery et al., 2013; S. A. Brown, 2011; Dey et al., 2020; Goodyear et al., 2018; Hing, Russell, Gainsbury, & Nuske, 2016; Johnson-Kwochka et al., 2021; Loyal et al., 2022; Van Boekel et al., 2014; Wild et al., 2021). However, most studies of

familiarity used correlational survey designs. Only one experimental study (K. L. Brown & Russell, 2019) manipulated contact, using video footage rather than in-person contact. These findings support the contact hypothesis which suggests that positive contact with stigmatized people can reduce stigma (Couture & Penn, 2003; Desforges et al., 1991; Islam & Hewstone, 1993) and tentatively indicate that increasing contact with people with addiction could be an effective intervention for stigma. In the literature, it has been theorized that close relationships with people with an addiction may also increase stigma towards people with an addiction when burden due to caretaking or stigma by as sociation is experienced by those close to them (Corrigan & Nieweglowski, 2019). This theoretical U-shaped trend for familiarity where stigma is lowest for people with moderate involvement with people with an addiction is not evaluated by most quantitative analyses which only consider linear relationships. Therefore, it is feasible that the more mixed findings of familiarity on behavioural addiction stigma compared to substance addictions could relate to different distributions or nonlinear relationships of familiarity to stigma.

Experimental studies, mostly relating to behavioural ad dictions, demonstrate different effects of explaining addiction as a biological process on stigma towards addictions (Kelly et al., 2021; Latner et al., 2014; Montemarano & Cassin, 2021). This research generally supports theories that neurobiological explanations should reduce blame by reducing perceptions of the illness as a moral or character f law (Buchman et al., 2010). Neurobiological explanations of an illness may increase stigma by presenting it as more inherent, harder to treat, and requiring greater distance from the person (Loughman & Haslam, 2018). However, correlational research examining disease model or biological process endorsement of substance addictions on stigma has offered mixed support for this possibility (Bannon et al., 2009; Kloss & Lisman, 2003; Ruddock et al., 2019; Rundle et al., 2021; Wild et al., 2021).

Measures used for addiction stigma research were commonly adaptations of medical or other mental health stigma scales. Few specific measures have been developed for other behavioural addictions, with only two measures devel oped for problem gambling. Measures with

cut-off scores that consider spectrums from negative to positive attitudes were scarce and would be beneficial for understanding stigma prevalence or the effects of stigma interventions. The AQ-27, a person-specific measure of public stigma, had the strongest support for its construct and convergent validity. Validation of other measures of self-stigma, and public stigma measures assessing perceptions of the illness more generally, could be beneficial for addiction research. This review also indicates that food addiction stigma measures should be developed, as the use of weight stigma measures in this area do not show consistent convergent or discriminant validity. The analysis of stigma components showed that avoidance was the most frequently measured. Person-specific stigma measures tended to cover the most stigma components, and social distance measures include few components of stigma and do not capture instances where someone may have negative thoughts towards a group but do not intend to act on these thoughts.

Limitations

This review has several limitations. Papers were excluded if they were not written in English or peer-reviewed, which may limit the representativeness of the studies. Additionally, some studies that used stigma as a predictor rather than an outcome measure in correlational research, or that used more generic measures of attitudes rather than stigma-specific measures, may have provided useful insights but did not fit the inclusion criteria. For example, studies examining barriers to treatment seeking may have considered shame or embarrassment as concepts related to self-stigma but were considered beyond the scope of this review if they did not intend to measure stigma (e.g., Evans & Delfabbro, 2005). Some substance addiction stigma measures were excluded due to the criteria for selecting measures. Exclusion of lesser used measures may have disproportionately affected addiction-specific measures as they are more specialized and may be used less than measures which apply to a range of illnesses, such as the Methadone Maintenance Treatment Stigma Mechanisms Scale (Smith et al., 2020), or the Pregnant Smoker Stigma Scale (Loyal et al., 2022). Therefore, an extended assessment of addiction stigma measures, which was beyond the scope of the present review, could provide useful insights. Furthermore, the use of a specific theory

to define which components of stigma were examined may be biased against measures based on different theories.

Future Directions

This review highlights several areas for further investigation. An important area is the study of whether labels of gaming disorder and other emerging behavioural addictions (see Brand et al., 2022) shift public perceptions of these conditions (Galanis et al., 2021, 2023). Research is needed to assess the prevalence of addiction stigma, and study its real-world effects on help-seeking. Relatedly, the field would benefit from standardized measures of self and public stigma with cut-off scores. Research could further investigate the relationship between addiction stigma and psychological distress, and the extent to which psychological flexibility may mediate this relationship (Hayes et al., 2004; Lillis & Hayes, 2007; Masuda et al., 2009). Further studies could identify how much public stigma leads to self-stigma, shame, and embarrassment, and subsequently affects treatment outcomes such as help-seeking behaviours. The ameliorating effects of familiarity and lower psychological distress on stigma could inform intervention programs. Studies could evaluate whether educational and contact programs increase knowledge and understanding of addiction, and reduce stigma and improve attitudes toward sufferers. More robust designs such as contact interventions (e.g., K. L. Brown & Russell, 2019) would gain insights into causal relationships between stigma and mental health.

Conclusions

This review critically summarized research into behavioural and substance addiction stigma from the last 20 years. Public and self-stigma were associated with greater psychological distress; addiction diagnoses are associated with more stigma than other mental and physical health conditions; and substance-based addictions are stigmatized more than behavioural addictions. Greater familiarity with addictive conditions tended to be associated with lower stigma. Although stigma frequency rates vary greatly, these findings indicate that people experiencing addiction perceive stigmatizing attitudes and behaviours that can become internalized as harmful self-stigma.

Countermeasures to reduce stigma, such as public education, are currently underdeveloped. Further research is needed to evaluate the nature and prevalence of addiction stigma and inform the development of countermeasures to combat stigma affecting the mental health and quality of life of individuals and their families.

Chapter Three: Study Two

Stigma and other public perceptions of recreational gaming and gaming disorder: A large-scale qualitative analysis

Publication

The following chapter (with minor changes) has been published in the journal of Computer in Human Behavior Reports [CC BY 4.0]:

Galanis, C. R., & King, D. L. (2025). Stigma and other public perceptions of recreational gaming and gaming disorder: A large-scale qualitative analysis. *Computers in Human Behavior Reports, 17,* 100581. https://doi.org/10.1016/j.chbr.2024.100581

Contributors

Both authors contributed to conceptualization (CRG 80%; DLK 20%), data collection and analysis (CRG 85%; DLK 15%), and writing and editing (CRG 85%; DLK 15%).

Funding Statement

This work received financial support from the Breakthrough Mental Health Research Foundation. The funding body had no influence on study design; collection, analysis and interpretation of data; writing of the report; and decision to submit the article for publication.

Abstract

Introduction: Individuals affected by addictive disorders commonly report stigma, which reduces engagement in treatment. To better understand the nature of stigma associated with gaming disorder, a new addictive disorder in the ICD-11, this study evaluated public perspectives of recreational and problem gaming. *Methods:* An online survey recruited 1337 participants aged 35–50 years via Prolific. Participants were administered questions about: (a) perceptions of problem gaming as an addictive disorder; (b) public perceptions of gaming disorder as a diagnosis; and (c) perceptions of the utility of a gaming disorder category. A thematic analysis identified three primary themes: (1) Public understanding of problem gaming, (2) Culture and context of attitudes towards gaming, and (3) Stigma responses to gaming. *Results:* Responses to a forced-choice survey question indicated that most (82%) participants endorsed problem gaming as an addictive disorder. Qualitative data indicated that some believed that a problem gaming diagnosis could increase stigma toward gaming and reduce treatment-seeking, whereas others believed that it would improve social supports and treatment availability. Gaming-related stigma affecting treatment engagement was associated with negative stereotypes about gamers (e.g., being 'lazy', 'childish', 'toxic') and gaming as an activity (e.g., 'waste of time', 'dangerous for children'). *Discussion:* This study shows that there are diverse views on problem gaming as a public health issue and mental disorder, and that these views are linked to perceptions of the need for resources and interventions. These data may inform research on gaming-related stigma experiences, as well as guide public health messaging to foster more balanced perceptions of gaming and reduce stigma judgments about individuals and families who experience gaming-related problems.

Keywords: Stigma, Problem gaming, Addiction, Qualitative, Public perceptions

Introduction

Stigma is defined as a discrediting attribute which can cause prejudice, devaluation, status loss, and discrimination (Link & Phelan, 2001; Link et al., 2004; Yang et al., 2007). Stigma is commonly experienced by people suffering from mental illness and has been reported in a range of disorders, including gaming disorder (GD; Casale et al., 2023; Galanis et al., 2023; Peter et al., 2019). These social judgments and actions towards people can impact their well-being, self-esteem, and social engagement (Bos et al., 2013; Link et al., 1989; Markowitz, 1998; M. G. Weiss et al., 2006). Stigma can affect a person's willingness to seek or engage with treatment for fear of being stigmatized by others (Corrigan & Wassel, 2008). As a recent mental disorder, gaming disorder has generated academic discussion of the potentially stigmatized aspects of gaming as a leisure activity. For example, some researchers have claimed that the recognition of the GD category in the International Classification of Diseases (ICD-11) in 2019 may generate or exacerbate moral panic, stigma, and other negative reactions toward both problem and non-problem gamers (Aarseth et al., 2017; Division 46 Committee, 2018; Ko et al., 2020; Markey & Ferguson, 2017; van Rooij et al., 2018). However, there is limited qualitative research on the GD diagnosis, including; how it may be associated with stigma towards people who game; the qualities of this stigma that may be specific to gaming; and how this stigma may be related to the acceptance of gaming problems, treatment-seeking, and seeking social support. Therefore, the present study aimed to examine social attitudes towards gaming disorder and what people perceive to be the impact of the diagnosis on gamers.

Gaming is an immensely popular hobby worldwide which can be normal and beneficial for users (Granic et al., 2014). However, gaming-related problems can be associated with bodily pain, repetitive strain injuries, social isolation, relationship conflict, psychological distress (e.g., depression and anxiety), poor sleep and diet, and loss of productivity (Ayenigbara, 2017; Saunders et al., 2017; Sublette & Mullan, 2012). In view of these issues, GD was introduced into the International Classification of Diseases (ICD-11; World Health Organization, 2018). Harmonizing with substance addiction models and gambling disorder, the criteria for GD refer to over-prioritization of gaming,

impaired control over gaming, and continuation of gaming despite an awareness of the experience of harms and consequences (King & Delfabbro, 2020). Some research has reported that these criteria do not always distinguish between clinical and non-clinical populations (Colder Carras & Kardefelt-Winther, 2018; Ferguson & Colwell, 2019; Przybylski et al., 2017) and the GD category has been opposed by the Media Psychology Division of the American Psychological Association and Psychological Society of Ireland (Division 46 Committee, 2018). To avoid the controversy of the addiction label, the term 'problem gaming' is often used by researchers to refer to gaming that is associated with significant negative consequences.

Stigma is commonly described as a process and as co-occurring components in social–cognitive models (e.g., Corrigan, 2000; Corrigan et al., 2003, 2009; Link & Phelan, 2001; Link et al., 2004; Rüsch et al., 2005). The first phase of stigma relates to the recognition that someone suffers from these problems due to learning about their diagnosis or noticing symptoms like withdrawing from other hobbies to play games (Corrigan, 2000; Link & Phelan, 2001; Link et al., 2004). This recognition of their problems may lead to stereotyping, affective reactions, and subsequent behavioural outcomes (Corrigan et al., 2003). Gamer-specific stereotypes have been noted in past studies, including views that people who game are generally unhealthy, overweight, and have poor social skills (Amby et al., 2020; Kowert et al., 2014). Behavioural outcomes may involve helping behaviours towards the stigmatized person if the observer takes pity on them or discriminatory outcomes like avoidance if the observer feels fear or anger (Corrigan et al., 2003).

Substance-based addictions are known to engender stigma, including perceptions of blame and dangerousness (Kilian et al., 2021), but there is limited research about stigma related to behavioural addictions such as GD (Galanis et al., 2021). Specifically, little is known about the nature of stigma among individuals with gaming-related problems. Some emerging research has sought to compare how people may appraise individuals with different psychological conditions. For example, experiments using vignettes have reported that GD tends to generate less public stigma than casino gambling or esports betting (Peter et al., 2019) but more than problem smartphone or social media

usage (Casale et al., 2023). Other research has demonstrated that cognitive and affective features of self-stigma of substance use disorders are weakly related to problem gaming symptoms (C.-W. Chang et al., 2023). These studies indicate that GD receives more stigma relative to other technology-based problems and less than gambling disorder, but also that self-stigma may lead to gaming as a coping mechanism.

Survey-based research has investigated clinician and scholar attitudes towards diagnostic categories, indicating that more than half of clinicians and scholars endorse GD as a mental health problem (Dullur & Hay, 2017; Ferguson & Colwell, 2019). Viewing an addiction as a disease is theorized to influence stigma in the form of reductions in blame and increases in compassion and treatment quality and availability, although it may also increase discrimination (Buchman et al., 2011). In their review, Schomerus et al. (2011) reported that alcohol use disorder is more stigmatized, and less likely to be considered a mental illness, than non-substance related mental illnesses. Additionally, viewing problem gaming as a disease rather than as a lifestyle choice reduced blame (Galanis et al., 2023). These studies indicate support for GD category among mental health professionals, and stigma towards gamers among lay persons. However, no research has investigated support for GD among members of the public or evaluated their attitudes towards gaming beyond quantitative measurement tools.

Although researchers refer to the stigmatized nature of gaming as a hobby and mental health condition, there are few descriptive accounts of gaming-related stigma due to a relative lack of qualitative data on problem gaming (Colder Carras et al., 2020; Karhulahti et al., 2023). In a vignette-based experiment comparing gamers with different levels of engagement, problem gamers received more public stigma than non-problem gamers, included blame, anger, fear, and avoidance (Galanis et al., 2023). However, research on stereotyping has indicated that recreational gamers still receive stigma, including perceptions of being less sociable, unattractive, and passive (Kowert et al., 2012).

The Present Study

Past research suggests that some problem gamers experience significant public stigma (Casale et al., 2023; Galanis et al., 2023; Peter et al., 2019). However, there are limited accounts of the nature or quality of gaming-related stigma. Another important issue in the GD literature relates to research that indicates support among academics and clinicians for the GD category. A common argument raised in debates on gaming disorder, for example, is that the classification may stigmatize recreational gaming and/or gaming culture (Dullur & Hay, 2017; Ferguson & Colwell, 2019). However, these arguments often cite negative media reports or portrayals of gaming and there is a general lack of survey or other empirical data on people's views about GD as a diagnosis. Currently, there is a lack of qualitative research on the diverse stigma-related perspectives on problem gaming, including whether an official GD diagnosis may affect people's views and experiences. Qualitative research is important for guiding other empirical research on the GD category and informing this work using lived experiences (Stutterheim & Ratcliffe, 2021). Stutterheim and Ratcliffe (2021) argue that qualitative research empowers community perspectives in a way that is important for social justice issues such as stigma and balances data collection with theory that can improve the reliability and validity of quantitative research. This methodology is therefore crucial in new research areas to ensure that quantitative research is guided by lived experiences and ideas about the mechanisms, rather than assumptions applied from past literature.

As part of a larger project on gaming-related stigma (see Galanis et al., 2023), the present study aimed to examine the public perceptions of problem gaming as a mental disorder. Using a framework analysis approach, this study examined participants' views through the lens of stigma process models (Corrigan, 2000; Corrigan et al., 2003, 2009). The study's aims were: (1) to examine different perspectives on the nature of problem gaming and the extent to which gaming is viewed as addictive; (2) to investigate whether gaming disorder as a diagnostic category may affect stigma; and (3) to explore the types of stigma towards problem and non-problem gamers.

Method

Participants & Recruitment

Recruitment was conducted through the crowd-sourcing platform Prolific which hosts an international sample of over 150,000 adult participants. Participants were eligible to participate if they were adults aged 35–50 years who reported playing video games less than 6 h per week. This age range sought to reflect stakeholders such as parents of adolescents who game, teachers, clinicians, and policymakers. Limiting the sample to this group facilitated more in-depth interpretation of the views of a specific cohort. A sample of 1407 participants were recruited and 1337 responded to at least one of the open-ended questions. The average age of participants was 40.4 years (SD = 4.4). Participants were 58.5% male (39.4% female and 1.2% other) and were mostly from Western backgrounds (UK: 43%; USA: 22.2%; Australia and New Zealand: 4.8%). Most participants were in a relationship (76.1%), had a child under 18 years (61.1%), employed (85.6%), and had an undergraduate degree (70.2%).

Design

The present study was part of an online experiment (see Galanis et al., 2023; preregistration details: https://osf.io/nkfm4 and Appendix A). The study involved administering participants a series of open-ended self-report questions. The questions provided participants with the opportunity to give in-depth explanations about their feelings, attitudes, and perceptions in relation to the GD classification and its social consequences.

Measures

Demographic Information. These questions requested demographic information including age, gender, relationship status, employment status, income, and nationality.

Open-Ended Questions. Four exploratory questions were developed by the research team, which included a clinical psychologist and two psychology professors with over 15 years of experience: (1) Do you think problem gaming can be considered an addictive disorder? (2) Do you think a diagnosis of gaming disorder would change public perceptions of gamers or gaming? (3) Do

you think a diagnosis of gaming disorder would be helpful for problem gamers? (4) Do you have any other comments about gaming or gaming perceptions? Participants provided written responses to these questions and there was no word limit on responses.

Procedure

Participants were screened for eligibility using the Prolific filters to make the survey available only to participants aged 35–50 years who reported playing video games for less than 6 h per week. The online survey was presented in English and administered using Qualtrics and took approximately 25 min to complete. Participants completed the demographic questions before being randomly assigned to groups and then completed the experimental phase of the study (see Galanis et al., 2023). They were then administered the open-ended questions used for the present study.

Ethics

The project was approved by Flinders University Human Research Ethics Committee (project ID 4349), and the procedures followed were in accordance with the Helsinki Declaration. Participants were provided with study information followed by an online consent form.

Data analysis

In total, there were 64,479 words across all written responses. The responses were analysed using a framework analysis approach (Gale et al., 2013; Parkinson et al., 2016; Ritchie & Spencer, 2002) supported by NVivo qualitative analysis software (Lumivero, 2020). Framework analysis was chosen because it provides greater structure and organization to the traditional thematic analysis approach and is particularly favourable for larger datasets (Gale et al., 2013; Parkinson et al., 2016). The framework analysis approach involves five stages: (1) familiarization with the data; (2) development of a framework for organizing and coding the data; (3) indexing, where the whole dataset is coded based on themes; (4) charting summaries of the data into a matrix with a row for each participant and a column for each code; and (5) mapping and interpretation of the dataset as a whole, to identify relationships between variables and interpret the data (Gale et al., 2013; Parkinson et al., 2016; Ritchie & Spencer, 2002).

A framework was developed during discussion between both authors based on study goals and emerging ideas, following the authors reading through the data. This framework included several codes (i.e., descriptive summaries of the data) such as: explanations of problem gaming (addiction and alternative explanations); stigma processes based on Corrigan's (2000) model (i.e., recognition of mental illness or differences, stereotyping, affective responses, discriminatory responses, and helping and empowering responses); and additional data-driven codes such as comparisons to addictions or hobbies, benefits of games, changes over time and time periods, game types and features, personality and individual differences, and parent–child relationship.

A sample of responses (n = 50) was used to assess if preliminary codes were adequate for summarizing responses and before settling on the codes stated above for coding the whole dataset. The first 50 participant responses were used for the first test of the framework and the last 50 responses were used to confirm and finalize the framework before coding the entire dataset. The contents of each code were checked to ensure content was internally consistent and data was moved to other codes if it appeared to better relate to the ideas and content appearing elsewhere. NVivo generated a matrix summarizing participant responses for each code. Mapping was then conducted, and relationships were identified between different codes to connect them as three main themes (Public understanding of problem gaming, Culture and context of attitudes towards gaming, and Stigma responses to gaming) with 10 subthemes collectively. The authors collaboratively discussed and refined the themes. The interpretation phase involved final adaptations of codes into themes to ensure that they appropriately represented and reflected the data.

Results

Table 3.1 presents a summary of participants' views on GD. Most (82%) participants indicated that they believed problem gaming could be considered an addictive disorder. There was less agreement on whether the diagnostic category of GD would change gaming-related public

perceptions. About two-thirds of participants indicated that they believed that a GD diagnostic category would be helpful for problem gamers.

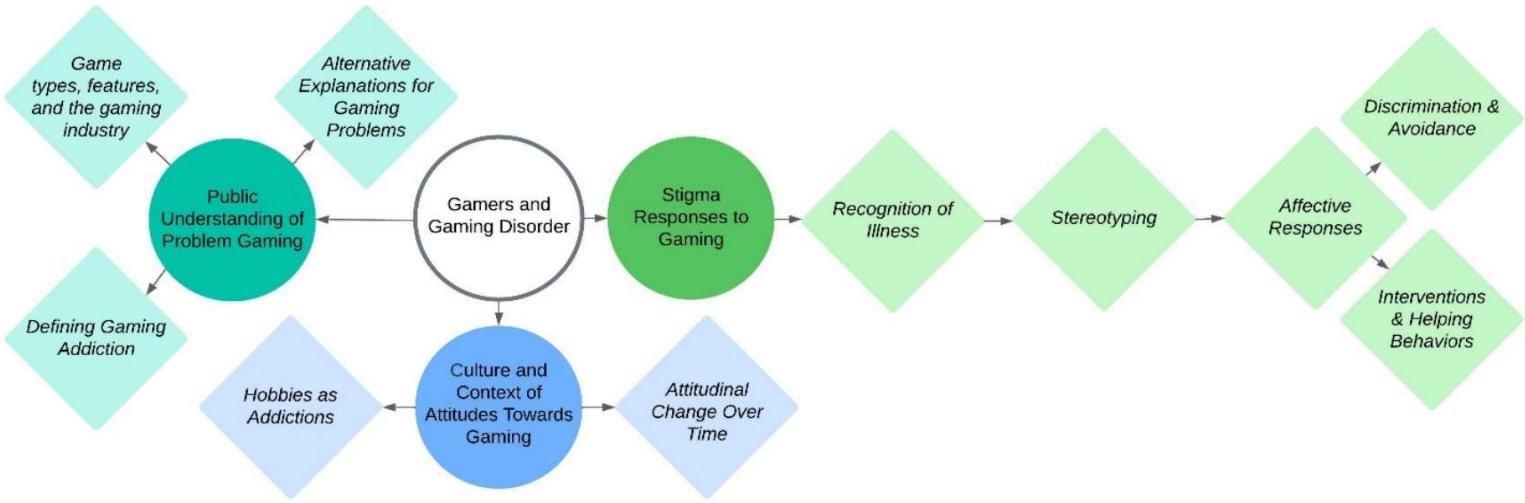
Table 3.1.

Summary of Participants' Responses to Forced-Choice Survey Questions; n (%)

Question	Yes	No	Unsure
Do you think problem gaming can be considered an addictive disorder?	1,096 (82.3%)	155 (11.6%)	81 (6.1%)
Do you think a diagnosis of gaming disorder would change public perceptions of gamers or gaming?	713 (53.7%)	403 (30.4%)	211 (15.9%)
Do you think a diagnosis of gaming disorder would be helpful for problem gamers?	843 (63.5%)	230 (17.3%)	255 (19.2%)

Figure 3.1.

Summary of Relationship Between Themes



Three main themes were identified using qualitative framework analysis. These themes were: (1) Public understanding of problem gaming; (2) Culture and context of attitudes towards gaming; (3) Stigma responses to gaming. These themes and subthemes are illustrated briefly in

Figure 3.1 and fully elaborated in Supplementary Table 3. In order from most common to least the subthemes were Alternative Explanations for Gaming Problems (T1); Stereotyping (T3; approximately one-quarter of this con tent focused on blame and control); Defining Gaming Addiction (T1; approximately one-third of this content focused on consequences due to gaming); Recognition of Illness (T3); Interventions and Helping Behaviours (T3); Hobbies as Addictions (T2); Game Types, Features, and the Gaming Industry (T1); Attitudinal Change Over Time (T2); Affective Responses (T3); Discrimination and Avoidance (T3). The most common theme was mentioned approximately 17 times more often than the least common theme.

Theme 1: Public understanding of problem gaming

Subtheme 1: Defining Gaming Addiction

Defining gaming addiction refers to participants' understanding of the critical criteria needed for them to classify or endorse gaming problems as an addictive disorder. Participants varied as to whether they thought excessive screen time or gameplay indicated addiction (e.g., "We do need to think about the time spent on them and whether it is healthy for them" vs. "I do not think simply playing a lot means you are necessarily addicted"). Many participants noted neurological responses to gaming as a reason to endorse that it is an addiction (e.g., "If the condition triggers the same mechanisms in the brain that a drug would"; "If it changes neuro chemistry within an individual"). Many participants acknowledged individual differences in susceptibility to gaming addiction (e.g., "It can be very addictive for the right person"; "Yes, for those who are predisposed to being addicted to stimulations"). Participants also highlighted symptoms consistent with the ICD and DSM categories for GD, including preoccupation (e.g., "It would dominate my free time and thoughts"), tolerance (e.g., "They want to game more and more"), withdrawal (e.g., "When his gaming time was limited, he would become moody and irritable"), loss of control (e.g., "If the gamer finds it difficult to stop"), experiencing problems from gaming (e.g., "I would consider it a disorder only if it was having a negative impact on other areas of their life").

Subtheme 2: Game types, features, and the gaming industry

Game types, features, and the gaming industry refers to elements of game design that participants thought influenced problematic gaming behaviour and blameworthiness of people who struggle to control their gaming. Participants referred to mobile games and MMOs which they considered to be particularly addictive (e.g., "I can't have Candy Crush or the many related games on my phone, I have to keep them off my phone completely or I play them obsessively"; "I have personally been addicted to playing an MMO"). Other noteworthy features of modern gaming included its immersive qualities, fears of missing out, complex achievement structures, and gambling mechanisms (e.g., "Gaming is addictive especially when your peers are playing. My son doesn't want to miss out so can be on there for hours if I let him"; "People get addicted to getting more levels and items"; "I fear that many games (particularly mobile games) utilize gambling like mechanics"). Participants thought that game development should be regulated, and developers should assume some responsibility for problem gaming (e.g., "Games are specifically engineered for engagement to make them addictive"; "New games should go through the same rigorous process such as new drugs, before being released").

Subtheme 3: Alternative Explanations for Gaming Problems

This theme refers to how participants explained problematic gaming when they disagreed with or rejected the addiction paradigm and language. For some, gaming was a personal choice (e.g., "It is about individuals' preference for it that causes them to spend more time at it"; "It's a poor choice that can have negatives and positives") or a parenting issue (e. g., "I can see it in my children and have introduced limits for them as they get addicted"; "I think it's a parenting thing"). Some proposed a new disorder (e.g., "I think it is not actually a gaming disorder but simply a habit disorder"), or believed that problem gaming was better explained by other disorders (e.g., "Those suffering from so called 'problem gaming' symptoms are clearly engaged in coping mechanisms for depression, anxiety …"; "It is more about the person's mental health before they start than the gaming itself"); or that problem gaming can be addictive but not a disorder (e.g., "I think it is

addictive, but would not describe it as a disorder"). Similarly, some participants reported that games are not inherently problematic given its benefits (e.g., "Gaming by itself is not bad"; "Games provide entertainment and escapism so naturally they will be used to relax").

Theme 2: Culture and context of attitudes towards gaming

Subtheme 1: Hobbies as addictions

This theme refers to the comparisons of gaming to other hobbies or substance-related addictions. These comparisons were used by participants as a frame of reference in their judgement of whether gaming should be considered addictive. Some participants reported that anything could be an addiction, including hobbies like gaming (e.g., "Gaming is like anything, it can become an obsession in a person's life"; "Gaming can be taken too far, just like many other things"); other participants made parallels between gaming and substances (e.g., "Gaming addiction is probably the same as smoking/drinking/drug addiction"; "Just like any drug"). Many participants sought to clarify that gaming should not be considered judged as less worthy or valid as a form of recreation (e.g., "I think gaming is as valid a hobby as watching movies, television, reading, or sports"; "I cannot understand how gaming can be considered any different to sitting and watching reality tv"); or thought gaming did not share enough similarities to substance addictions to be considered addictive (e.g., "I don't think the body is necessarily dependent on that unlike drugs").

Subtheme 2: Attitudinal Change Over Time

This theme refers to participants' beliefs about how fixed or changeable social attitudes are towards people with gaming problems. Some participants expressed that perceptions of gamers may tend to be fixed or slow to shift following the introduction of a diagnostic category of GD (e.g., "No, people are set in their ways"; "The real issues of public perceptions of gamers and gaming will only change with time"). Some participants expressed that there had already been a cultural shift towards gaming, irrespective of growing recognition of GD, as gaming becomes an increasingly normalized hobby and technology becomes more accessible (e.g., "Gaming is much larger now, and mostly everyone I know does some form of gaming, even the older people on their smartphones"). A

related reason was the significant uptake of gaming in the context of COVID-19 restrictions where individuals sought out indoor hobbies (e. g., “Everyone was asked to bunker down at home and not go out … I’m sure kids were playing a lot more videogames than usual”).

Theme 3: Stigma responses to gaming

Subtheme 1: Recognition of illness

Recognition of illness refers to participants’ expectations of how the introduction of a diagnostic category would influence public perceptions of the prevalence of problem gaming and engaging in labelling people as having a disorder. This theme was understood in the context of the first stage of the stigma process and leads to the subsequent themes of stereotyping, affective responses, and interventions and helping behaviours or discrimination and avoidance. Participants discussed a diagnostic category for GD in terms of how it would increase awareness and understanding of problem gaming leading to increase early detection and taking steps to respond to these issues (e.g., “People would start to realize that gaming disorder is really a serious problem”; “It would be helpful as it could detect the problem much earlier helping to prevent further damage”). Some participants thought that a GD diagnosis would not affect attitudes or that the diagnosis would be rejected by members of the public (e.g., “Putting a name to something does not change anything”; “I feel that there might be some pushback labelling it a mental health disorder”). Participants had diverse views on the prevalence of GD (e.g., “Increasingly more people are becoming addicted”; “I think “problem gamers” are so rare that it’s not worth creating a diagnosis”), or expressed concerns about how accurately GD would be diagnosed or judged (e.g., “It can be hard to tell when a love of gaming has crossed into a danger zone”; “More people would think that all gamers are problem gamers”). Participants also acknowledged the impact of recognizing GD on people suffering from problem gaming and felt that it would facilitate recognizing of their problems

or cause reluctance to seek help (e.g., “They would know what they are doing is wrong”; “I think it would make people afraid of seeking treatment because they might get a diagnosis”).

Subtheme 2: Stereotyping

This theme discusses the various prejudicial stereotypes regarding problem and non-problem gamers that participants endorsed as existing in the community. Some participants thought the category would be met with ridicule or be seen as an excuse for playing games too much (e.g., “I think many people would laugh at that idea”; “It might give them an excuse for their behaviour”). Participants also referred to stereotypes about gamers, including being ‘nerdy’ or ‘geeky’, ‘childish’, ‘useless’, ‘unambitious’, ‘lazy’, ‘a waste of time’, ‘lost’ or ‘without a life’, and involved in ‘rude’, ‘dangerous’, and ‘toxic’ online behaviour (e.g., “Most of them are put into a general category of a nerd”; “Most of the public would look at it as though the gamer is being childish or lazy”; “Gaming has been unfairly associated with real world violence and antisocial behaviour”; “The general view on gaming disorder is that it is due to a lack of character”; “When I think of problem gamers I think of incels who hate women”). Participants reported beliefs that certain groups may be more prone to holding negative attitudes towards gamers and gaming (e.g., “stigma that is seen by older generations”; “People who don’t game at all may potentially see it as more dangerous for the children”) and the role of the media in creating or maintaining negative attitudes (e.g., “Gamers can get unfair representation in the media (likely to shoot someone because they game etc)”).

Subtheme 3: Affective responses

Affective responses refers to the emotional reactions towards people who game, often in response to stereotypes or as a precipitant of behavioural outcomes. Affective responses to gamers included feelings of sympathy or understanding towards problem gamers (e.g., “Some people may be a little more understanding”; “I think it could make things worse because people wouldn’t understand”). Some participants expressed concerns that the diagnostic category may lead to increased frustration or fear towards problem gamers or gamers more generally (e.g., “Labels can scare people”; “A separate diagnosis stands to foster paranoia and fear”; “Frustrations for family of

problem gamers"). Other participants felt that gamers may experience feelings of shame, embarrassment, or guilt (e.g., "Possibly make non-problematic gamers feel ashamed to admit that they like to play videogames"; "Causing them more guilt feelings and feeling bad about themselves").

Subtheme 4: Interventions and helping behaviours

This theme discusses the positive behavioural responses that participants anticipate occurring as a response to the GD or diagnosis. These behaviours related to treatment, including treatment accessibility, treatment seeking, an increase in specialized services, and health insurance would be more likely to assist with costs (e.g., "I think official recognition would help, and mean that treatments were more easily accessible"; "Once it is classified I believe people would be more willing to seek help and offer help"; "This way they could seek specialized treatment"). Outside of treatment practices, participants believed that the recognition of GD would lead to increased investments in research and education endeavours, and empowering problem gamers, and work or school-based supports (e.g., "It might also lead to further research about non-drug/alcohol addictive tendencies"; "It may sound counterintuitive, but a diagnosis can be empowering"; "If it's diagnosed then it can be treated seriously"). Some participants perceived a diagnostic category as a route to recovery while others felt the diagnosis would not affect treatment availability (e.g., "Diagnoses can be a launch pad for personal change"; "The diagnosis would need to accompany treatment"). Although some participants thought treating GD was important, others thought this might be misguided (e.g., "More help and support should be available"; "Pretending this is a separate condition 'gaming disorder' is a distraction") and described what type of treatment was appropriate (e.g., "If there is some kind of medication to control the edge then it can be really helpful"; "Yes, but without the need of using drugs"; "Possibly, if it meant providing them therapy").

Subtheme 5: Discrimination and avoidance

This theme discusses a range of negative behavioural outcomes and discriminatory acts that participants anticipate would occur following the introduction of GD. These outcomes included

avoidance of gaming or gaming in secret, discrimination, treatment avoidance, or social isolation of problem gamers (e.g., “It could cause people who play games to hide”; “Mental health diagnoses are often used against people too”; “I think it would make people afraid of seeking treatment because they might get a diagnosis”; “If we were to diagnose people with gaming disorder we would just outcast them”). Some participants also highlighted involuntary treatment approaches (e.g., “Locking people up in a hospital or being afraid of them seems really drastic”; “Counselling could be the way forward but forcing it would reverse the intended outcome”).

Discussion

The present study examined the perceptions of gamers and gaming among non-gaming members of the public. Gaming-related stigma was associated with terms such as lazy, childish, toxic, or useless. These stereotypes tended to focus on the negative characteristics of the individual and less frequently cantered on the negative attributes of the activity (e.g., ‘waste of time’, ‘dangerous for children’). Many participants thought the GD category would lead to greater reductions in stigma in the form of increased understanding, social supports, and increased treatment availability for problem gamers, while others were concerned that the category could lead to discrimination, avoidance, and further isolation of gamers. Interestingly, some highlighted the role of the media for perpetuating stigmatizing portrayals of people who game, and the gaming industry was seen as having a responsibility to mitigate gaming problems.

The present study found that most participants thought that problem gaming could be an addictive disorder (82%) and that the GD category would be helpful (63%), although there were more mixed views about whether the GD category would change public perceptions of gamers or gaming. Perceptions of gaming as ‘addictive’ included references to perceived similarities with other hobbies or addictive substances. Participants who endorsed problem gaming as an addictive disorder highlighted features that distinguish problem gaming from non-problem gaming, such as loss of control and experiencing negative consequences due to gaming. The opposing view was that

gaming problems were better explained as a symptom of another illness rather than its own disorder.

Participants reported key features of addictive disorders, identified these within gaming problems, and applied these to distinguish between problem and non-problem gaming. Some of the features of addiction highlighted by participants were consistent with the ICD-11 and proposed DSM-5 criteria for GD (American Psychiatric Association, 2013; King & Delfabbro, 2020; Petry et al., 2014). For example, participants recognized that merely spending lots of time gaming should not be considered sufficient to diagnose GD and that an individual should experience negative consequences from their gaming. Some participants highlighted the role of the gaming industry in the development of GD due to features of video games such as gambling mechanisms, loot boxes, and achievement structures. This was consistent with past literature that has reported that games and social media are designed to increase engagement and prolong use (Montag et al., 2019; Mujica et al., 2022). On the other hand, many participants argued that problem gaming may be better explained as a choice or as a symptom of another illness like anxiety disorders, mood disorders, or gambling disorder rather than as a separate and distinct addictive disorder. GD as a possible symptom of other illnesses has been a feature of academic literature regarding the disorder's validity (Bean et al., 2017) as well as a consideration for internet use problems (Wölfling et al., 2015). The idea that GD is a symptom of other illnesses has some consistency with research that emphasizes GD's common comorbidities with many of the disorders mentioned (Burleigh et al., 2019; Gonzalez-Bueso et al., 2018).

Participants indicated that the formation of their opinions regarding the disease status of problem gaming was informed by comparisons to addictions and hobbies and the perceived threshold for defining an addiction. These judgements of GD as an addiction or its disease status may relate to a process for accepting other behavioural addictions. For example, past research has demonstrated there is a negative association between endorsing substance use disorders as a real disease and stigma (Lanzillotta-Rangeley et al., 2021). These comparisons of gaming to other

activities or addictions may also inform the severity of stigma a person holds based on whether they consider gaming like a hobby, such as reading, which has not been associated with stigma, or like an addiction, such as alcohol, which tends to be stigmatized (Kilian et al., 2021). Attitudes regarding the credibility of GD as an illness could affect stigma perceptions and, consequently, may inform future intervention strategies. For example, endorsing addiction as a disease has been related to reductions in blame and increased perceptions of the addiction as inherent with a poor prognosis (Haslam & Rothschild, 2000). Consistent with other research, participants acknowledged that attitudes may change over time irrespective of a diagnostic category, as cultural attitudes change (Earnshaw et al., 2022) and gaming becomes increasingly normalized and accepted.

On the one hand, some participants were concerned about the negative consequences of the GD category. This included the possibility that the GD category would lead to over-diagnosis of recreational gamers or public rejection of legitimate GD diagnoses. Gaming was perceived to be associated with negative and prejudicial responses which may be exacerbated by a diagnostic category, such as being perceived as lazy, childish, toxic, or useless. This exacerbation of prejudice is consistent with concerns in academic debates that the GD category might lead to moral panic about video gaming (Kardefelt-Winther, 2014; Markey & Ferguson, 2017; van Rooij et al., 2018). Consistent with past research on individuals that associate gaming with aggression (Przybylski, 2014), participants tended to report that older adults and people who do not play video games would be more likely to be prejudiced towards gamers. On the other hand, some participants thought that a GD diagnosis would be beneficial, reducing stereotypes such as blame towards people who experience problem gaming and increasing positive behavioural outcomes such as available treatment and social supports. This is consistent with social —cognitive models of stigma, such as Attribution Theory, which are used to understand stigma towards mental illnesses (Corrigan et al., 2003). Many stigma-related issues discussed by participants mirrored discussions of the merit of a diagnosis for problem gaming that have occurred among academics (Aarseth et al., 2017; Bean et al.,

2017; Di vision 46 Committee, 2018; Dullur & Starcevic, 2017; Kardefelt-Winther et al., 2017; King et al., 2018; Markey & Ferguson, 2017; Quandt, 2017; Van Den Brink, 2017).

The media was noted as having a role in creating negative attitudes towards gamers, highlighting a possible factor that maintains stigma towards gamers and which could affect public health messaging aimed at reducing stigma. This is consistent with Cultivation Theory which posits that the media plays a role in forming cultural norms (Bryant & Miron, 2004), and past research which has demonstrated that media consumption is related to support for policies on substance use (Wild et al., 2021). Although the study by Wild et al. (2021) focused on how the media could have positive influences in reducing stigma by emphasizing harm reduction strategies for people who inject drugs, participants in the present study had more negative views of the impact of the media on stigma towards people who play video games. The negative portrayal in the media of people who play videogames has been highlighted by Bergstrom et al. (2016), who reported similar stereotypes to those identified in the present study and noted that the media has linked violent crimes to video games. Similarly, a review by Wahl (2002) reported the media was a possible contributing factor for negative attitudes among children towards mental illness. This theme highlights the media as a possible maintaining factor for gaming stigma, and the key stereotypes to be addressed by intervention programs.

Participants reported that emotional and behavioural responses to the recognition of GD would vary from increased sympathy and helping behaviours, to increased frustration, fear, avoidance, and discrimination, and the rejection of certain treatment approaches. Participants' responses demonstrated the process of identifying and recognizing gaming problems in stereotyping, emotional responses, and behavioural reactions, which was consistent with the social–cognitive models of self and public stigma (Corrigan, 2000; Corrigan et al., 2003, 2009). Participants also anticipated that the GD category would assist gamers in recognizing when they have a problem. However, descriptions of gamers' responses to the GD category highlighted obstacles to treatment seeking in the form of label avoidance. Label avoidance is a stigma concept that explains that people

avoid treatment providers to avoid being labelled as suffering from a mental illness (Corrigan & Wassel, 2008).

Future directions

Qualitative research is limited in the behavioural addictions field, despite its potential to provide more personal insights into the experiences of problem gamers. This study highlights gaps in research for GD related stigma intervention programs, such as advocacy interventions which emphasize social justice issues (e.g., K. L. Brown & Russell, 2019) which have been examined in gambling disorder research by focusing on the gambling industry's role in problem use. Many participants emphasized the role of gaming design and industry practices in explaining problem gaming. The alternative explanations for problem gaming suggest that some people who disagree with the GD category make negative attributions of people who experience gaming problems, such as describing GD as 'making excuses'. In this way, further studies could investigate how perceptions of problem gaming as a disease impact on stigma-related beliefs. As recommended by Stutterheim and Ratcliffe (2021) qualitative research can be used to inform stigma reduction initiatives, guided by the specific stereotypes and negative behavioural outcomes identified in this study as points to be addressed by an intervention program. Additionally, future work could investigate whether perceptions of the helpfulness of the GD diagnosis may relate to broader views about health and medical systems as distinct from perceptions of gaming activities. For example, participants often associated diagnosis with helping or discriminating behaviours and these associations might be moderated by overall trust in the medical system, as many participants reported what they perceived to be the correct treatment for GD. The stereotypes and behavioural responses identified, that are specific to people who game, could inform adaptations of stigma measures for future quantitative studies on gaming disorder. For example, stigma measures do not typically consider

gaming specific stereotypes like ‘nerdy’ or ‘geeky’, ‘childish’, ‘without a life’, or ‘toxic’ which may be more relevant stereotypes to consider.

Limitations

The present study had several strengths, including a large sample size with low attrition and strong engagement with the open-ended question format. However, there were several limitations. The online survey format did not include probes and follow-up questions to expand on participant perspectives. The self-report survey format may also be susceptible to self-report biases such as socially desirable responding and fail to capture unconscious stigmatizing attitudes. The findings relate to the perceptions of people aged 35–50 years from predominantly Western countries who played videogames infrequently. Therefore, the findings may not generalize to other age groups, cultures, or different levels of gaming engagement and may be further limited due to the use of online sampling. Furthermore, participants made few references to differences in gender of gamers or differences between gaming as a hobby or for work. Therefore, our understanding of attitudes towards different groups of gamers is limited in this work. Additionally, as Roberts et al. (2020) describe, the personal identities of authors can influence research analyses and interpretation.

Conclusions

The present study found that gaming stigma can involve negative stereotypes about gamers including the view that people who game are lazy, childish, toxic, or useless. This study identified the myriad views that constitute some of the public understanding and levels of support for the GD category and its relationship to stigma. Public opinion and attitudes are diverse regarding support for the GD category and its social implications. This research highlights that concerns about the GD category may stem from the view of gaming as a personal choice and not a pathology. Some participants were concerned that the GD category may make some problem gamers reluctant to seek treatment due to an increase in stigma and a desire to avoid being labelled as having a mental illness. These findings highlight the important role of the media in perpetuating or reinforcing negative stereotypes, and the perceived role of the gaming industry at the level of responsibility for

the gaming product. A practical implication is that public messaging focused on promoting the legitimacy of gaming disorder should recognize and distinguish the healthy aspects of gaming. Future qualitative work should involve problem gamers to better understand their experiences of self-stigma, including how this relates to their understanding, expectations, and potential misgivings in relation to treatment.

Chapter Four: Study Three

Social and psychological predictors of perceived stigma towards adolescent problem phone use

Manuscript

This chapter includes a manuscript for the following study:

Galanis, C. R., Radunz, M., Quinney, B., Wade, T., & King, D. L. (Manuscript). Social and psychological predictors of perceived stigma towards adolescent problem phone use.

Contributors

CRG (80%) designed the study with input from MR (5%), TW (5%), and DLK (10%). MR (50%) and CRG (50%) led data collection and data management. CRG (95%) conducted data analysis with input from BQ (5%). CRG (85%) and DLK (15%) completed writing and editing.

Role of Funding Sources

This study was funded by a 2023 Flinders Foundation Health Seed Grant.

Acknowledgements

We are grateful to the Department for Education for their support in identifying suitable schools to participate in this study, and to all the school staff, parents, and students who participated.

Abstract

Adolescents are among the most frequent users of smartphones globally, which puts this group at risk of negative consequences associated with excessive phone use. Although addictions tend to attract more stigma than other mental disorders, research on stigma or negative public perceptions of overuse of phones and other digital technologies is limited. The aim of the present study was to examine variables that may predict public stigma towards adolescent problem phone use.

This survey used follow-up data from a two-wave longitudinal study with 1,160 adolescents from five South Australian public high schools. This study tested predictors of perceived stigma towards phone use problems using an adapted version of the *Self-Stigma of Mental Illness Scale: Stereotype Awareness Subscale*. The predictors of interest included problem phone use, social media posting, resilience, life satisfaction, school connection, bullying, and lack of social capital. More than one in six (16.7%) of the adolescent participants indicated that there is a societal stigma towards mobile phone use problems. A simultaneous regression analysis found that age, resilience, and lack of social capital positively predicted perceived stigma towards problem phone use, and social media posting negatively predicted stigma. Lack of social capital was the strongest predictor of stigma. This study demonstrates that some adolescents perceive public stigma towards phone use problems. This includes notions that adolescents with phone use problems are 'selfish', 'rude', and 'to blame for their problems'. Future research should examine how these perceptions may affect severity of phone use problems, self-stigma, and efforts to address these issues.

Keywords: Stigma; Problem Phone Use; Addiction; Predictors; Adolescents

Introduction

Stigma is commonly attributed to people who experience a range of mental illnesses, with particularly high rates and severity of stigma experienced by people with addictions (Kilian et al., 2021). Stigma is associated with status loss, discrimination, shame, negative self-worth, and impedes treatment-seeking (Corrigan et al., 2009; Kaushik et al., 2016; Yang et al., 2007). To date, limited research has examined stigma in relation to the emerging categories of behavioural addictions, which includes activities which are often engaged in a normal, healthy, and recreational manner (Aarseth et al., 2017; Dullur & Starcevic, 2017; Galanis et al., 2021; van Rooij et al., 2018). Mobile phone use is a prime example of an activity which has become a fundamental part of everyday life for many adolescents (Maston et al., 2024). However, the continual use of phones is often viewed as distracting and potentially addictive (Lenhart et al., 2010), which has led to governments implementing policy to protect children from the negative effects of digital devices (Boscaini, 2024; Global Education Monitoring Report, 2023). The present study aimed to inform our understanding of the predictors of stigma towards mobile phone use problems.

More than a quarter of adolescents (28%) in Australia use their digital devices for more than 5 hours per day for activities other than schoolwork (Maston et al., 2024). There is growing research that mobile phones provide constant connectivity and ‘companionship’ for students which can disrupt learning and lead to dependency on digital devices (Lenhart et al., 2010; Sapacz et al., 2016). Recognizing these problems, the concept of smartphone addiction has been proposed, which is conceptualized as loss of control over mobile phone use, prioritizing phone use over other activities, and negative consequences of use (Enez Darcin et al., 2016; Panova & Carbonell, 2018). However, a review by Panova and Carbonell (2018) reported that the literature favours the term ‘problem’ phone use rather than addiction. Problem use of mobile phones can involve negative effects on concentration, sleep, social engagement, mental health (e.g., anxiety, stress, and depression), and important life areas (e.g., school and work) (Elhai et al., 2017; Enez Darcin et al., 2016; Mahapatra, 2019).

Individuals experiencing problematic phone use may experience stigma due to limited understanding, or misunderstanding, of these issues. Stigma related to mobile phone use problems may include self-stigma, conceptualized as negative beliefs and attitudes towards oneself, e.g., 'I am weak for not being able to control myself' (Bos et al., 2013; Overton & Medina, 2008). Models of stigma describe a process where a person with mobile phone use problems becomes aware of public stereotypes in the community (i.e., public stigma) and then agrees with these stereotypes, applying the stereotypes to themselves, and subsequently experiences negative effects like reduced self-worth (Corrigan et al., 2009). Experiencing stigma, such as shame and fear of discrimination, may be a barrier to treatment-seeking for people with mental health concerns including mobile phone use problems (Corrigan et al., 2009; Kaushik et al., 2016).

Past research has reported a positive association between addiction symptomatology and stigma, including self-stigma (Ahorsu et al., 2020; Burmeister et al., 2013; C.-W. Chang et al., 2023; K.-Y. Lee et al., 2023; Meadows et al., 2017), perceived stigma (Ertl et al., 2021; Hing & Russell, 2017b), and public stigma (Galanis et al., 2023). Studies have examined alcohol use problems and behavioural addictions such as food addiction, problem gambling, problem gaming, problem smartphone use, and problem social media use, including two studies (Ertl et al., 2021; Galanis et al., 2023) using an experimental design. Survey-based studies have also reported that self-stigma and public stigma are related to psychological distress in food addiction, problem social media, problem smartphone use, problem gaming, gambling disorder, and substance-based addictions (Ahorsu et al., 2020; Cooper et al., 2018; Dey et al., 2020; Hing & Russell, 2017b; K.-Y. Lee et al., 2023; Moore et al., 2020; Opsal et al., 2016; Pérez-Pedrogo et al., 2022). Other wellbeing-related variables such as quality of life, psychological flexibility, and self-esteem also have negative associations with self-stigma among people with addictions (C. C. Chang et al., 2020; Razeghian Jahromi et al., 2023; Sarkar et al., 2019; Uygur et al., 2020).

Stigma has complex relationships with social engagement and social relationships. Social capital refers to the social resources obtained from interpersonal relationships, such as

companionship or practical and emotional support (Kawachi & Berkman, 2000). Social capital is reported to be protective against psychological distress, poor mental health, and associated with better educational outcomes and feeling safe to express a minority identity (Beals et al., 2009; Delaruelle et al., 2021; Novak & Kawachi, 2015; Rothon et al., 2012). Some stigma intervention programs involve social engagement with people with a mental illness (i.e., contact interventions; Bielenberg et al., 2021; K. L. Brown & Russell, 2019). Only one study has employed this intervention type for behavioural addiction stigma, focusing on gambling disorder, and provides some limited evidence of its efficacy (K. L. Brown & Russell, 2019). However, studies also report that familiarity with people with a mental illness or specific behavioural addiction is negatively correlated with components of stigma such as danger, fear, and desired social distance towards gaming and gambling disorder (Hing, Russell, Gainsbury, & Nuske, 2016; Hing, Russell, & Gainsbury, 2016; Peter et al., 2019). Although these studies are focused on the benefits of contact with members of the stigmatized group, it may not be essential for these social experiences to be with those who experience problems when it relates to activities which can also be social or recreational in nature, such as problem phone use. Therefore, whether positive social engagement or interactions (e.g., social capital, fewer experiences of bullying, or school connection) can reduce stigma of mobile phone use problems was of interest to the present study.

In addition to expanding past research on predictors of stigma, the present study was interested in evaluating two proposed mechanisms for the relationship between addiction symptoms and perceived stigma. The mechanisms proposed by Ertl et al. (2021) included that individuals recovering from addiction may be less prone to viewing other people's intentions negatively or that actual reactions towards them improved as they recovered. Ertl et al. (2021) argued that the qualitative findings favoured the latter explanation, however, these mechanisms have not been quantitatively tested. The possible mediators could be conceptualised in terms of the impact of addiction symptoms on a persons' psychological state or, behaviours that

violate social norms or are non-compliant with rules which may result in punishment or elicit negative responses.

The Present Study

The present study aims to investigate predictors of perceived stigma of problem phone use among adolescents. Although there is a growing research base on psychological distress and self-stigma, research has scarcely explored these associations in the developing behavioural addictions field. Insight into the formation of self-stigma is important for clinical case formulation and abating the negative impact and reinforcing aspects for mental illness. The present study was interested in examining what variables predict perceived stigma toward problematic mobile phone use among adolescent school students. Guided by past research, we predicted: (1) perceived stigma of problem phone use will have a significant positive correlation with problem phone use and psychological distress; (2) there will be a positive relationship between problem phone use symptoms and stigma that is significantly mediated by psychological distress. Psychological distress is expected to have a positive relationship with both problem phone use symptoms and perceived stigma of phone use; and (3) there will be a positive relationship between problem phone use and stigma, significantly mediated by ban adherence. Ban adherence is expected to have a negative relationship with both problem phone use symptoms and perceived phone use stigma. This study also sought to investigate the relative impact of a range of social and psychological predictor variables.

Method

Design

The present study involved a survey examining predictors of perceived stigma of problem phone use in schools. This study was part of a larger natural policy experiment (King et al., 2024) which involved a 2 × 2 mixed methods design, although the present study only used data from the follow-up survey when the condition stimulus was the same across both groups.

Participants

Participants in this study were high school students (i.e., grade 7 to 12) from South Australian public schools. The average Index of Educational Disadvantage (where 1 indicates the most disadvantage and 7 indicates the least disadvantage) across the five schools that participated was 5, ranging from 4 to 6 (Lelli, 2023). Four out of five schools that participated were from suburban areas and one from rural South Australia. The number of students attending each school ranged from approximately 400 to 1700 students with an average of approximately 1000 per school for the no ban group and 1400 for the ban group.

Five of the 16 schools that were contacted agreed to facilitate their students being involved in the surveys. These five schools totalled 5,229 students who were invited to participate in the survey. This led to a total of 1,466 survey commencements and 1,059 completions which comprised the sample for the present study. A G*Power sensitivity analysis indicated that n = 1,059 participants was adequate for detecting small effects (r = .11, f^2 = .024, f^2 = .015 respectively) in a bivariate correlation, a simultaneous regression analysis with 11 predictors, and a linear hierarchical regression analysis with two predictors, when power (1 – β error probability) is set to .95 and p (α error probability) is set to .05 (Faul et al., 2007, 2009). Therefore, the study was sufficiently powered to detect a small effect.

Measures

Primary Outcome Measure

Self-Stigma of Mental Illness Scale: Stereotype Awareness Subscale. This scale asks participants to respond regarding how much they believe others hold negative stereotypes towards people with a mobile phone use problem. The stigma measure was an adapted version of the *Stereotype* A*wareness* subscale of the *Self-Stigma of Mental Illness Scale (SSMIS)* developed by Corrigan et al. (2006; Horch & Hodgins, 2015). The adaptations of this scale were to ensure the stereotypes stated in each item were relevant to mobile phone use and the adolescent population being sampled. For example, the item stating, “I think the public believes most persons with a

mental illness are unable to get or keep a regular job" became "I think society believes that most students with a mobile phone use problem are unable to concentrate". The adaptation refers to school performance rather than job performance and aimed to be sensitive to mobile phone use problems rather than mental illness in general. The stereotype awareness subscale has ten items measured on 9-point Likert scale from 1 = 'I strongly disagree', to 9 = 'I strongly agree'. The nine items were summed to calculate a total score from 9 to 81, where higher scores indicate perceptions of more negative stereotypes. The total scale was normally distributed (skew = -.14, kurtosis = .30) with high internal consistency (McDonald's ω = .96).

Predictor Variables

Primary Predictor.

Problem Phone Use. Students who owned a mobile phone were asked six items about their relationship with their phone over the last six months. These questions ask participants about preoccupation, lack of control, withdrawal, and functional impairment related to their mobile phone use. This measure was adapted from the relationship with social media questions used in the Longitudinal Study of Australian Children (LSAC; Growing Up in Australia, 2021). Each question is rated on a 5-point Likert scale from 1 = very rarely, to 5 = very often, and the six items are averaged to make a total score where higher scores indicate more problematic use of their mobile phone. Internal consistency was high (McDonald's ω = .85). Participants were also categorized as having a mobile phone use problem by defining participants who endorsed (i.e., often or very often response) five items including the item which refers to impairment on mood, study, or relationships due to their phone use.

Secondary Predictors.

Social Media Posting. A single item from the LSAC (Growing Up in Australia, 2021) asked students to report how often they share or post on social media, excluding times that they only viewed or checked their account. This was measured on a scale from 9 = Hourly or more often to 1 = I don't have any social media accounts.

Resilience. Resilience was measured using five items from the Programme for International Student Assessment (PISA; OECD, 2017). These questions asked students how well they cope in difficult situations, their pride in their accomplishments, and their belief in themselves. The questions are scored from 1 = Strongly disagree to 4 = Strongly agree. The five items were averaged to calculate a total score from 1 to 4 where higher scores indicate more resilience. Internal consistency was high (McDonald's ω = .84).

Life Satisfaction. Three-items from the PISA (OECD, 2017) asked participants to rate their sense of meaning and purpose in life. These were scored from 1 = Strongly disagree to 4 = Strongly agree. A total score from 1 to 4 was calculated by taking the average of the three-items, where higher scores indicate higher life satisfaction. Internal consistency was high (McDonald's ω = .91).

School Connection. A 6-item measure from the PISA (OECD, 2017) asked participants about their sense of belonging and whether they feel lonely or make friendships easily. Their agreement with each statement was scored from 1 = Strongly agree to 5 = Strongly disagree. Items with positive statements (e.g., "I make friends easily at school.", "I feel like I belong at school.", and "Other students seem to like me.") were reverse scored, so that average score of all six items could be calculated where higher scores indicate more school connection. Internal consistency was high (McDonald's ω = .82).

Bullying. A 6-item measure from the PISA (OECD, 2017) asked participants about their experiences of exclusion, being teased, threatened, having their belongings taken, physical violence, or gossip. This was scored from 1 = Never or almost never to 4 = Once a week or more. A total scale was calculated by taking the average of all six items, where higher scores indicate more frequent experiences of bullying. Internal consistency was high (McDonald's ω = .88).

Lack of Social Capital. Three items were taken from the LSAC (Growing Up in Australia, 2021) that asked participants if they felt that they lacked companionship, felt left out and isolated. These three items were scored from 1 = Never to 5 = Always and were averaged to calculate a total score where higher scores indicate less social capital. Internal consistency was high (McDonald's ω = .88).

Mediators

Psychological Distress. Psychological distress was measured using the Kessler Psychological Distress Scale (K10). The 10 items in the K10 are scored on a 5-point Likert from 1 = none of the time, to 5 = all of the time. Scores are summed to create a total score from 10 to 50, where 10 indicates no psychological distress, and 50 indicates severe distress (Andrews & Slade, 2001). Internal consistency was high (McDonald's ω = .91).

Mobile Phone Ban Non-Adherence. Ban adherence was measured using a single question which asked participants '*How has your phone use changed since the mobile phone ban came into effect at your school?'*. Participants were given one of three possible responses: (1) I am following the ban and not using my phone at school; (2) I am still using my phone or a spare phone at school occasionally; or (3) I am still using my phone whenever I feel like it.

Covariates

Demographic Variables. Participants were asked to report demographic information, such as date of birth (used to calculate age), gender (i.e., male, female, non-binary, other), postcode, parental educational attainment (i.e., did not complete year 12, finished year 12, TAFE or trade qualification, bachelor degree, postgraduate degree) for both their mother and father, year level, name of their school, and the language that they speak at home the most (i.e., English or other). Participants were also asked whether they owned a mobile phone (response options included: no; yes, for less than a year, and; yes, for more than a year), and their socioeconomic status was recorded based on their school's *Index of Educational Disadvantage* from 1, indicating the most disadvantage, to 7 indicating the least disadvantage (Lelli, 2023)

Ethics

This project was approved by the first author's university Human Research Ethics Committee (Project ID: 5954). Participants completed an online consent form before commencing the study, following the presentation of a participant information sheet. Information about the study was also

sent out to parents and guardians with a link to an online survey form to advise if they did not want their child to participate in the study.

Procedure

Participating schools were sent a Qualtrics survey link which the school coordinator distributed to students on behalf of the research team. Following the online consent form, participants completed demographic information, a battery of self-report measures predominantly adapted from the LSAC (Growing Up in Australia, 2021) and the Programme for International Student Assessment (OECD, 2017), and some open-ended questions were included as part of a larger study. A copy of the baseline survey is included in Appendix D. The baseline survey is similar to the follow-up survey used for this study but includes some additional measures. Each survey took students 40 minutes to complete on average. The survey took place early in term 3 of 2023, ranging from mid to late August.

Statistical Analyses

The analysis plan was preregistered with the Open Science Framework (https://osf.io/wrm28; included in Appendix B) following data collection. Two-tailed tests were used with cut-off scores for statistical significance at $p < .05$ for all analyses. Standardized and unstandardized regression/correlation coefficients and means and standard deviations are reported. Each hypothesis is analysed separately. Bivariate correlation is used to test hypothesis 1 and check that the preconditions for a mediation analysis are met to test hypothesis 2 and 3 (Baron & Kenny, 1986). Pearson's correlations were used for these analyses, other than correlations with ban adherence, which used Spearman's rho as this is better suited for ordinal variables (Baak et al., 2019). Hayes process macro in SPSS was used for testing mediation relationships, as per the preregistered analysis plan, and an exploratory simultaneous regression was used to examine covariates and the relative impact of the predictors and mediators on perceived stigma of problem

phone use. Missing data was minimal and only due to drop out from the survey, therefore, participants who were missing data from key outcome variables were excluded from analysis.

Results

Table 4.1 reports the participant characteristics. Participants tended to be 14 years old, owned a phone (95.4%), posted on social media a few times per month, and were slightly more likely to report being male (50.2%). Additionally, 2.2% (*n* = 23) of adolescents who reported owning a mobile phone were categorized as experiencing a mobile phone use problem and 16.7% (*n* = 181) of adolescents endorsed that there is a societal stigma towards problem phone use (i.e., had a total score in the top third [58 or higher] of the stigma scale).

Table 4.1.

Participant Characteristics (*n* = 1,160)

Variable	*n* (%)
Age in years: M(SD)	14.4 (1.7)
Grade: M (SD)	8.6 (1.5)
Gender	
Male	579 (50.2%)
Female	551 (47.7%)
Non-Binary	8 (.7%)
Other	16 (1.4%)
Index of educational disadvantage: M (SD)	5.54 (.77)
Phone ownership	
Does not own a phone	53 (4.6%)
Owned a phone for < 1 yr	180 (15.6%)
Owned a phone for > 1 yr	921 (79.8%)
Social Media Posting: M (SD)	6.2/A few times per month (2.1)
Ban Adherence	
Not using their phone at school	875 (79.9%)
Occasionally using their phone at school	153 (14.0%)
Using their phone whenever they like	67 (6.1%)

The results of a bivariate correlation analysis are reported in Table 4.2. All variables required for the proposed mediation analyses (i.e., hypotheses 2 and 3) were positively correlated with small to medium effect sizes (i.e., stigma and psychological distress, stigma and phone ban non-

adherence, psychological distress and problem phone use, and psychological distress and phone ban non-adherence), other than the relationship between the predictor and outcome variables (i.e., problem phone use and stigma, respectively) which were not correlated. Therefore, the conditions required to conduct mediation analyses were not met (Baron & Kenny, 1986) and hypotheses 2 and 3 were not supported, and hypothesis 1 was only partially supported. Although the preconditions were not met, the mediation analyses which used the Process macro in SPSS are reported in supplementary tables 4 and 5, in order to fulfill the requirements of the preregistered analysis plan.

Table 4.2.

Bivariate Correlation Coefficients

	Stigma	Problem Phone Use	Psychological Distress
Stigma	-		
Problem Phone Use	.04	-	
Psychological Distress	**.14**	**.44**	-
Phone Ban Non-Adherence	**.08**	**.17**	**.15**

Note. Bold font indicates significance at. Spearman's rho is used for all correlations that included ban non-adherence, all other correlations used Pearson's correlation coefficient.

Other predictor variables were examined as part of an exploratory analysis to identify potential mechanisms that influence perceptions of community stereotyping towards students with mobile phone use problems. A simultaneous hierarchical regression (which included age, gender, Index of Educational Disadvantage, bullying, school connection, lack of social capital, psychological distress, problem phone use, social media posting, life satisfaction, and resilience) found that this model explained 6.0% (R^2 = .06) of the variance perceived stigma of problem phone use, F (11, 1001) = 5.77, $p < .001$. Table 4.3 reports the standardized and unstandardized coefficients of each predictor variable. Perceived stigma of problem phone use had a mean score of 42.10 and a standard deviation of 17.83 (skew = -.14). Age, resilience, and lack of social capital were positively

related to stigma, whereas social media posting was negatively related to stigma. No other variables were significantly related to stigma in this model.

Table 4.3.

Coefficients and Descriptive Statistics for Predictors of Perceived Stigma of Problem Phone Use

Variable	Unstandardized B	Standardized β	*p*	*M (SD)*
Age	**1.26**	**.12**	**<.001**	14.44 (1.66)
Gender	1.68	.05	.16	1.49 (.50)
Index of Educational Disadvantage	.60	.03	.43	5.54 (.77)
Psychological Distress	.13	.06	.14	22.30 (8.7)
Problem Phone Use	-.36	-.02	.63	2.12 (.95)
Social Media Posting	**-.56**	**-.07**	**.04**	6.19 (2.13)
Life Satisfaction	-.52	-.02	.58	2.91 (.73)
Resilience	**2.70**	**.08**	**.04**	3.01 (.54)
Bullying	1.07	.03	.38	1.33 (.54)
School Connection	-1.08	-.03	.45	2.93 (.56)
Lack of Social Capital	**2.42**	**.13**	**.004**	2.37 (.96)

Note. Bold font indicates significance. Gender was coded as 1 = Male and 2 = Female.

Table 4.4 reports the bivariate Pearson's correlations for all variables used in the simultaneous regression analysis. This demonstrated that an additional three variables were related to perceived problem phone use stigma when analysed independently of other variables. This included bullying, gender, and psychological distress which were positively correlated, and life satisfaction and school connection which were negatively related to stigma. However, all significant correlations had small effect sizes. Social media posting was not significantly related to mobile phone use.

Table 4.4.

Pearson's Bivariate Correlation Coefficients

	Stigma	Age	Gender	Index of Educational Disadvantage	Psychological Distress	Problem Phone Use	Social Media Posting	Life Satisfaction	Resilience	Bullying	School Connection	Lack of Social Capital
Stigma	-											
Age	**.12***	-										
Gender	**.08**	-.03	-									
Index of Educational Disadvantage	-.02	**-.32***	.03	-								
Psychological Distress	**.14***	**.07**	**.28***	**-.08**	-							
Problem Phone Use	.04	.02	**.23***	**-.08***	**.44***	-						
Social Media Posting	-.04	-.01	**.07**	-.01	**.13***	**.26***	-					
Life Satisfaction	**-.09***	-.05	**-.15***	**.07**	**-.45***	**-.17***	-.01	-				
Resilience	-.01	.03	**-.11***	**.07**	**-.41***	**-.22***	**-.07**	**.50***	-			
Bullying	**.10***	-.04	**-.09***	**-.07**	**.33***	**.23***	**.16***	**-.17***	**-.16***	-		
School Connection	**-.14***	-.03	**-.18***	**.06**	**-.51***	**-.23***	-.05	**.42***	**.47***	**-.39***	-	
Lack of Social Capital	**.19***	**.07**	**.20***	**-.08***	**.58***	**.35***	**.10**	**-.39***	**-.32***	**.42***	**-.65***	-

Note. Bold font indicates significance (i.e., <.05), * indicates significant at p <.01. Gender was coded as 1 = Male and 2 = Female.

Discussion

This survey study of high school students sought to identify the predictors of perceived stigma of problem phone use. Psychological distress and phone use in schools was positively related to increased perceptions of a social stigma towards problem phone use. However, problematic

mobile phone use did not relate to perceptions of stigma about problem phone use. When controlling for social and psychological variables, age, resilience, and lack of social capital were positively related to perceived stigma of problem phone use, whereas social media posting was negatively related. Other variables such as gender (i.e., female), age, psychological distress, poor life satisfaction, bullying, lack of social capital and lack of school connection were positively associated with stigma when considering only the bivariate relationships, with small effects. This suggests that lack of social capital, age, resilience, and social media posting explained more variance in perceived stigma of problem phone use than gender, psychological distress, life satisfaction, bullying, and school connection. However, these variables only explained a small amount of the variance in stigma of problem phone use (6.0%).

The positive relationship between resilience and stigma of problem phone use can be explained by the *just world hypothesis* (Ottati et al., 2005). The just world hypothesis predicts that people blame others for the misfortune they experience or perceive it as just and fair. This blame is theorized to have ego-defensive benefits as it protects someone from fearing that they are at risk of experiencing the same misfortune (Ottati et al., 2005). Past research has reported that belief in a just world is positively related to resilience (L. T. Wu et al., 2011) and better mental health outcomes (Jiang et al., 2016). This may explain why stigma towards mobile phone use problems increases with resilience, where more resilient people are more likely to attribute fault in others experiencing hardship as a way of reducing fears that they could be at risk of experiencing the same problems (Ottati et al., 2005; L. T. Wu et al., 2011).

The relationship between lack of social capital and perceived stigma of mobile phone use problems emerged as one of the strongest in the multivariate analysis. This was consistent with past research which has reported that social support is negatively related to self-stigma among people with an addiction (Birtel et al., 2017) and that social support can be protective against self-stigma (Brener et al., 2022). This finding was also consistent with past studies that have investigated contact with people with mental illness as an intervention for stigma (Bielenberg et al., 2021). However, the

present study suggests that social interaction or resources may have benefits for reducing stigma beyond only social engagement with people who experience phone use problems, and that its protective features may extend to perceived stigma. However, the small amount of variance in stigma explained by social capital could indicate that general social engagement is less influential over stigma than contact specifically with people who experience phone use problems.

Social media posting was a significant predictor of stigma towards phone use. One explanation is that social media posting may increase familiarity with the concept of phone use and problem phone use. Familiarity with people with an addiction is commonly associated with reductions in addiction stigma (Hing, Russell, Gainsbury, & Nuske, 2016; Hing, Russell, & Gainsbury, 2016; Horch & Hodgins, 2008; Lang & Rosenberg, 2017; Peter et al., 2019), where the highest level of familiarity is usually conceptualized as a person's own experiences with the addiction (Holmes et al., 1999). Alternatively, past research has highlighted the role of the media in perpetuating stigma towards mental illness (Galanis & King, 2025; Wahl, 2002). Adolescents routinely engage with news media via social media channels (Boczkowski et al., 2019; Maston et al., 2024; Notley et al., 2020), and therefore this may influence their perceptions of problem phone use stigma. This suggests that social media bans, such as the one proposed in Australia for young adolescents in 2025 (Boscaini, 2024) may potentially affect stigma towards phone use. The small amount of variance in problem phone use stigma explained by these variables could relate to social media posting not being specific enough to problem phone use to be considered by participants as a high level of familiarity or problem phone use related content may only make up a small amount of the content that some adolescents view on social media platforms.

Limitations

The present study had several strengths, including its large sample and standardized measures. However, there were also limitations. First, we cannot be certain that participants were consistent in their interpretation of the term 'problem phone use'. This could have encompassed being dependent on phone use (i.e., addictive or compulsive use) or being rude to others online (i.e.,

antisocial behaviour) (Galanis & King, 2025). A related issue is that the notion of 'perceived stigma to problem phone use' is relatively abstract and may not easily reflect the diverse experiences that adolescents have in relation to public views on phone use. The self-report nature of the study may also be associated with socially desirable responding. The convenience samples from schools may not be representative of the general population of adolescents. Given the correlational nature of this research, we are also unable to draw conclusions about causal relationships.

Future Directions

The small variance explained in the regression model in this study indicates that there is still much to learn about perceived stigma towards mobile phone use problems in adolescent samples. Future studies could investigate causal relationships between social capital and stigma by employing experimental designs or examine if certain types of social capital, social connection or moderators result in stronger relationships between social capital and stigma. For example, this could include considering whether the participant's community includes people who experience problem phone use or highly engaged users. The hypothesized mediation relationships may also be considered by future research using measures that involve more self-referential levels of self-stigma scales. Additionally, the mechanisms influencing the relationship between stigma and other variables such as social media use or resilience can be tested.

Conclusion

About one in six (16.7%) adolescents endorsed that there is a societal stigma towards mobile phone use problems. This study found that lack of social capital was the strongest predictor of perceived stigma of mobile phone use across a range of wellbeing, social engagement, and digital media related variables. Resilience and age were positively related to stigma, whereas social media posting was negatively related to stigma, as the only other significant variables in the simultaneous regression analysis. These four variables appear to account for the effects of gender, psychological distress, life satisfaction, bullying, and school connection. Future studies could examine intervention approaches for problem phone use stigma as part of a holistic approach to improving adolescent

wellbeing. Although this study provides insights into the nature of social engagement on perceived stigma, more research is needed to understand the major causes of stigma towards digital technology-related problems and how this differs from other health issues.

Chapter Five: Study Four

Stigma towards problem phone use in the context of a statewide school phone ban: A natural policy experiment

Manuscript

This chapter includes a manuscript of the following study:

Galanis, C. R., Radunz, M., Quinney, B., Wade, T., & King, D. L. (Manuscript). Stigma towards problem phone use in the context of a statewide school phone ban: A natural policy experiment.

Authors' Contributions

CRG (80%) and DLK (10%) conceptualized the study with input from MR (5%) and TW (5%). CRG (50%) and MR (50%) led data collection and data management. CRG (85%) conducted data analysis with the assistance of BQ (15%). All authors contributed to writing and editing (CRG 75%; DLK 10%; MR 5%; BQ 5%; TW 5%).

Role of Funding Sources

This study was funded by a 2023 Flinders Foundation Health Seed Grant.

Acknowledgements

We are grateful to the Department for Education for their support in identifying suitable schools to participate in this study, and to all the school staff, parents, and students who participated.

Abstract

Background: Addictive disorders are among the most stigmatized conditions. The growing recognition of behavioural addictions has resulted in policies regulating digital devices which may stigmatize users. This study sought to understand whether students perceived any public stigma towards problematic mobile phone use arising from the mandatory phone ban introduced to South Australian public schools in 2023. *Method:* Students were recruited from five public schools for two surveys; 1,111 participants at baseline and 1,059 at follow-up. This study involved a 2 (ban condition: baseline and follow-up or ban at follow-up only) × 2 (time: baseline or follow-up) mixed methods design on perceived stigma towards mobile phone use problems. The surveys included an adapted version of the Self-Stigma of Mental Illness Scale: Stereotype Awareness Subscale, the Longitudinal Study of Australian Children's measure of problem phone use, and the Kessler Psychological Distress Scale. *Results:* About one in five (18.6%) adolescents agreed that there was societal stigma toward problem phone use. This stigma encompassed stereotypes about problem phone users as being unpredictable, distracting, rude, and untrustworthy. The no ban group reported significantly more stigma towards problem phone use than the ban group at baseline, however, there was no significant change in stigma over time. *Discussion:* These results suggest that students tend to be ambivalent about societal perceptions of problematic phone use and that these attitudes may be relatively stable and unlikely to be negatively affected by broad institutional restrictions on access to devices. Future research should investigate the cause and impacts of stigma of problem phone use among vulnerable adolescent users.

Keywords: Stigma; Problem Phone Use; Longitudinal; Survey; Adolescent

Introduction

The study of stigma is important to our understanding of the lived experiences of people with mental illness and their treatment-seeking behaviours (Kaushik et al., 2016). Stigma involves status loss, encompassing negative attitudes and discrimination (Link & Phelan, 2001; Link et al., 2004). Researchers in behavioural addiction have debated whether diagnostic categories, such as gaming disorder, may exacerbate stigma for both healthy and recreational forms of these activities (Aarseth et al., 2017; Dullur & Starcevic, 2017; Galanis et al., 2021; van Rooij et al., 2018). Similarly, the use of mobile phones amongst adolescents has become cause for concern with respect to mental health and wellbeing, and has resulted in the implementation of mobile phone bans in schools across many different countries (Beland & Murphy, 2016; Beneito & Vicente-Chirivella, 2020, 2022; Cakirpaloglu et al., 2020; Kessel et al., 2020). The present study sought to understand how school phone policies may impact adolescents' perceptions of stigmatizing attitudes and beliefs towards those who experience problems related to overuse of mobile phones. This research was conducted in the context of a digital device ban in South Australian schools commencing in February 2023 and enforced statewide by July 2023 (DECD, n.d.).

There is growing evidence that mobile phones provide constant connectivity and ‘companionship’ for students which can be disruptive to learning (Lenhart et al., 2010). More than a quarter of adolescents (28%) in Australia report using their digital devices for more than 5 hours per day for activities other than schoolwork (Maston et al., 2024). Although it is not formally recognised by diagnostic classification systems, the proposed criteria for smartphone addiction have emphasized features such as physical and functional impairment, tolerance, withdrawal, preoccupation, and loss of control over mobile phone use (Enez Darcin et al., 2016; Panova & Carbonell, 2018). It has been conventional in the literature to conceptualise problem phone use along a continuum, where the most severe form may be an addictive disorder, and that most problem use tends to fall below this clinical threshold. It has been argued that the evidence tends to favour ‘problem’ phone use rather than addiction (Panova & Carbonell, 2018). Problem use of

mobile phones can have many negative impacts on concentration, sleeping, loneliness and friendships, mental health (e.g., anxiety, stress, and depression), or affect key aspects of their life (e.g., school or work) (Elhai et al., 2017; Enez Darcin et al., 2016; Mahapatra, 2019). Past studies have highlighted the mental health risks of constant accessibility and use for students in terms of developing 'dependency' on devices (Sapacz et al., 2016).

Increasing individual and societal concerns about 'problem' phone use may contribute to stigma towards problematic phone use. This could be in the form of *perceived stigma*, where a person is *aware* of negative stereotypes in the community (Horch & Hodgins, 2015). Applied to phone use, theoretical models of stigma suggest that people may become *aware* of stigma and stereotypes in the community, and *agree* with the stereotypes, causing public stigma or prejudice (Corrigan & Kleinlein, 2005). Those who experience mobile phone use problems may then experience self-stigma by *apply*ing these stereotypes to themself, and experience negative effects like reductions in self-worth (Corrigan et al., 2009). A mobile phone ban may be indicative of the public's negative attitude towards mobile phone use and thus elicit stigma among adolescents. This could be problematic as stigma can cause greater shame and discrimination, leading to barriers to treatment-seeking for people with mobile phone use problems (Corrigan et al., 2009; Kaushik et al., 2016).

Phone bans may also represent a form of *structural stigma*. Structural stigma refers to rules, laws, and institutional practices that discriminate against certain groups (e.g., people with mental illness; Bos et al., 2013; Hemeida & Goldberg, 2022). A restrictive phone policy, such as a ban on freedom to use digital technology, may impact students with phone use problems due to penalties for a behaviour that they lack control over (Hemeida & Goldberg, 2022). This conceptualization is based on Hemeida and Goldberg's (2022) description of structural stigma against substance use disorders where policies in educational facilities involve punishments such as school suspensions rather than offering help or support. It follows that exclusion from class time is also a feasible outcome for those who experience mobile phone use problems in schools with phone bans.

However, there is a paucity of research on structural discrimination towards mental illness and its impact on public and/or self-stigma. There is evidence that structural stigma in the form of bans on same-sex marriage has a negative mental health impact on wellbeing among people who identify as lesbian, gay or bisexual (Hatzenbuehler et al., 2010). In this way, we would expect that perceived stigma of problem phone use would increase following a phone ban (representing structural stigma).

Phone bans may influence both public and structural stigma and these two forms of stigma may be interrelated. Exposure-adaptation theory explains how policy influencing accessibility of mobile phones can influence person-level responses. This theory predicts that exposure to a phenomenon, such as mobile phones, can cause an increase in problems related to their use and these problems plateau or drop as resistance or normalization occurs over time (Shaffer et al., 2004; Storer et al., 2009). Delfabbro et al. (2022) investigated exposure-adaptation theory with respect to stigma toward gambling disorder by comparing countries with different gambling regulations. These authors reported that countries where gambling has been widely available for a long time reported less stigma towards problem gamblers compared to where gambling is newly available. In line with this theory, we may expect an opposite pattern, whereby the ban on phones initially reduces negative attitudes toward problem phone use and then increase as adolescents adapt to the new rules.

Past research demonstrates that stigma has deleterious effects on children and adolescents. These studies have identified that negative attitudes towards mental illness occur in early primary school or pre-school aged children (Swords et al., 2011; M. F. Weiss et al., 1986). A review by Wahl (2002) reported that cultural factors such as the negative media depictions of mental illness may contribute to attitude formation among children. Adolescents who take medication often endorse experiences of secrecy, treatment avoidance, shame and avoiding social interactions (Kaushik et al., 2016; Kranke et al., 2010). Young people with affective, behaviour, or post-traumatic stress disorders report experiences of stigma such as loss of friendships, being the subject of gossip among family members, and negative assumptions about their capabilities from school staff members (Moses,

2010). Studies also report on negative responses akin to those experienced by adults with mental illness, such as avoidance, pity, fear, and being disliked (Moses, 2010). Drawing on this past research on other mental illnesses, we expect that children or adolescents who have problems with phone use may feel disconnected from others within their school environment and experience low school belonging.

Research on mobile phone bans in schools have used pre-post or between-group designs to understand the impact of phone bans on bullying and academic achievement (Beland & Murphy, 2016; Beneito & Vicente-Chirivella, 2020, 2022; Cakirpaloglu et al., 2020; Kessel et al., 2020; King et al., 2024). These studies have reported that the mobile phone bans have small positive effects on academic performance, mostly due to improvements among the students who had the poorest performance (Beland & Murphy, 2016; Beneito & Vicente-Chirivella, 2020, 2022; Kessel et al., 2020). Mobile phone bans have been reported to improve conflict resolution, reduce bullying, and improve class satisfaction (Beneito & Vicente-Chirivella, 2020, 2022; Cakirpaloglu et al., 2020). However, the study by King et al. (2024) reported no short-term effect of the ban on problem phone use, school performance, psychological distress, life satisfaction, or school belonging. Despite several studies into school-based mobile phone bans, research on wellbeing-related outcomes of mobile phone bans, such as stigma of mental illness, is limited.

The Present Study

The present study aimed to understand the impact of a school mobile phone ban on perceived stigma towards problem phone use among students. Guided by structural stigma and exposure-adaptation theories, the hypotheses were: (1) the no ban group will report significantly greater stigma at follow-up than at baseline; (2) there will be a significant interaction effect of ban condition (phones banned or not banned at baseline) and time (baseline or follow-up) on stigma of problem phone use, where the no ban at baseline group has a greater increase in stigma from baseline to follow-up compared to the phone ban group; (3) there will be a significant main effect of

ban condition on stigma, where participants in the phone ban group will have more perceived stigma than the no ban at baseline group.

Method

Design

This natural experiment involved a 2 (Phone ban condition: phones banned at baseline and follow-up [i.e., *Ban Group*], phones only banned at follow-up [i.e., *No Ban Group*]) × (Time: baseline/end of term 2, follow-up/early to mid-term 3) mixed methods design on stigma of problem phone use among high school students. The design was quasi-experimental because participants were not randomly allocated and not blind to conditions. Self-reported survey measures were taken while students were transitioning to new policies on the use of personal devices at school.

Participants

Participants in this study were high school students (i.e., years 7 to 12) from South Australian public schools. The average Index of Educational Disadvantage (where 1 indicates the most disadvantage and 7 indicates the least disadvantage) across the five schools that participated was 5, ranging from 4 to 6 (Lelli, 2023). Three of the participating schools were in the South or South-Western suburbs of Adelaide, with one Eastern suburbs school and one Rural South Australian school. The number of students attending each school ranged from approximately 400 to 1700 students with an average of approximately 1000 per school for the no ban group and 1400 for the ban group. The device policies of participating schools indicated that the consequences for non-compliance with the ban included warnings, confiscation of devices, detention, or suspensions. These consequences varied by school and depended on the severity or frequency of the infringement. Figure 5.1. shows the flow of participants through the study. Five of the 16 schools that were contacted agreed to facilitate their students being involved in the surveys. These 5 schools totalled approximately 5,229 students who were invited to participate in the survey. Many of the invited students completed both surveys (n = 510), while others only completed the first (n = 601) or second (n = 549) survey. Two schools comprised the ‘phones banned at baseline and follow-up’

group (i.e., the ban group) and three schools comprised the 'phones banned at follow-up only' group (i.e., the no ban group). This led to a total of 1,527 survey commencements and 1,111 completions for the baseline survey, and 1,466 survey commencements and 1,059 completions for the follow-up survey. A G*Power sensitivity analysis indicated that a small effect size (f^2 = .01) could be detected with 1,059 participants when power (1 – β error probability) is set to .95 (Faul et al., 2007, 2009) with two predictor variables.

Measures

Primary Outcome Measure

Self-Stigma of Mental Illness Scale: Stereotype Awareness Subscale. This scale asks participants to indicate how much they believe others hold negative stereotypes towards people with a mobile phone use problem. The stigma measure was an adapted version of the *Stereotype* A*wareness* subscale of the *Self-Stigma of Mental Illness Scale (SSMIS;* Corrigan et al., 2006; Horch & Hodgins, 2015). This subscale is a measure of perceived public stigma (Horch & Hodgins, 2015). The adaptations of this scale were to ensure the stereotypes stated in each item were relevant to mobile phone use and the adolescent population being sampled. For example, the item stating, "*I think the public believes most persons with a mental illness are dangerous*" became "*I think society believes that most students with a mobile phone use problem are bullies*" or "*I think the public believes most persons with a mental illness are below average intelligence*" became "*I think society believes that most students with a mobile phone use problem are unable to achieve good grades*". The adaptation used school-relevant language but sought to address similar themes and aimed to be sensitive to mobile phone use problems rather than mental illness in general. The stereotype awareness subscale has ten items measured on 9-point Likert scale from 1 = 'I strongly disagree', to 9 = 'I strongly agree'. Consistent with scoring conventions reported by Horch and Hodgins (2015), the nine items were summed to calculate a total score from 9 to 81, where higher scores indicate perceptions of more negative stereotypes. The scale had high internal consistency ratings (McDonald's ω = .96) at both baseline and follow-up. The total scale was normally distributed at baseline (skew = -.15,

kurtosis = -.64) and follow-up (skew = -.14, kurtosis = .30). The continuous scale was used for data analysis, however, some additional descriptive statistics (i.e., frequency rates) were reported by dividing the scale into three equal parts (24–25 points each). The scores were categorized as not perceiving any stigma (stigma absent; participants who scored 9–32 points), indifferent (participants who scored 33–57 points) and perceiving that there is a societal stigma of problem phone use (stigma present; participants who scored 58–81 points).

Covariates

Demographic Variables. Participants were asked to report date of birth (used to calculate age), gender (i.e., male, female, non-binary, other), postcode, parental educational attainment (i.e., did not complete year 12, finished year 12, TAFE or trade qualification, bachelor degree, postgraduate degree) for both their mother and father, year level, name of their school, and the language that they speak at home the most (i.e., English or other).

Phone Use in School [Ban Adherence]. A single question asked participants about their adherence to the mobile phone ban. There were three response options: (1) I am following the ban and not using my phone at school; (2) I am still using my phone or a spare phone at school occasionally; or (3) I am still using my phone whenever I feel like it.

Mobile Phone Ownership. A single question was used to ask students if they owned a mobile phone. Multiple choice responses included "*No, I do not own a mobile phone*"; "*Yes, I got my first phone this year*"; "*Yes, for more than a year*". This was coded dichotomously as *yes* or *no* responses for the purpose of this study.

Problem Phone Use. This measure asks participants about how they use their mobile phone, including preoccupation, continual use, using their phone to forget personal problems, unsuccessful attempts to stop use, withdrawal, and negative impact resulting from its use. Students who owned a mobile phone were asked six questions about their mobile phone use over the last six months. These questions were adapted from the questions used in the Longitudinal Study of Australian Children (LSAC; Growing Up in Australia, 2021). An example item is "*I have tried and not succeeded in*

stopping using my phone". Each question is rated from 1 = very rarely, to 5 = very often, and the six items are summed to make a total score where higher scores indicate more problematic use of their mobile phone. Internal consistency was high at baseline (McDonald's ω = .84) and follow-up (McDonald's ω = .85).

Psychological Distress. Psychological distress was measured using the Kessler Psychological Distress Scale (K10). The 10 items in the K10 are scored on a 5-point Likert from 1 = none of the time, to 5 = all of the time. Scores are summed to create a total score from 10 to 50, where 10 indicates no psychological distress, and 50 indicates highest level of distress (Andrews & Slade, 2001). Internal consistency was high at baseline (McDonald's ω = .90) and follow-up (McDonald's ω = .91).

Ethics

This project was approved by Flinders University Human Research Ethics Committee (Project ID: 5954). Participants completed an online consent form before commencing the study, following the presentation of a participant information sheet. Information about the study was also sent out to parents and guardians with a link to an online survey form to advise if they did not want their child to participate in the study.

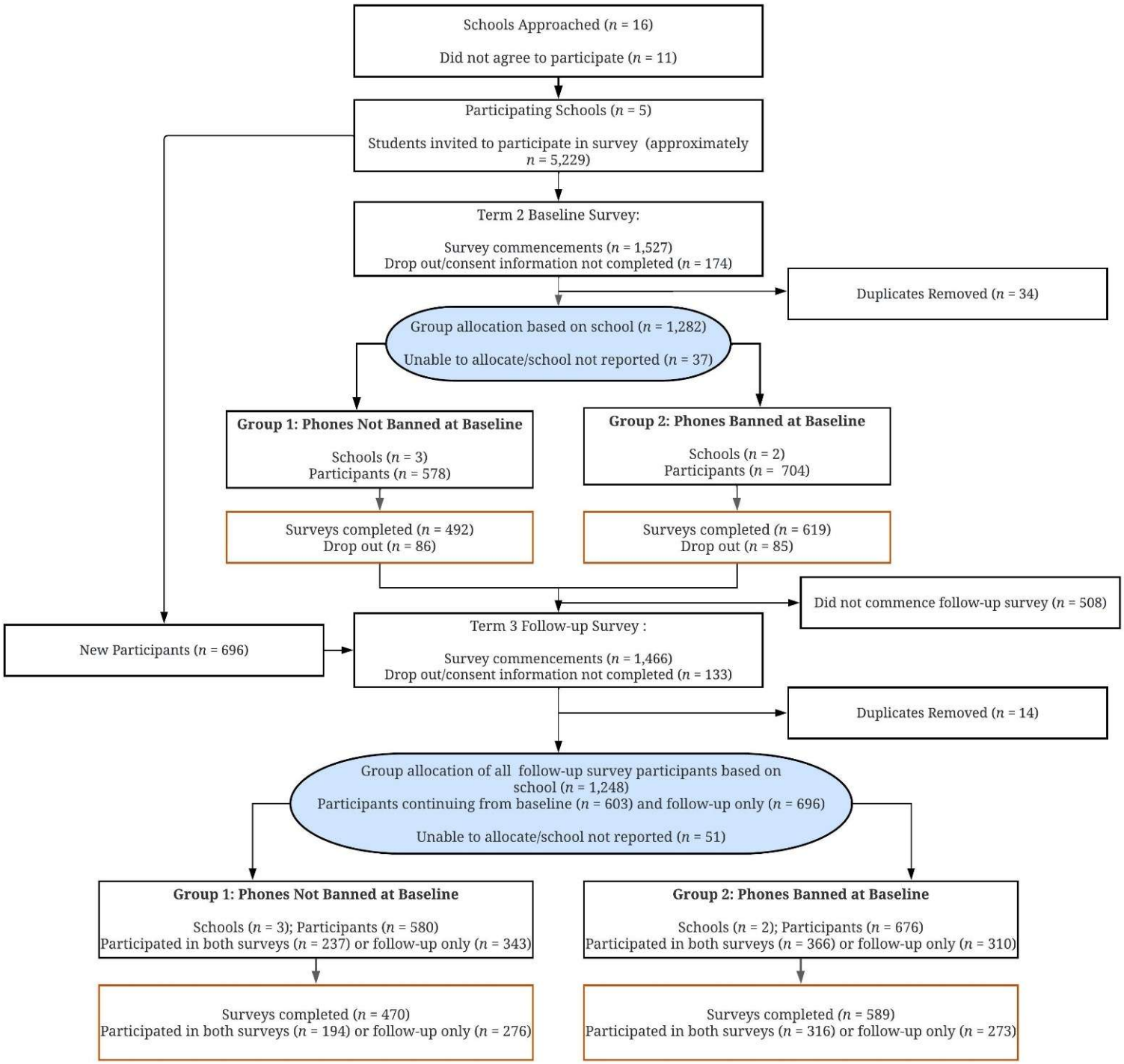
Procedure

Participating schools were sent a Qualtrics survey link which the school coordinator distributed to students on behalf of the research team. Following the online consent form, participants completed demographic information, a battery of self-report measures predominantly adapted from the LSAC (Growing Up in Australia, 2021) and the Programme for International Student Assessment (OECD, 2017), and some open-ended questions were included as part of a larger study. A copy of the baseline survey is included in Appendix D. A similar survey was conducted at follow-up, with a new survey link provided to schools and distributed to students. Each survey took students 40 minutes to complete on average. The baseline survey took place in the last weeks of

term 2 of the school year, ranging from mid-June to the first week of July 2023, and the follow-up survey took place early in term 3, ranging from mid to late August 2023.

Figure 5.1.

Flow of Participants Through the Study



Statistical Analyses

The analysis plan was preregistered with the Open Science Framework (https://osf.io/89mjk; included in Appendix C) following data collection. All participants were included in any analyses for which they had completed relevant measures. Proportions are presented for group stigma ratings. Two-tailed tests were used with cut-off scores for statistical significance at $p < .05$ for all analyses. Independent *t*-tests and chi-square analyses were used to check for between-group differences on possible covariates. Means standard deviations and proportions are reported for the covariate checks.

A linear mixed model (LMM) was used to analyse the interaction and main effects of two independent variables (phone ban condition and time) on perceived stigma of problem phone use. Estimated means and standard errors are reported and used to calculate Cohen's *d* and 95% confidence intervals using Wilson's (n.d.) effect size calculator. Covariates with significant between-group differences were controlled for in the LMM, and nested effects by school were assessed by including school as a clustering variable.

Results

Participants

Table 5.1 provides a list of participants' characteristics by survey wave and group allocation in frequency (percentage) format unless otherwise stated. Participants were excluded from analyses for not completing the primary outcome measure for this study in either survey ($n = 238$), or if they did not report their school and were unable to be assigned to a group ($n = 28$). Thus, the final sample included in analyses was 1,749.

Table 5.1

Participant Characteristics (*n* = 1,749)

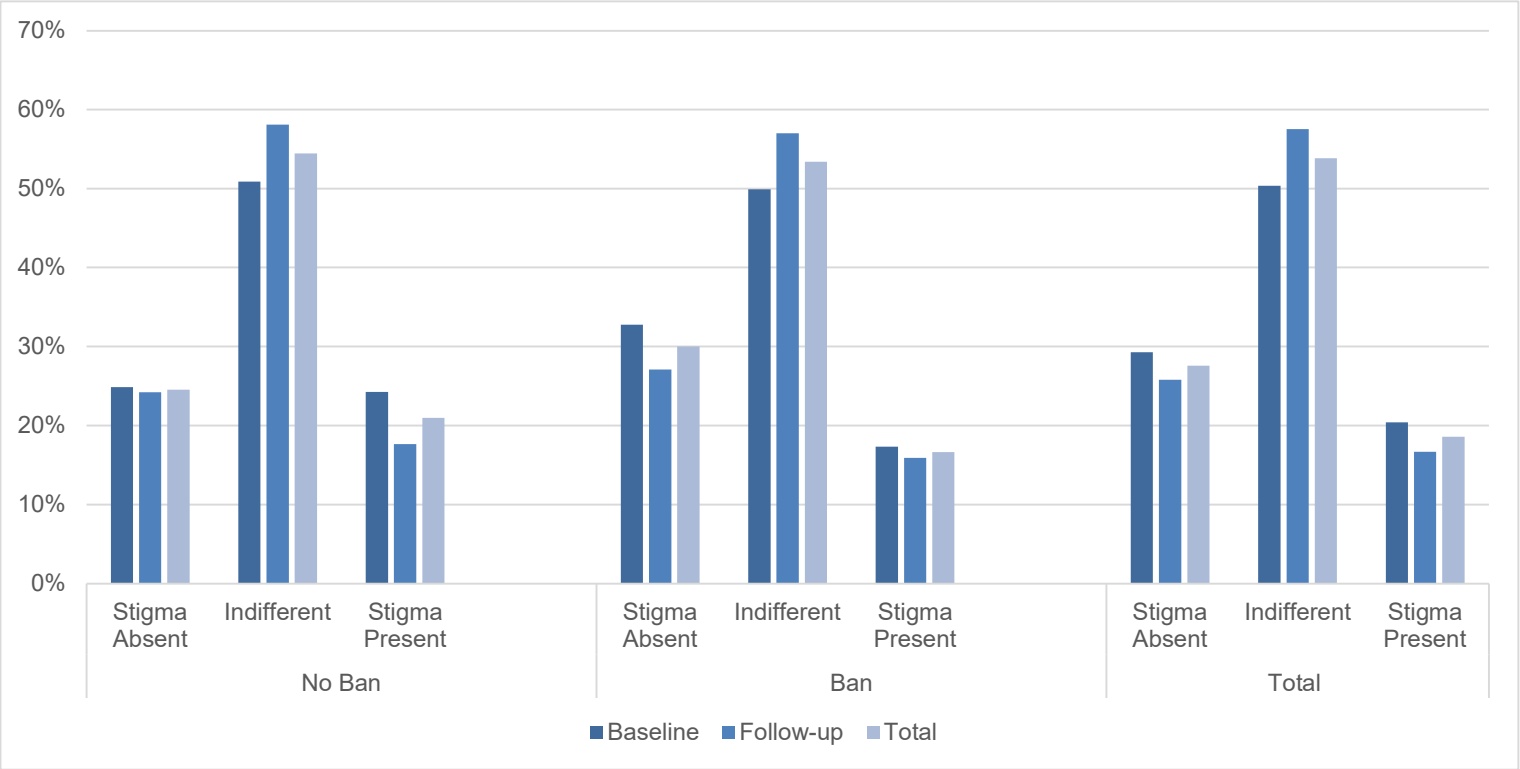
	Baseline (*n* = 1,178)		Follow-up (*n* = 1,160)	
	No Ban Group (*n* = 526)	Ban Group (*n* = 652)	No Ban Group (*n* = 524)	Ban Group (*n* = 636)
Age in years: M(SD)	14.79 (1.66)	14.09 (1.30)	14.70 (1.65)	14.18 (1.40)
Gender				
Male	245 (47.0%)	281 (43.3%)	273 (52.5%)	306 (48.3%)
Female	251 (48.2%)	347 (53.5%)	235 (45.2%)	316 (49.8%)
Non-Binary	16 (3.1%)	9 (1.4%)	4 (0.8%)	4 (.6%)
Other	9 (1.7%)	12 (1.8%)	8 (1.5%)	8 (1.3%)
Index of Educational Disadvantage: M(SD)	5.53 (.68)	5.47 (.88)	5.60 (.63)	5.5 (.87)
Phone Ownership				
Does not own a phone	22 (4.3%)	22 (3.4%)	20 (3.8%)	33 (5.2%)
Owned a phone for < 1 yr	96 (18.6%)	104 (16.1%)	76 (14.6%)	104 (16.4%)
Owned a phone for > 1 yr	399 (77.2%)	521 (80.5%)	424 (81.5%)	497 (78.4%)
Language Spoken at Home				
English	407 (78.1%)	594 (91.7%)		
Other	114 (21.9%)	54 (8.3%)		
Ban Adherence				
Not using their phone at school		572 (87.5%)	485 (71.0%)	552 (87.6%)
Occasionally using phone at school		55 (8.4%)	112 (20.7%)	52 (8.3%)
Using their phone anytime		27 (4.1%)	45 (8.3%)	26 (4.1%)

Stigma Frequency

The measure of perceived stigma of problem phone use ranges from rejection to endorsement of the view that there is a societal stigma of problem phone use and participants were categorized as perceiving stigma as present, absent, or indifferent. Supplementary Table 6 provides the frequencies and proportions for each group, and Figure 5.2 reports the perceived stigma of problem mobile phone use by group. Across all groups and time points stigma of problem phone use was endorsed by 18.6% of participants (range 15.9%–24.2%).

Figure 5.2.

Percentage of Participants in Each Group that Perceive Stigma of Problem Mobile Phone Use



Covariate Check

T-tests and chi-square analyses were conducted to examine if there were any group differences on age, gender, phone ownership, phone relationship, and psychological distress. The descriptive and inferential statistics are provided in Table 5.2 These analyses indicated that age differed between groups at baseline, follow-up, and overall, with students in the no ban group being older than the ban group with small to medium effects. Overall gender differed by group where there were more female students in the ban group than the no ban group. All other comparisons were not significant across groups.

Table 5.2.

Covariate Analysis of Between-Group Differences at Baseline and Follow-Up

Covariate	Time	No Ban Group	Ban Group	Inferential Statistics	Effect Size
Age (in years)	Baseline	**14.85 (1.80)**	**14.09 (1.65)**	**t (1069.60) = 7.40, p <.001**	**Cohen's *d* = .44**
	Follow-up	**14.70 (1.78)**	**14.22 (1.53)**	**t (1027.70) = 4.84, p <.001**	**Cohen's *d* = .29**
	Overall	**14.82 (1.65)**	**14.22 (1.37)**	**t (1589.7) = 8.14, p < .001**	**Cohen's *d* = .40**
Gender (% female)	Baseline	251 (48.2%)	347 (53.5%)	χ^2 (3) = 6.34, p = .10	ϕ = .07
	Follow-up	235 (45.2%)	316 (49.8%)	χ^2 (3) = 2.55, p = .47	ϕ = .05
	Overall	**371 (45.5%)**	**489 (52.8%)**	**χ^2 (3) = 11.68, p =.009**	**ϕ = .08**
Phone Ownership (% yes)	Baseline	495 (95.7%)	625 (96.6%)	χ^2 (1) = .58, p = .45	ϕ = .02
	Follow-up	500 (96.2%)	601 (94.8%)	χ^2 (1) = 1.20, p = .27	ϕ = -.03
Phone Relationship	Baseline	2.37 (.86)	2.39 (.89)	t (1111) = -.37, p = .71	Cohen's *d* = -.02
	Follow-up	2.21 (.84)	2.24 (.86)	t (1080) = -.56, p = .58	Cohen's *d* = -.03
Psychological Distress	Baseline	23.82 (8.75)	23.29 (8.63)	t (1144) = 1.03, p = .31	Cohen's *d* = .06
	Follow-up	22.24 (9.07)	22.35 (8.44)	t (1037.33) = -.22, p = .83	Cohen's *d* = -.01

Note. Bold font indicates significant differences between ban and no ban conditions.

Analysis of Ban Condition Over Time

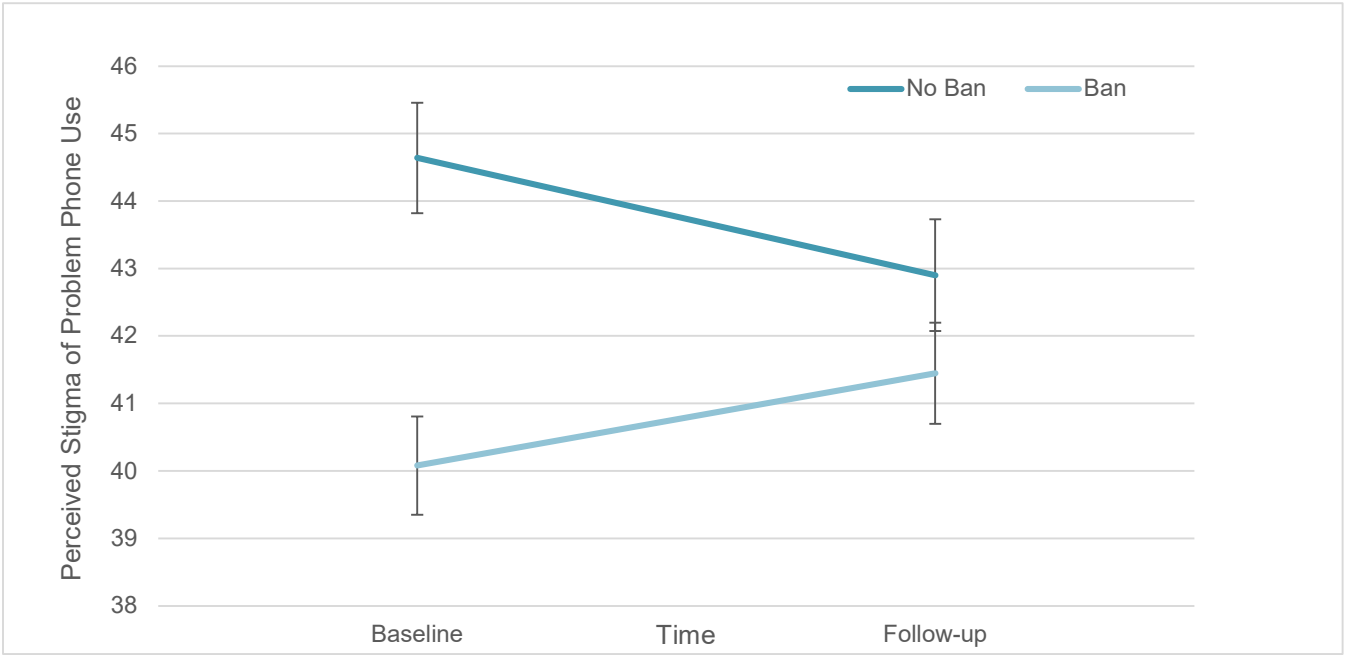
A linear mixed model was used to test the effect of a 2 (Phone ban condition: Ban group, No Ban Group) × 2 (Time: baseline/end of term 2, follow-up/early to mid-term 3) interaction on stigma of problem mobile phone use. This analysis indicated that there was no significant main effect of time, F (1, 2209) = .05, *p* = .82. However, there was a significant main effect of ban condition, F (1, 2209) = 14.65, *p* < .001, where the no ban group (M = 43.77, SE = .59, N = 986) perceived more

stigma of problem mobile phone use than the ban group (M = 40.76, SE = .53, N = 1227) with a small effect size Cohen's *d* = .16, 95% CI [.08, .25]. Therefore, Hypotheses 2 and 3 were not supported.

The linear mixed model also indicated that there was a significant interaction effect between ban condition and time on perceived stigma of problem phone use, F (1, 2209) = 3.91, *p* = .048. Figure 5.3 shows the interaction between ban condition and time on perceived stigma of problem phone use. There were significant differences by ban condition where the no ban group (M = 44.64, SE = .82, N = 499) perceived more stigma of problem phone use at baseline than the ban group (M = 40.08, SE = .73, N = 629) with a small effect, F (1, 2209) = 17.16, *p* < .001, Cohen's *d* = .24, 95% CI [.12, .36], but no significant differences between the no ban (M = 42.90, SE = .83, N = 487) and ban (M = 41.45, SE = .75, N = 598) groups at follow-up, F (1, 2209) = 1.68, *p* = .20, Cohen's *d* = .08, 95% CI [-.04, .20]. Stigma perceptions did not significantly change over time for either the ban group, F (1, 2209) = 1.72, *p* = .19, Cohen's *d* = -.07, 95% CI [-.19, .04], or the no ban group, F (1, 2209) = 2.20, *p* = .14, Cohen's *d* = .10, 95% CI [-.03, .22]. Therefore, Hypothesis 1 was not supported.

Figure 5.3.

Estimated Means with Standard Error Bars of Phone Ban Condition Over Time on Stigma



Note. The full scale is not represented on the y-axis; minimum score on outcome measure is 9 and maximum score is 81.

Age, Gender, & Nested Effects of Schools

Further linear mixed models were run to control for covariates (i.e., age and gender [male/female]) as reported below, and an evaluation of nested effects of school is reported in Supplementary Table 7. When controlling for covariates, the interaction between time and ban group no longer had a significant effect on perceived stigma of problem phone use, $F (1, 2138) = 3.16$, $p = .08$, time remained non-significant, $F (1, 2138) = .001$, $p = .98$, and ban group was still significant, $F (1, 2138) = 8.74$, $p = .003$. The main effect of ban group was non-significant when including nested effects of school in the model. Age, $F (1, 2138) = 21.85$, $p < .001$, and gender, $F (1, 2138) = 18.21$, $p < .001$, were significant covariates on perceived stigma of problem phone use.

Discussion

This natural policy experiment investigated the impact of a phone ban on perceived stigma of problem phone use. The study found that there was only a small effect of the phone ban on students' perceived stigma of problem phone use, where those in the no ban group had higher stigma ratings than those in the ban group. Stigma ratings did not significantly change over time, even within groups, and the effects of group and time remained unchanged when considering covariates of age and gender. About one in five (18.6%) adolescents endorsed the view that there is a societal stigma of problem mobile phone use. This includes negative stereotypes such as students who have mobile phone use problems being perceived as distracting, rude, or untrustworthy. Overall, this study suggests that the mobile phone ban may have only very limited effects on social stigma toward problem phone use.

Although the ban and no ban groups differed significantly in stigma ratings at baseline, neither group's stigma ratings changed significantly over time. This suggests that the ban did not appear to influence problem phone use stigma perceptions over time, and that these perceptions were stable over a short period. The results of this study are inconsistent with theories about structural stigma which would conceptualize the phone ban as structural stigma towards those who experience problems and other research investigating structural stigma with respect to same-sex

couples (Hatzenbuehler et al., 2010). The marginal to no effect of ban condition on stigma may reflect that the ban is implemented only at school and students still have access to their digital devices at other times. In this way, the phone ban is dissimilar to other types of structural stigma which are present in the community more consistently. However, the small to no relationship between the ban and stigma, is comparable to past research on the impact of mobile phone bans on school performance (Beland & Murphy, 2016; King et al., 2024), and stigmatizing attitudes in adolescences (Watson et al., 2004).

The findings were somewhat consistent with exposure-adaptation theory and past research related to stigma towards behavioural addictions, as the ban group had at most, slightly lower ratings of problem phone use stigma than the no ban group (Shaffer et al., 2004; Delfabbro et al., 2022). This difference in perceived stigma of problem phone use is consistent with early phases of exposure, or in the context of a ban, the removal of exposure. One possibility is that students will adapt, and more long-term follow-up is required to adequately test exposure-adaptation theory and identify how long it takes students to adapt to the new policy (Shaffer et al., 2004). On the other hand, the ban group had their phones banned at school for much longer than the no ban group and did not differ in perceived stigma of problem phone use ratings compared to the no ban group at follow-up. Therefore, this study did not observe an adaptation phase within a matter of months in the context of the phone ban. A cross-cultural study by Delfabbro et al. (2022) reported that stigma of gambling disorder was not influenced by participants' perceptions of the regulations for electronic gambling machines in their country. However, countries which had allowed the use of these machines for a long time did have better attitudes than countries where they were newly available (Delfabbro et al., 2022).

Interestingly, an inability to concentrate was the most strongly endorsed stereotype about people with mobile phone use problems, while being untrustworthy was the least endorsed. There was also a tendency toward indifferent or ambivalent about negative stereotypes about problem phone use. This was consistent with research that reports adolescents tend to not have strong

negative views towards people with mental illness (Watson et al., 2004). However, a significant minority (18.6%) of participants endorsed the view that there is a social stigma of problem phone use. Recognizing these stigma-related views and experiences is important to understanding those who experience problematic phone use because they have real-world consequences including discrimination and treatment-seeking (Corrigan et al., 2009).

Limitations

This study employed a large student sample and a two-group pre-post design and investigated the psychological effects of a mobile phone ban, which is an issue that has received mainstream media attention but minimal research attention. This study was a unique opportunity to study adolescent experiences during a major phone policy change. However, there were several limitations that warrant acknowledgment. First, it was not possible due to the quasi-experimental design to employ random assignment to groups or manipulation of the implementation of the digital device bans to ensure that this was equivalent within-groups. Secondly, it was not feasible to recruit schools for a traditional pre-post design where baseline data is collected before the schools implemented the ban and follow-up data is collected when half the schools have implemented the ban. Additionally, the efficacy of the ban such as policy adherence or enforcement of the mobile phone ban were not compared across schools. Therefore, we cannot rule out that the lack of change in stigma from baseline to follow-up for the no ban group may have been influenced by differences in phone ban implementation and school-level device policies.

Another limitation was the outcome measure was based on existing conventional measurement but had not yet been validated. Although the high rates of indifferent responses were consistent with research on stigma among adolescent populations, we cannot rule out that some of these responses may relate to a lack of understanding of the questions. Additionally, participants were not provided a definition of '*mobile phone use problems'* and therefore may have interpreted these items differently. However, definitions were not provided to avoid giving leading content and allow stigma judgements to reflect the possibility of mislabelling people as experiencing mobile

phone use problems, a concern which has been raised in academic debates regarding gaming disorder (Ferguson & Colwell, 2019). Self-report questions also have general limitations such as social desirability bias and biased recall.

Future Directions

Future research would benefit from some methodological improvements. For example, studies could collect baseline data prior to the announcement of a mobile phone ban in other regions to examine how anticipation of the mobile phone ban affects perceived stigma of problem phone use and other outcome variables of interest. Studies could compare students that are aware of plans to implement a mobile phone ban with students who report that they are not aware. Future studies may also consider more long-term follow-ups, as changes in attitudes may take time to be consolidated as cultural norms (Shaffer et al., 2004; Storer et al., 2009). Research could investigate the impact of other policies relating to the accessibility of other digital technologies that are associated with addictive behaviours. For example, the South Australian government is considering a social media ban for children under 14 years of age (Boscaini, 2024). Research on social media bans could provide insights into its impact on wellbeing related factors, such as stigma and problem use of social media.

Future studies should seek to better understand the nature of stigma related to digital technologies and their problem use. Understanding the nature of digital technology-related stigma could inform investigations into the impact of other aspects of structural stigma on public stigma of problem phone use, to understand the theoretical relationship between these two levels of stigma. For example, academic literature has also described cultural norms as a form of structural stigma (Hatzenbuehler, 2017). Additionally, other stigma outcomes could be examined, such as bullying experiences, self-stigma, and treatment-seeking. Furthermore, peer and parental responses to the mobile phone ban could be examined to determine the extent to which these social factors affect stigma perceptions of problematic phone use.

Conclusions

This research found that students in schools without a mobile phone ban in place perceived marginally more societal stigma toward problem phone use than adolescents in schools with the phone ban in place. However, stigma ratings did not change over time. This suggests that mobile phone bans appear unlikely to affect attitudes towards problem phone use, showing that these attitudes may be relatively stable over time. Further studies could consider the impact of education, ban adherence, or anxiety and apprehension about the ban on stigma of problem phone use. Future research could evaluate in more detail how individuals view overuse of digital devices and how these views relate to experiences of discrimination and treatment-seeking in vulnerable populations.

Chapter Six: General Discussion

Publication

Excerpts of an accepted book chapter have been included in the discussion:

Galanis, C. R., Hodgins, D.C., & King, D. L. (accepted). Behavioural Addictions and Stigma. In A. Nogueira López, & J. Billieux (Eds.), Untitled Non-substance Addictive Behaviours Handbook.

Authors' Contributions to Publication. CRG (80%) and DLK (20%) planned the chapter. CRG (90%) reviewed the literature in preparation for this chapter with input from DLK (5%) and DCH (5%). CRG (85%), DLK (10%), and DCH (5%) completed writing and editing for this publication.

Overview

The study of behavioural addictions has greatly expanded over the last three decades. Some academics have discussed the potential for certain recreational activities (e.g., gaming, social media, shopping, and so on) to be recognised addictions. A major aspect of this discussion has included concerns about the potential for recognising new addictions on stigma towards these activities (Aarseth et al., 2017; Dullur & Starcevic, 201; Galanis et al., 2021; Gearhardt & Hebebrand, 2021; Rasmussen, 2014; Ruddock et al., 2019; van Rooij et al., 2018). In the last decade, there has been an increase in empirical investigations of stigma experiences related to behavioural addictions, particularly in relation to gambling. However, less is known about whether individuals who are highly engaged in certain activities proposed to be addictive might experience stigma. As a new and emerging area, more research is required to understand stigma towards behavioural addictions including its frequency, measurement, unique stereotypes, and the impact of growing policy decisions related to the use of digital technology. The study of stigma informs our understanding of the lived experience of people with mental illness as it affects treatment-seeking behaviour, experiences of discrimination, self-esteem, and social isolation (Feldman & Crandall, 2007; Markowitz, 1998).

This thesis was focussed on investigating stigma and behavioural addictions with a primary focus on (1) gaming disorder as a recently recognised disorder in the International Classification of Diseases (ICD-11) and (2) problem phone use which has been the focus of restrictive policies worldwide. This chapter summarizes four studies of stigma towards behavioural addictions conducted for this thesis in the context of the existing literature, the thesis aims, and implications of the findings. Following this, the limitations and future directions for behavioural addictions stigma research are outlined. Future research priorities include focussing on samples of treatment providers, people who experience behavioural addictions, and investigating the mechanisms underlying predictor variables of stigma such as social media posting or familiarity with a behavioural addiction.

Main Findings

What is the current state of knowledge about stigma related to behavioural addictions?

Past studies have reviewed the literature on stigma towards substance-related addictions (Bielenberg et al., 2021; Kilian et al., 2021; Meyers et al., 2021); however, behavioural addictions have not been included in these reviews. Substance-related addictions are more stigmatised than a range of other mental illnesses (Kilian et al., 2021). Therefore, it is of interest whether behavioural addictions generate comparable amounts of stigma to substance-related addictions. In this way, this thesis was interested in what research or knowledge on stigma towards addictions (i.e., substance-based or behavioural addictions) can be applied to behavioural addictions. There are some notable differences in the way predictor variables, such as familiarity with addictions and neurobiological understandings of addictions, impact behavioural addictions compared to substance-related addictions. These differences are discussed below.

Study 1 involved a systematic review of stigma towards substance and behavioural addictions and summarized 99 studies which included outcome measures of stigma related to an addiction. This review sought to understand what existing knowledge of stigma towards substance-based addictions can be applied to behavioural addictions and how stigma towards behavioural addictions occurs in the context of what is known about stigma towards the broader addiction category. Several survey-based studies asked participants about why they had not sought treatment or delayed seeking treatment for an addiction. These studies showed that stigma was a barrier to treatment seeking for 22% to 40% of participants. However, no studies reported frequency rates of treatment-seeking related to behavioural addictions. This is an understudied research area for behavioural addictions and it is, therefore, necessary for future research to examine what influences treatment uptake among people with behavioural addictions.

Comparisons of Diagnoses. Studies that compared addictive disorders tended to report more public stigma towards substance-based addictions than behavioural addictions. However, there were some similarities between gambling and alcohol use disorder, and problem use of

marijuana was reported to receive low stigma ratings relative to other addictions. More stigma was reported towards addictions than a range of other physical and mental health conditions and more than no-diagnosis controls which were described as having comparable symptoms or impairment. This was consistent with a past review that reported alcohol use disorder as experiencing comparable stigma to other substance-based addictions but more than other physical and mental illnesses (Kilian et al., 2021).

Psychological Distress. Psychological distress was positively associated with self and public stigma. This was consistent with the Displaced Aggression Hypothesis which describes that negative moods can prime people to make more negative judgments (Ottati et al., 2005). Another explanation is that self-stigma among people with higher psychological distress perceive less stigma actual reductions in their experiences of stigma due to reduced symptoms when they are less distressed (Ertl et al., 2021). This explanation could be relevant as people with a behavioural addiction often report more distress as symptoms of their addiction worsen (Fung et al., 2021; Hing & Russell, 2017b; K.-Y. Lee et al., 2023). Although bidirectional relationships cannot be ruled out from these correlational studies, there is also evidence of a negative relationship between self-stigma and well-being among people with a behavioural addiction.

Familiarity with People who have a Behavioural Addiction. Thirteen of the 20 studies examining the impact of familiarity with addiction reported that greater familiarity was associated with lower public stigma. However, behavioural addiction studies which examined familiarity on stigma made up a greater proportion of studies which had mixed effects or no association between familiarity and stigma compared to the studies which demonstrated a significant negative relationship. These findings for familiarity with behavioural addictions may relate to theories describing a U-shaped curve, where stigma is lowest when familiarity with a stigmatized group is moderate, and stigma is higher when familiarity is either very low or very high (Corrigan & Nieweglowski, 2019). As familiarity with the stigmatized group passes the mid-point of the scale, people may experience greater burden due to their close relationship with the person with a

behavioural addiction, either due to responsibilities of helping to care for the person or from experiencing stigma themselves due to their association with the person (Corrigan & Nieweglowski, 2019). This theoretical U-shaped relationship between stigma and familiarity could explain the mixed findings in some studies if analyses have not considered non-linear relationships. Future research is needed to understand if people report more familiarity with behavioural than substance-related addictions and test for non-linear relationships to investigate this theory.

An alternative explanation for inconsistent relationships between familiarity with addiction and stigma, could be related to the quality of contact with people with a behavioural addiction (Couture & Penn, 2003). Studies of familiarity in behavioural addiction stigma have only assessed contact and not whether they had positive experiences, which can reduce stigma, or negative experiences which may increase stigma (Couture & Penn, 2003). The contact hypothesis predicts that people need to generalize their experiences with the stigmatized person to the rest of that group to influence stigma; therefore, contact may increase stigma if the contact is not positive (K. L. Brown & Russell, 2019).

Neurobiological Explanations of Addictions. Experimental studies that examined the impact of neurobiological explanations of addiction on public stigma were predominantly studies of behavioural addictions such as food addiction or gaming disorder (Galanis et al., 2023; Latner et al., 2019; Montemarano & Cassin, 2021). These studies indicated that neurobiological explanations reduced blame (Galanis et al., 2023; Latner et al., 2019; Montemarano & Cassin, 2021). However, neurobiological explanations of addiction also led to increases in perceptions of impairment and distrust for problem gaming (Galanis et al., 2023). This was consistent with findings of a review by Angermeyer et al. (2011), which reported that responsibility for a person's mental illness was mostly unrelated to discrimination. However, this finding was in contrast to social–cognitive models of stigma, such as Attribution Theory, which stipulate that blame is a precursor for other negative outcomes of stigma (Corrigan et al., 2003).

The reductions in blame can be explained by theories of the paradoxical effect of neurobiological explanations on stigma. These theories suggest that emphasizing biological causes of a mental illness make it seem more inherent in the individual and therefore they are less blameworthy (Kvaale et al., 2013; Loughman & Haslam, 2018). However, this may make the illness seem more dangerous and desiring greater social distance (Kvaale et al., 2013; Loughman & Haslam, 2018). Additionally, the studies of addiction stigma offer some support for the impact of biological explanations reducing blame but having negative outcomes on other stigmatizing judgements (Galanis et al., 2023; Lebowitz & Appelbaum, 2017). This may explain the mixed and inconclusive results of correlational studies examining disease models as subscales of measures may be influenced in different directions or if certain dimensions of stigma are emphasized by the measure.

In comparison to the impact of neurobiological explains of behavioural addictions on stigma, correlational studies which considered the relationship between disease endorsement of substance-based addictions and stigma reported no relationship (Kloss & Lisman, 2003), a positive relationship (Wild et al., 2021), and a negative relationship (Rundle et al., 2021). Research has identified differences in causal attributions for substance use disorders and behavioural addictions, where substance use disorders are more likely to be seen as due to the addictive properties of substance use disorders and behavioural addictions due to a character flaw (Konkolÿ Thege et al., 2015). Therefore, neurobiological explanations or the use of addiction terminology may be suitable for addressing some of the blame attributed to people with a behavioural addiction (Himelein-Wachowiak et al., 2022) whereas these explanations might have limited benefits for substance-based disorders which are already viewed as due to the substance more than the person.

Conclusions. Returning to the question of what is known about stigma and behavioural addictions, this thesis contributes several insights drawn from its comprehensive review of stigma towards addictions. Stigma towards addiction can cause delays in treatment-seeking for up to 40% of people experiencing an addiction. However, research is yet to examine what specifically affects treatment-seeking among people with a behavioural addiction. The primary predictor variables of

addiction stigma included the presence of a diagnosis, familiarity with the condition, psychological distress, and neurobiological explanations of the condition. Although behavioural addictions are more stigmatised than some other physical and mental health conditions, these conditions tend to be less stigmatized than substance-related addictions. Familiarity with addictions had more mixed or null effects on stigma towards behavioural addictions compared to well-established positive relationship between familiarity and stigma towards substance-related addictions. Substance-based and behavioural addiction stigma has consistent positive relationship to psychological distress or negative relationships to other wellbeing variables. Finally, neurobiological explanations of behavioural addictions tend to reduce blame but can increase other aspects of stigma. Overall, there is a substantial understanding of the relative stigma towards different health conditions and growing insights into predictor variables with increasing consideration of behavioural addictions, such as gaming disorder. More research is required to understand why there are differences in the amount of stigma directed towards substance-based compared to behavioural addictions, and why predictor variables, like familiarity with addictions may influence stigma differently across these two types of addictions.

What are the psychometric qualities of stigma measures and what is their suitability for studying behavioural addictions?

Conceptual definitions of stigma tend to refer to internal thought processes. Although there are observable features of stigma, it is challenging to ascertain whether these behaviours are due to stigma without knowing the underlying thought process. In this way, stigma is challenging to measure given its dependency on self-report measures which can be subject to social desirability biases. As there are a growing number of behavioural addictions that are considered in stigma research it is increasingly important to consider the validity of the measures in this research area. Many studies of stigma towards these addictions employ stigma measures for other mental illnesses with minor adaptations to suit the illness that that the researchers are interested (e.g., Galanis et al., 2023; Horch & Hodgins, 2008; N. M. Lee et al., 2014). This is likely due to the paucity of stigma

measures developed specifically for addictions. However, this indicates an assumption that measures of stigma related to other mental illnesses are suitable for examining addictions. Therefore, this thesis was interested in examining the convergent, discriminant, and construct validity of measures that are used in addiction research to determine their suitability and identify what other measures may be needed for continued development of research into behavioural addiction stigma.

The systematic review examined common stigma measures and their psychometric properties for addiction stigma. Of the 21 measures examined, 7 were used specifically for behavioural addictions, and another 5 that were used for both substance-based and behavioural addictions. Most of the measures used for behavioural addiction research only were measures of weight-related stigma. Approximately two-thirds (13/21) of the stigma measures were measures of public stigma and almost all (19/21) of the measures employed Likert scales for each item. The Perceived Devaluation-Discrimination Scale was the only scale to provide cut-offs for the presence and absence of stigma, whereas all other measures were scored on a continuous scale. These cut-off scores could assist in calculating prevalence rates for stigma and evaluating meaningful change in attitudes as a result of intervention programs.

The use of weight stigma scales had inconsistent evidence of convergent or discriminant validity for their use in food addiction research. Gambling disorder was the only behavioural addiction which had measures developed specifically for the condition. Therefore, it may be beneficial to develop more measures for specific behavioural addictions, in particular, this would support research into stigma towards food addiction. On the other hand, the Attribution Questionnaire, a public stigma measure had strong evidence of convergent, discriminant, and construct validity for both substance-based and behavioural addictions. This is consistent with Attribution Theory being the basis of the Attribution Questionnaire (Corrigan et al., 2003) and a commonly used theory in stigma research which comprised some of the evaluation of construct validity for these measures. Self-stigma scales such as the short form of the Self-Stigma Scale (Mak &

Cheung, 2010), demonstrated adequate validity. Person-specific measures tended to cover the most components of stigma, whereas social distance-based measures tended to cover the least.

Taken together, the findings of this review indicate that there are psychometrically valid measures which are suitable and sufficiently robust for examining stigma towards behavioural addictions. This includes a scale for measuring public stigma (i.e., the Attribution Questionnaire) and self-stigma (i.e., the Short form of the Self-Stigma Scale) which have shown adequate construct, convergent, and discriminant validity for use in behavioural addiction research. However, there are few stigma measures which are designed for behavioural addictions specifically and focus on issues that are unique to these problems. Additionally, there is a paucity of strong measures which can be used to measure frequency or more general forms of public stigma (i.e., other than person-specific) towards behavioural addictions. These findings indicate types of stigma measures (e.g., dichotomous or categorical, and general public stigma measures) that could be developed for behavioural addictions research to support studies with suitable measures and strong psychometric properties.

What are the nature and origins of stigma towards behavioural addiction?

Research has begun to report on stereotypes and some predictor variables, including familiarity with mental illness, in relation to gaming or problem gaming (Kowert et al., 2012, 2014; Peter et al., 2019). However, there has been minimal investigation of other predictors and research that has included other digital technology-related problems or behavioural addictions has focussed on the relative intensity of stigma towards different problems (Casale et al., 2023; Peter et al., 2019). Other research has examined problem use of digital technology stigma in the context of other comorbid conditions (C.-W. Chang et al., 2023; Chen et al., 2022; K.-Y. Lee et al., 2023). Therefore, this thesis was interested in predictors of stigma towards problem mobile phone use as one of the less studied disorders. This project considers psychological distress, as an established predictor of stigma towards other addictions, and variables related to interpersonal relationships as part of understanding the impact of familiarity with the condition on stigma towards behavioural addictions. Currently, it is not clear whether the stereotypes reported in past research are sufficient

to represent the complete array of negative stereotypes that occur towards gaming. Qualitative investigation is required to understand the full extent of these stigmatizing perceptions.

To examine the nature of stigma towards problem gaming, a qualitative framework analysis was conducted on open-ended responses from adults aged 35-50 years who do not play video games. Participants were asked about their perceptions of problem gaming as an addictive disorder, whether they believed a diagnosis of gaming disorder would change public perceptions of gaming, and whether they thought a diagnosis for gaming disorder would be helpful for those who experience gaming problems. This study identified a variety of negative stereotypes associated with gaming and problem gaming, including the view that people who game are childish, lazy, or toxic, and that the activity is a waste of time or dangerous for children. Some of the stereotypes were consistent with past research reporting that people who game are unhealthy, overweight, and have poor social skills (Amby et al., 2020; Kowert et al., 2014). However, there was also a view that attitudes towards gaming are changing as the hobby becomes more commonplace and normalized in society. Some participants noted that the activity of gaming is no longer isolated just to those who are already labelled with negative terms such as ‘geek’ or ‘nerd’. This was consistent with past research indicating that stigma tends to change over time (Earnshaw et al., 2022).

Study 2 provided insight into the potential predictors of stigma related to problem gaming. Similar to how cultivation theory proposes that cultural norms are formed (Bryant & Miron, 2004) or a past study which concluded that the media can affect stigma (Wahl, 2002), some participants emphasized the role of the media in generating or maintaining stigma. Participants also thought that older people or those who do not game may be more likely to have a negative view of people who game. This is consistent with past research demonstrating that these groups tend to associate gaming with aggression (Przybylski, 2014). Similar to social—cognitive models of stigma (Corrigan et al., 2000), labelling people as experiencing gaming disorder was viewed by participants as something that might have both positive (e.g., treatment access) and negative (e.g., discrimination) effects.

Study 3 examined the predictors of perceived public stigma towards problem phone use. To address the aim of investigating predictors of stigma towards mobile phone use problems, a cross-sectional study collected data from adolescents in public schools in South Australia. This study identified that lack of social capital was positively related to stigma and the strongest predictor of stigma across a range of social and psychological predictor variables. Consistent with Study 2, age was positively related to stigma towards problem phone users. Additionally, resilience was positively related and social media posting was negatively related to perceived stigma of problem phone use when controlling for other social and psychological variables. More than one in six (16.7%) adolescents endorsed that there was public stigma towards mobile phone use problems. This includes negative stereotypes such as students who have mobile phone use problems being perceived as distracting, rude, or untrustworthy.

Variables including social media posting and lack of social capital may influence perceived stigma of problem phone use via similar mechanisms as familiarity with behavioural addictions. For example, the effect may relate to the contact hypothesis which posits that positive contact with members of stigmatized groups can reduce that stigma (Couture & Penn, 2003; Desforges et al., 1991; Islam & Hewstone, 1993). Those who lack social capital may have small social circles and be less likely to know people who engage in excessive or problematic use of their phones. Similarly, those who frequently post on social media may associate with others who do the same and this activity may be associated with greater use of their phones. Alternatively, social media posting could relate to media influence on stigma highlighted by other research (e.g., Galanis & King, 2025; Wahl, 2002) but having a positive influence in normalizing mental health problems.

Regarding the question of the nature of stigma towards behavioural addictions, study 2 indicated that people who experience gaming problems may experience negative stereotypes including childish, lazy, and toxic. The extent to which these descriptors (e.g., ‘childish’), either alone or in combination with each other, may be unique to gaming-related stigma is an interesting point for future research to consider. The activity of gaming is also associated with negative stereotypes

including being viewed as a waste of time or dangerous for children. However, this negative perception of gaming was perceived to be changing as gaming becomes more commonplace. In this way, stigma towards problem gaming may differ from other digital technologies which are already integrated into everyday life. In terms of the origins and predictors of stigma: older age and less use of technology were related to more stigma towards problem gaming and perceived stigma of problem phone use. Perceived stigma of problem phone use was positively related to a lack of social capital and negatively related to social media posting. This finding may require further investigation to understand the mechanisms that influence these relationships and ascertain what other factors are affecting stigma towards digital technologies given the small amount of variance explained by these variables. The media was viewed as influencing cultural norms and attitudes.

What is the impact of the diagnostic category of gaming disorder and its addiction formulation of public perceptions towards gaming and gaming problems?

The inclusion of an official diagnosis for gaming disorder in the International Classification of Diseases (ICD-11) was subject to debates among academics about the validity of this category (Higuchi et al., 2017; 2018; Király & Demetrovics, 2017; S. Y. Lee et al., 2017; Quandt, 2017; Van Den Brink, 2017). These debates have included concerns about whether this category may have negative ramifications such as exacerbating stigma towards problem and non-problem gamers (Aarseth et al., 2017; Division 46 Committee, 2018; Ko et al., 2020; Markey & Ferguson, 2017; van Rooij et al., 2018). Although some quantitative research has examined these claims (Galanis et al., 2023), qualitative research can provide new insights into the impact of the gaming disorder category on stigma towards people who play video games. Therefore, the question of whether the diagnostic category for gaming disorder impacts public perceptions towards gaming was examined in a qualitative study of attitudes towards recreational and problem gamers. This study enquired about participants' perceptions of the validity and impact of the addiction formulation of the diagnostic classification for problem gaming and the usefulness of a diagnosis.

Most participants (82%) endorsed that there were at least some cases in which problem gaming could be considered an addictive disorder. This indicates that irrespective of knowledge about the status of problem gaming in current diagnostic classification systems, people tend to view gaming problems as a valid mental health concern at higher rates than previously reported among scholars (Ferguson & Colwell, 2019). However, many participants did stipulate that the experience of negative consequences due to gaming behaviour is crucial to diagnose someone with gaming disorder or that playing for excessive amounts of time is not enough for a diagnosis. Comparatively, some participants thought that a diagnosis for gaming disorder would be met with ridicule and viewed as making excuses, or that the diagnosis would be incorrect; the result of over-pathologizing or mislabelling a parenting issue or another illness. Participants referred to many positive and negative outcomes of a gaming disorder diagnosis, with some reporting that it would increase stereotyping and discrimination, while others thought it would promote accessibility of treatment, quality of specialised services, social supports, and legitimise real problems. The recognition of a diagnostic category was proposed to be a deterrent for some who might avoid seeking help for fear of being labelled but also aid others in seeking help by helping them to recognise that they have a problem. Many of these ideas mirror those presented in academic debates regarding the validity of the gaming disorder diagnostic category (Aarseth et al., 2017; Bean et al., 2017; Division 46 Committee, 2018; Dullur & Starcevic, 2017; Kardefelt-Winther et al., 2017; King et al., 2018; Markey & Ferguson, 2017; Quandt, 2017; Van Den Brink, 2017).

In conclusion, the introduction of a diagnosis for problem gaming was viewed as a beneficial change that would support the recognition, treatment-seeking, and treatment access for people with gaming problems. The consensus was that gaming problems could be consider an addiction in at least some circumstances, with many perceiving the experience of consequences due to gaming as crucial for a diagnosis, and that simply playing for long hours is not sufficient. Although this indicates a significant amount of support for the gaming disorder category by members of the public, many other participants perceived a diagnosis for problem gaming as misguided. This perception

was due to either believing that a gaming disorder diagnosis would be incorrect or potentially leading to more prejudice and stereotyping, such as viewing people who game as making excuses for one's problems.

What is the impact of policies restricting mobile phone access at schools on stigma towards problem phone use?

Digital technology is constantly evolving in the way it functions and consequently in how it is regulated by the governments around the world. The efforts to protect people, particularly children and young people, from the harms that these devices can cause has resulted in mobile phones being banned from schools and restrictions on social media or video gaming access among minors (G. Conroy, 2024; Király et al., 2017; Global Education Monitoring Report, 2023). Therefore, this thesis was interested in the impact of the mobile phone ban which was introduced to public schools in South Australia in 2023. The school-based phone ban provides a research opportunity to examine the impact of digital device policies on stigma in a real-world setting with possible policy implications. The phone ban provides an example of a digital device policy which impacts minors across an entire state and students of all ages, affecting most daylight hours, during a period where there are teachers to enforce the policy, targeting young people who are often considered high risk users, and is a policy with strong and divided public opinions.

Study 4 employed a quasi-experimental design to investigate the school-based mobile phone ban in South Australia and the impact it has on perceived stigma towards mobile phone use problems among adolescent high school students. Two schools which implemented the ban early comprised the *ban group* (i.e., had the ban in place at baseline and follow-up) and three schools which implemented the ban in term 3 of the school year comprised the *no ban group* (i.e., the ban was only implemented at follow-up). Although there were differences in stigma between the ban and no ban group with only a small effect, neither group changed significantly over time. These results suggest that students' views about societal perceptions of problematic phone use may be relatively stable and unaffected by broad institutional restrictions on access to technology.

The small to nil effect of the ban was consistent with other reported outcomes of mobile phone bans (Beland & Murphy, 2016; King et al., 20024), and stigmatizing attitudes among adolescents towards other mental illnesses (Watson et al., 2004). However, it was inconsistent with past research which conceptualizes negative consequences rather than help and support for an addiction as a form of structural stigma, which can impact other levels of stigma (Hatzenbuehler et al., 2010; Hemeida & Goldberg, 2022). These findings relate to past research on exposure-adaptation theory where, *exposure*, operationalised as low restrictions on gambling machines, leads to an initial increase in stigma but improves or reduces as people *adapt* to the new normal (Delfabbro et al., 2022). Delfabbro et al. (2022) reports that countries which have had few restrictions on gambling for a long time had the least stigma, whereas a country which only recently reduced restrictions reported the most stigma towards gambling. In this way, we may expect changes to occur in students' attitudes towards mobile phone use problems as they adapt to the new policies.

In conclusion, the mobile phone ban in public schools did not affect perceived stigma towards mobile phone use problems after short term follow-up. More long-term follow-up would be required to understand if digital device bans impact stigma once students have adjusted to these new restrictions. However, it seems unlikely that this restriction will have any negative impact on attitudes as the no ban group reported marginally more stigma compared to the ban group. Investigation in more varied samples over longer time periods may assist in confirming whether baseline differences in groups were related to the ban or intrinsic differences between schools that agreed to participate and those that declined, or the schools which were able to implement the ban early and those that did not.

Implications

This project has several implications for stigma towards behavioural addictions. This includes knowledge gain in terms of insights into the lived experiences of stigma for people with behavioural addictions and the optimal ways of assessing these experiences. For example, stereotypes related to gaming would be a useful point of focus for reducing stigma through education and other efforts.

There are also implications for digital device restrictions, debates about diagnostic classifications, the extent of negative consequences due to stigma, and contributing factors for public stigma, which will be outlined below**.**

Digital Technology Restrictions

This project aimed to understand the impact of school-based mobile phone restrictions on perceived stigma towards mobile phone use problems. The present research indicates that major policy decisions relating to restricting the use of personal digital devices in schools, primarily mobile phones, are unlikely to impact students' views of how mobile phone use problems are seen in society. Long-term follow-up is needed to determine if attitudes change as students adapt, as initial and long-term follow-up have reported different changes in stigma following the rescinding of restrictions on electronic gambling machines (Delfabbro et al., 2022). However, study 4 provides preliminary evidence to suggest that the mobile phone ban in schools does not cause harm in this way. This finding may also inform our expectations for other digital technology restrictions such as the impact of the impending social media ban on stigma towards social media use problems.

Debates about Diagnostic Classifications

This research sought to understand the impact of a diagnostic category for gaming disorder on stigma. Although some potential negative ramifications on stigma were reported, participants generally believed that a diagnosis would beneficial and improve treatment prospects. The findings can directly inform academic debates about whether the inclusion of gaming disorder into the ICD-11 will generate or exacerbate stigma towards problem and non-problem gaming (Aarseth et al., 2017; Dullur & Starcevic, 2017; Galanis et al., 2021; van Rooij et al., 2018), and indirectly inform the similar concerns raised regarding the impact of food addiction (Gearhardt & Hebebrand, 2021; Rasmussen, 2014; Ruddock et al., 2019). The study also indicates that most participants consider problem gaming as an addiction to be a legitimate formulation of these problems.

The Extent of Negative Consequences Due to Stigma

Findings related to frequency of stigma inform our understanding of the extent of harm experienced due to stigma towards behavioural addictions, reporting that it affects more than one in six adolescents. Frequency rates can also indicate how often stigma causes significant detrimental effects, such as reducing or delaying treatment seeking for 12% to 40% of people with an addiction. Delayed treatment due to stigma or discrimination can have costs related to unemployment or absences from work related to their problems. Increased economic costs related to unemployment, work absences, and productivity have been reported to occur due to psychological distress (Canavan et al., 2013) and this may apply to behavioural addictions. Frequencies of stereotype endorsement or willingness to seek treatment may also indicate access to social supports, such as a person with a behavioural addiction feeling able to disclose their problems to friends and family.

Most of this thesis focussed on public or perceived stigma which are features of the self-stigma processes and can have further effects on willingness to seek help or engage in treatment (Corrigan & Wassel, 2008). In this way, these studies indicate that the diagnostic category for gaming disorder may improve treatment-seeking; the restrictive policies on phone use in public schools may be unlikely to impact treatment-seeking; and that certain groups may be more susceptible to these negative consequences. Furthermore, this thesis suggests which groups of people may be vulnerable to stigma and consequently at risk of having digital technology-based problems escalate or additional health problems (Weiss et al., 2006). For example, those with less social media engagement or less social capital were identified as perceiving more stigma towards problem phone use. Stigma research is a crucial part of our understanding of treating and reducing digital technology-based problem.

A review of the impact of mental health stigma on economic outcomes reported that stigma had a negative impact on employment, income, perceptions of appropriate resource allocation, and increased healthcare costs (Sharac et al., 2011). This highlights the importance of understanding stigma in emerging fields such as behavioural addictions as it has negative economic effects.

Resource allocation to healthcare has significant implications for whether healthcare is accessible and people experiencing behavioural addictions are able to receive treatment.

Contributing Factors for Public Stigma

This project has increased our understanding of the causes of stigma related to mobile phone use problems and gaming disorder. The predictors of stigma reported in Study 3 has implications for understanding who is most at risk of stigmatising mobile phone use problems, such as older students, those with more resilience, less social capital, and less social media engagement. Additionally, Study 2 reported that those who are older and do not play videogames were also viewed as being more likely to hold stigmatizing views of people who game. These predictors of stigma indicate who may be most at risk of having stigmatizing beliefs towards people with a behavioural addictions and groups that can be targeted by stigma reduction initiatives. These studies indicate predictors of stigma and behaviours that may be able to be targeted in reducing stigma for intervention programs. For example, addressing media influences (reported in Study 2 as a maintaining factor for stigma) or using the media to change attitudes by organising or promoting positive stories about activities related to the mobile phone use or video gaming. Addressing predictors of stigma identified in Study 3, such as improving social capital, may be another way of reducing stigma towards behavioural addictions.

Limitations of the Project

This thesis involved a series of distinct but linked studies of stigma in relation to behavioural addictions. The methodological approaches of each study differed and this meant that findings could be triangulated on specific topics (e.g., predictors of stigma) but this had some basic drawbacks, such as limits on innovation across similarly designed studies. Nevertheless, the studies in this thesis had many strengths, including large sample sizes, low attrition, standardized measures and use of control conditions. Limitations of this thesis will be discussed in relation to sampling, design, and measurement. Regarding scope, this thesis examined stigma related to behavioural addictions with a focus on digital technology-related problems, including problem gaming and problem phone use,

which means that we cannot be sure how generalizable the findings are to other digital activities that are attracting increasing interest in addiction studies.

Sampling

The generalisability of study findings are limited due to the samples used for data collection. Firstly, sampling may not have been exhaustive of all relevant papers for the systematic review. The review was limited to studies published in English and with outcome variables of stigma. Although limiting to peer reviewed articles sought to maintain a level of reputability among studies, this means that relevant grey literature may have been omitted and the review could be subject to a publication bias (Winters & Weir, 2017). Some variables of shame or embarrassment may also provide insight into self-stigma but were considered beyond the scope of the review. Additionally, some studies which only used stigma as a predictor variable may have included relevant findings about stigma outcomes as correlational studies cannot rule out bidirectional relationships. Future research could improve on these limitations by searching grey literature and including studies with outcome variables which are relevant to stigma even if not intended to be stigma measures.

Similarly, the samples used for the three empirical research studies may not be exhaustive of the entire populations of interest. The qualitative study was restricted to adults aged 35-50 years who do not play video games, and two studies used adolescent participants from South Australian public schools. The schools recruited for these research studies had mid to high socioeconomic status. This means that understanding the views of adults who regularly game, others outside those age brackets, socioeconomic ranges, adolescents from other national or international samples, or who attend private schools, is a significant limitation of this research with respect to understanding stigmatizing views more generally. Therefore, the findings may not be generalizable beyond these specific groups, which affects the interpretation and applicability of findings.

It is worth noting the use of convenience sampling for these studies. These samples include the use of online data collection through *Prolific*, a crowd-sourcing recruitment platform. Therefore, the results may represent adults with a certain level of computer or internet literacy and the free

time or interest required to participate in online studies. Similarly, the five schools (out of 16 invited schools) that agreed to be involved in this research may overrepresent those who had the resources to participate or staff who are more interested in research. This could include schools which had fewer challenges with implementing the mobile phone ban. Socioeconomic background may have been associated with willingness or capacity to participate as only schools with mid to high socioeconomic backgrounds agreed to participate (Lelli, 2023). Limitations related to convenience sampling and recruiting specific age or demographic groups can be addressed by conducting research using nationally representative samples for examining public stigma.

Design

This thesis has some limitations with the respect to the design of the studies. In Study 4, which investigated the mobile phone ban in schools, there were fewer schools available without the ban in place to conduct a typical pre-post control study where the groups have the same condition stimulus (i.e., no ban implemented) at baseline and different stimulus at follow-up (i.e., one group with and the other without the ban implemented). Instead, the two groups had different condition stimulus at baseline and were the same at follow-up. Although this two group design controls for history effects across schools, the design provides less clarity into the impact of the phone ban than the traditional pre-post study. For example, it is unclear whether the change from a significant difference at baseline to no difference at follow-up between schools is due to regression towards the mean or the move to having the same condition stimulus. This is particularly apparent in the absence of a significant change over time within groups. Earlier recruitment of participants following the announcement of future digital technology-related policies would assist in facilitation of a more traditional two group pre-post quasi-experimental study.

Additionally, the use of qualitative data analysis is understood as a process that can be influenced by the researchers' own identities and view of the world (Roberts et al., 2020). This may be influenced by the way questions are written as well as the construction of a framework for the framework analysis approach and the interpretation of participants comments. Although used to

support analysis in large datasets (Gale et al., 2013; Parkinson et al., 2016), the framework did refer to past research and this may also limit the extent to which interpreting the data was able to provide new theoretical ideas. Participants also made few references to gender in this study; therefore, conclusions about different experiences among male and females who game are limited. Issues of stigma related to gender may be particularly relevant given that a past review noted female specific issues of stigma among women who have substance-based addictions which was only captured by qualitative research (Meyers et al., 2021). Future qualitative research can consider asking participants specifically about their attitudes towards male and female people with gaming problems.

Measures

Two studies recruited adolescent participants to provide their views on social stereotypes related to problem phone use. Few measures are designed for examining stigma among child or adolescent participants (e.g., Watson et al., 2004) and no known measures have been developed for stigma towards problem phone use. Therefore, a subscale of the Self-Stigma of Mental Illness Scale was adapted for use in these studies. However, the internal validity of scale is uncertain as this measure was unable to be piloted tested for this purpose, although it demonstrated good internal consistency in these studies and the absence of strong views was consistent with past research on mental illness in adolescent samples (Watson et al., 2004). Pilot testing of measures which require adaptations would provide some indication of the validity of measures in future research.

The use of a social desirability bias measure would have helped to understand the extent to which participants are dishonest and respond in order to be viewed favourably. However, the survey used for data collection of Study 3 and 4 of the thesis had limitations on the survey capacity and additional measures were not able to be included. This means that we cannot be certain that views of problem gaming or problem phone use are not more negative than presented in these studies. Although a beneficial inclusion which can be considered by future research, the use of these measures does not appear to be conventional in addiction stigma literature and findings suggest that

socially desirable responding typically has small to no impact on addiction stigma (DePierre et al., 2013; Lang & Rosenberg, 2017; Mahmoud et al., 2021).

Future Directions

This thesis highlights many avenues for future research into stigma related to the growing field of behavioural addictions. Future research can examine whether the findings of the present thesis apply to: Other samples, other disorders, or different levels of stigma; the research can be applied to develop behavioural addiction stigma measures, including dichotomous measures to support the evaluation of intervention programs and investigation into the wide variance among estimates of frequency rates; what mechanisms influence the predictors of stigma towards behavioural addictions, and; how current knowledge of addiction stigma can be applied to develop and evaluate anti-stigma interventions. Researchers examining stigma related to gambling disorder have considered the importance of applying research to stigma prevention and intervention strategies and focussing these efforts on treatment providers to ensure that quality of care is not affected due to stigma (Quigley, 2022). These are also important avenues and applications for research into stigma related to other behavioural addictions.

Other Samples, Disorders, or Levels of Stigma

Other Levels of Stigma. The studies in this thesis primarily focus on public stigma, although two studies used a measure based on the first stage of the self-stigma process (i.e., stereotype awareness) and one study considered a conceptualisation of structural stigma. Therefore, future studies should assess more levels of self-stigma, including agreement with negative stereotypes, the application of negative stereotypes to oneself, self-esteem decrement, and behavioural outcomes such as treatment seeking. This could include more quasi-experimental research related to the impact of digital technology policies on stigma or other cross-sectional survey-based research investigating stigma predictors. In study 4, the pre-requisites were not met for the mediation analyses, where psychological distress was predicted to mediate the relationship between problem phone use symptoms and stigma. This relationship could be tested for more self-referential levels of

self-stigma or different study populations, as positive relationships have been demonstrated in past research of other disorders (e.g., C.-W. Chang et al., 2023; Meadows et al., 2017).

Other Problems or Disorders. This thesis investigated stigma towards problem phone use and problem gaming, however, there are a growing number of behavioural addictions in academic literature which may also be worth studying. The systematic review identified that there is some research on stigma related to gambling disorder and food addiction, and increasing research related to gaming disorder and digital technology-based problems. However, other behavioural addictions are scarcely investigated with respect to stigma. More research should be conducted on into other proposed behavioural addictions. This could include compulsive buying or pornography addictions, as well as increasing our understanding of the less frequently examined digital technology-based problems such as problem social media use.

Other Participant Samples. Other study samples of stakeholders would also be important to examine to fully understand the impact that stigma has on the experiences of people with behavioural addictions. Samples used in this project sought to involve key stakeholders in current policy decisions and changes to diagnostic classification systems related to technology-based problems. However, further research could investigate whether the stigma identified by the current project extends to other relevant groups or the general public. This could include recruitment of specific groups of stakeholders such as parents of children who play video games or own a mobile phone, policy makers, or people who work for technology companies. Parents of children who experience problems related to mobile phone use or video gaming may be of particular interest as their attitudes could impact whether a child receives treatment. Similarly, health practitioners should be considered in future research as their attitudes towards problems that patients present with can impact the quality of care received by people who experience behavioural addictions (Quigley, 2022). Additionally, people who are currently experiencing a behavioural addiction should also be a priority for sample selections in future research as groups who can provide direct insight into the experiences and impact of stigma.

Frequency Rates and Behavioural Addiction Stigma Measures

Future research should develop specific behavioural addiction measures of stigma and include dichotomous stigma measures. Development and validation of dichotomous measures that provide cut-off scores for the presence and absence of stigma would facilitate the study of frequency rates. Improving the validity of research comparing these frequency rates would assist in better understanding the wide variance in stigma frequency rates and subsequently in identifying groups that are high risk for experiencing stigma. Categorical measures or measures with cut-off scores for stigma could facilitate the evaluation of intervention programs by indicating how many people have had a meaningful change (e.g., from having stigmatizing views to neutral or no stigma) rather than merely indicating if there is a reduction in stigma.

Developing measures of stigma can also use some of the gaming specific stereotypes identified in the qualitative analysis to provide measures that examine issues that are unique to gaming and gaming disorder and not previously explored by other stigma measures. This would contribute to the paucity of behavioural addiction specific measures. Specifically developed measures may provide a more valid and sensitive measurement of stigma towards behavioural addictions. This could be crucial for detecting changes or between group differences given that small effect sizes are common in social psychological research (Lovakov & Agadullina, 2021).

Predictors of Stigma

Future studies should continue to investigate the predictors of stigma towards behavioural addictions and investigate the mechanisms of these relationships. The predictors of stigma examined in Study 3 explained only a small amount of variance in perceived stigma of problem phone use, which indicates that there is more that can be learnt about the causes of stigma. Predictors of stigma that were significant when controlling for other variables (i.e., resilience, social media posting, lack of social capital, and age) may provide avenues for future research to investigate underlying mechanisms or examine if similar and related concepts are the main determining factor for these variables. For example, social media posting and lack of social capital may relate to

familiarity with problem phone use, which is a commonly investigated variable in addiction stigma research, or collectively with resilience these variables may be associated with the participant's mental state. Furthermore, the non-significant relationship between problem phone use symptoms and perceived stigma towards mobile phone use problems (i.e., stereotype awareness) may warrant further investigation into more self-referential levels of self-stigma. Future studies could also consider potential non-linear relationships between familiarity with the condition and stigma towards behavioural addictions.

Stigma Interventions

Future research should consider developing strategies and/or programs for reducing stigma towards behavioural addictions. Education about an addiction and contact with people with an addiction or past history of an addiction are commonly employed as ways of reducing stigma towards substance-related addictions (Bielenberg et al., 2021). However, digital technology-related problems do not currently have any intervention programs for stigma. Although gambling disorder has had some evaluation of programs using video and theatre to provide contact and education about the lived experiences of gambling problems (K. L. Brown & Russell, 2019; Thomas et al., 2024), it is not clear whether these initiatives are readily available to treatment providers or the public. Current research can inform stigma reduction endeavours, but evaluation is needed to determine the cost-benefits, such as whether these interventions effectively reduce stigma, lead to earlier treatment-seeking, and fewer delays in receiving treatment once help is sought. This evaluation should also consider whether there are any negative ramifications given that neurobiological explanations of addictions, which may be included in education interventions, have demonstrated mixed effects on stigma (Galanis et al., 2023; Kelly et al., 2021).

The results from this project can inform future work investigating interventions to reduce behavioural addiction related stigma. The systematic review highlighted the paradoxical nature of neurobiological explanations of behavioural addictions on stigma, where neurobiological explanations tend to reduce blame but increase other aspects of stigma. This should be a

consideration when using these explanations in educational interventions to increase their efficacy by addressing possible negative consequences of neurobiological explanations. Insights from the systematic review regarding the impact of familiarity with the condition on stigma towards behavioural addictions indicates the need for more understanding before contact with people with a behavioural addiction can be employed as a stigma intervention program. Contact interventions require a better understanding of whether the relationship between familiarity with a behavioural addiction and stigma is linear or nonlinear; whether the recreational forms of the activities associated with behavioural addictions may also be associated with the effect of familiarity with addictions, and; how influential the quality of the relationship or interaction with a person with a behavioural addiction is on stigma.

The qualitative study of gaming disorder indicates that advocacy interventions, previously used in gambling disorder research (K. L. Brown & Russell, 2019), may also be an appropriate approach for diverting blame away from people with gaming disorder by framing the problem as a social justice issue where video games are designed to be addictive. An advocacy intervention could involve explaining the mechanisms in video games that make them addictive. The qualitative study highlighted specific stereotypes related to video gaming (e.g., lazy, toxic, childish) that can be specifically targeted by tailored intervention programs. Finally, the review indicated a relationship between psychological distress and stigma. Therefore, it would be important for future research to test whether the use of general programs to address psychological distress, such as mindfulness training (Virgili, 2015), may ameliorate self or public stigma. The systematic review and study of predictors of stigma towards mobile phone use problems indicate that there may be other mechanisms influencing this relationship that require investigation.

Conclusions

The study of behavioural addictions is a research area that continues to grow in relevance to modern society. Problem use of digital technology is a recent development which has generated debates about the costs and benefits of formalising diagnostic categories for these problems,

including the risks associated with stigma (Aarseth et al., 2017; Dullur & Starcevic, 2017; Galanis et al., 2021; van Rooij et al., 2018). This research project sought to improve our understanding of the nature and origins of stigma towards behavioural addictions and investigate academic and policy decisions about problems associated with digital technology use. The systematic review indicated that while most behavioural addictions tend to be less stigmatised than substance-related addictions, these conditions are still more stigmatised than a range of other physical and mental health conditions. Quality measures of stigma are emerging in this field; for example, the Attribution Questionnaire demonstrates robust validity for examining public stigma towards vignettes described as experiencing a behavioural addiction. Stigma towards gaming was associated with negative stereotypes such as lazy or toxic and the media was viewed by participants as having a reinforcing effect on these stereotypes. The study of stigma predictor variables demonstrated that less social media posting, lack of resilience, lack of social capital and younger age were associated with more perceived stigma towards problem phone use. The mobile phone ban in public schools had no effect on perceived stigma of mobile phone use problems from baseline to follow-up as schools transitioned to the ban.

The findings of this project inform academic debates on the nature and occurrence of stigma as well as moral panic about new addictions. Notably, the addiction formulation for problem gaming was mostly supported by non-gaming adults in Study 2. Improving the validity of measurement by including more specific gaming stereotypes would be beneficial for improving the ease, accuracy, and meaning in research on stigma. The identification of predictor variables can inform future research into the mechanisms influencing stigma towards problem use of digital technologies, including testing theories and proposed mechanisms. The evidence that digital device policies in schools may be unlikely to influence stigma towards problem phone use can inform policy decisions on the psychosocial impacts of digital technology-related restrictions. Future research should prioritise how stigma can be addressed for the substantial minority of young people, among other populations, who experience these issues. This research would further our understanding of

the lived experiences of people with behavioural addictions and inform interventions to abate the negative of impact of stigma. The field of research investigating behavioural addiction stigma has a significant role to play in reducing stigma so that it does not negatively impact wellbeing, social supports or equal treatment for people and families living with behavioural addictions.

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Supplementary Materials

Supplementary Table 1

Supplementary Table 1.

Summary of Studies (n=99) in Relation to Addiction-Related Stigma Outcomes [Chapter 2]

Authors	Sample	Study Design	Type of Stigma	Measures of Stigma	Components of Stigma Addressed	Addiction Type	Instruments Used	Analysis Plan in Relation to Stigma	Main Finding	Reporting Quality
Adlaf et al. (2009)	HS Students *n*=4078	Survey	P	SDS-WHO	SI, Fear, Shame	S	self and peer DU	LSR, Two-way interactions	Peer DU was a stronger negative predictor of stigma than own DU. Residency area and gender had small or no effect.	7
Ahorsu et al. (2020)	HS Students *n*=1497	Survey	S	WBIS	RB, Competency, SI	B	BMI, DASS-21, YFAS-C, BES	Correlations	Psychological distress, binge eating, and food addiction were weakly but significantly positively related to weight stigma.	8
Ashford et al. (2019)	In SUD recovery *n*=54	Survey	S, P	PSAS-8, ISSA, ISS	SI, Trust, Self-Devaluation, FF	S	BARC-10, HFS, RSE-10	One-way ANOVA	Use of "person with a SUD" was related to the least internalized stigma but most internalized	7.5

									shame compared to SUs who used "addict", no label, or both labels for themself.	
Avery et al. (2013)	Psychiatrists *n*=84	Experiment: Vignettes	P	Adapted MCRS	SI, Anger/Frustration, Help	S	-	t-test, ANOVA	Addiction psychiatrists held more stigma for schizophrenia and less for polysubstance use than community psychiatrists but no differences for depression or comorbid schizophrenia and SU.	6
Balan et al. (2023)	Tribal & non-tribal people with SUD *n* = 80	Survey	SP	BTSQ	BTSQ	S	ASI, Attitudes towards seeking help, WHO pathway to care proforma	χ^2 analysis	15 (37.5%) tribal patients and 17 (42.5%) of non-tribal patients reported delaying seeking treatment for substance use problems due to fear of social stigma and isolation.	5.5

Bannon et al. (2009)	University Students *n*=374	Experiment: Vignettes	P	AFA, UMBFAT, AFAT	Disparagement, FF, attractiveness, weight RB, judgment, rights, dislike.	B	PAQ	4 × 2 ANOVA	Non-binge eating vignettes were rated as more attractive, desiring less SD, and less blameworthy for their obesity than binge-eating vignettes. Men held more stigma than women.	8
Billian et al. (2024)	Psychiatric Outpatients *n* = 525	Survey	S P	PDDS	Devaluation, Stereotyping, DB	S, B	Self-esteem, TST, accessibility of treatment site	Descriptive statistics	People with SUD scored a mean of 3.0 (SD = .5 for inner city and SD = .8 for outer city patients) compared to 3.4 (SD = .8) for patients with behavioural addictions, on a scale of 1-5, with 1 being the most PDDS.	9
Boysen et al. (2014)	Mturk *n* = (1)242	Experiment	P	Adapted AQ-27	Fear, Pity, blame	S, B	Feminine/ Masculine Stereotyping of Disorders	Descriptive Statistics	AUD had an average score of 2.72 (SD = 1.32) for lack of pity and 4.75 (SD = 1.76) for fear. Compared to Gambling disorder having an average score of 3.04 (SD = 1.80) for lack of pity and 2.28 (SD = 1.25) for fear. Scores are out of 7.	6.5
Boysen et al. (2020)	MTurk,	Experiment	P	ASBD, BIAS	Dehumanization, APF, APH, Warmth, Envy,	S	WC	2 × 3 ANOVA	Warmth, competence, contempt, pity, active and passive behavioural intentions were more	7.5

	n=(S1)157, (S3)159, (S4) 157, (S5)299				Pity, Admiration, Help, Contempt, Capability				negative for drug addiction than anxiety, autism, dementia, intellectual disability, PTSD. Drug addiction was more dehumanized than PTSD and anxiety.	
Brener et al. (2022)	PWID <12mths ago *n*=535	Survey	S, P	Adapted IA-RSS, FSD	SI, Shame	S	IDU on self-image and community, PWI, K10, DU.	Between-groups comparisons	People who used both opioids and stimulants were more likely to report stigma or discrimination than those who had only used one substance. They did not differ in internalized stigma.	7
K. L. Brown & Russell (2019)	Adults *n*=164	Experiment: Intervention	P	PDI, ERQ, SDS-6, PDDS	Pity, Fear, Anger, SD PD, Devaluation, DB	B	Concealability, KIQ, LOCR, PO, PCS, Labelling, intervention	Independent and paired sample t-tests	A contact intervention increased perceived dangerousness, pity, and SD, but reduced fear of people with a gambling addiction. Education and advocacy interventions reduced anger and Advocacy reduced discrimination.	7.5

							credibility, SE			
S. A. Brown (2011)	University Students *n*=565	Survey	P	SDS, DS, AS, AS-SU, DS-SU, SDS-SU	SD, ER, PD	S	LOF	Independent samples t-tests, Correlations	Familiarity with mental illness was negatively related affect and social distance. Women had higher (indicating more negative) affect and SD. There were no differences for dangerousness.	5
Brown-Johnson et al. (2015)	Smokers in Psychiatric Admission *n*=956	Survey	S, SP	ISSI	SE, Perceived DB, SI	S	SF-12, MINI, FTCD, Smoking Stage of Change	EFA, CFA, Correlations, GLM	Participants experienced DB more than self-stigma, and self-stigma, more than felt stigma. Women, college educated, and Caucasians, experienced more self-stigma. Caucasians and those with greater cigarette addiction experienced more DB.	8
Burmeister et al. (2013)	Overweight	Survey	S	AFA, WBIS	FF, Dislike, RB, Competency, SI	B	YFAS, BMI, BES, CES-D,	Correlations	Food addiction symptoms were positively correlated with internalized stigma, fear of fat,	9

	Adults in an Intervention *n*=57						ESES, DEBQ, OBCS-Shame, MBSRQ		and dislike of obese people but was not related to belief that weight is regulated by willpower.	
Can Gür et al. (2020)	People with SUD *n*=156	Survey	S, SP	ISMI, SU-SMS	DB, SE, SI, Stigma Resistance, Self-stigma, AES	S	-	Correlations, Factor analysis	The SU-SMS has a five-factor structure: self-stigma and enacted or anticipated stigma from family or health care workers. The SU-SMS was positively and significantly correlated with internalized stigma (r=.548).	8.5
K. C. Chang et al. (2019)	People with OUD n = 268	Survey	S	SSS-S	Cognitive, affective, and behavioural self-stigma	S	OTI, CHQ-12, WHOQOL-BREF	Frequencies, percentages	81.7% of the sample had an SSS-S score over 2.5, indicating a high level of self-stigma.	8

C. C. Chang et al. (2020)	People with SUD *n*=300	Survey	S, S P	Adapted SSS-S, PSPS-TV	Trust, self-defeating Cognitions, Shame, Embarrassment, SI, DB	S	RSE-10, TDQ	One-way ANOVA	Heroin and Amphetamine users had higher perceived stigma than alcohol users. Self-stigma was significantly associated with and explained 13% of the variance in perceived stigma.	7.5
C.-W. Chang et al. (2023)	Adults with SUD or AUD *n=530*	Survey	S	SSS-S	Cognitive, affective, and behavioural self-stigma	S, B	SABAS, BSMAS, IGDS9-SF	Correlation	Self-stigma was related to PUSM, PG, PSU. Cognitive self-stigma explains affective stigma, and affective self-stigma explains behavioural self-stigma.	8
Chen et al. (2022)	People with SUD, *n*=319	Survey	S	SSS-S	self-defeating Cognitions, Shame, Embarrassment, SI	S, B	BSMAS, SABAS, IGDS9-SF	SEM, Correlations, ANOVAs	Problem Internet Use and SSS-S improved over time. Significant correlations of Problem social media r = .22, smartphone r = .30, and gaming r = .17, with self-stigma (at wave 1).	9
Cheung et al. (2021)	Adults *n*=123	Experiment: Vignettes	P, P P	PSS, PSMI	Inferiority, RB, PD, Status Loss, SI	S	-	2 × 2 ANOVA and SMR.	Perceived stigma of alcohol and cocaine misuse explains 15.7% of the variance in public stigma, problem seriousness adds 7.2%, and respondents age adds 5.6%, all with positive relationships	7

Cleary et al. (2009)	Workers and Caregivers *n*=32	Experiment: Intervention	P	AM-BS	RB, Anger, Pity, Help	S	GQA, SKS	Paired Samples t-test	Post workshop, participants were more sympathetic and supportive of health care for drug users than prior. Perceptions of RB, anger, and concern were not affected by the workshop.	6.5
Cooper et al. (2018)	People with OUD *n*=108	Survey	S P	PSAS	SI, Trust	S	SF-12, MOS, Opioid Use History	Independent Samples t-test, MRA	Perceived stigma was higher regarding caring for their child and obtaining employment but lowest regarding dating and friendships. Marriage led to more stigma (controlling for sex).	8.5
Crapanzano et al. (2014)	Physician assistant students *n*=28	Experiment: Intervention	P	AMIQ	SI, PD	S	-	Within-Subjects Wilcoxon signed-rank	The implementation of a substance use curriculum had no effect on perceptions of the AU vignette of which attitudes were neutral. The course led to small reductions in stigma for heroin users, but attitudes remained quite negative.	7.5

Cunningham et al. (2023)	Adults accessing Mental Health or SU services n=355	Survey	S	P	Adult Primary Care Patient Experience Survey	Relationship Quality, discrimination, diagnostic overshadowing	S	Access to primary care services	χ^2 analysis	73-80% (always/most of the time) of people with a substance use addiction reported being treated with respect and listened to, and 65%-82% sometimes or never being treated unfairly or having their mental health distract from their physical health.	7
Dambrun et al. (2024)	French citizens *n*= 952	Survey	P		BSDS, Feeling thermometer	SD, prejudice	S, B	Social Perceptions	Multiple Linear Regression	Vital force (β = -.28* & -.25*), burden (β = .15* & .15*), danger (β = .24* & -.08), warmth (β = -.14 & -.24*), and competence (β = -.18 & .0), explained a total adjusted R^2 of .38 and .40 SD for AUD and digital addiction respectively. * indicates significance.	9
David et al. (2024)	Medical & midwifer	Experiment:	P		P3S-PS	Derogatory cognitions, negative behaviours,	S	Intention and self-efficacy,	t-test, ANOVA	Midwifery students had less stigma than medical students and female students had less stigma than men towards pregnant smokers. There was	8

	y students *n* = 489	Intervention		information provision, personal distress		video acceptability		no difference in stigma towards pregnant smokers based on whether participants watched educational content about smoking during pregnancy or a video with tobacco facts.	
Deng et al. (2020)	Random sampling (>16 yrs) *n*=1066	Experiment: Vignettes	P	SDS, SDSS	SD, SE, labelling	S	Knowledge about MMT	Independent Samples t-test, χ^2, Correlations	Most respondents held negative stereotypes about heroin-dependent patients (76.46%) and were unwilling to socialize with them (78.54-90%), but few had negative stereotypes about hypertension patients.	7
DePierre et al. (2013)	Adults *n*=(S1) 659, (S2) 570	S1: Survey, S2: Experiment: Vignettes	P	Modified AQ-27 and SDS, FPS-S	Anger/Disgust, RB Sympathy/concern, SD	S, B	MCSDS	Regressions, ANOVAs	The 'Cocaine addict' label generated the most stigma then 'smoker', 'obese/food addict', and 'physically disabled' had the least. 'Obese food addict' had more stigma than obesity or food addiction alone.	6.5

DePue et al. (2024)	*n* = 396	Experiment: Vignettes	P	AQ-27, SDS-6	Blame, Danger, Pity, Fear, Anger, Help, Segregation, Coercion, Avoidance	S	-	One-way ANOVA	Participants stigmatized vignettes with OUD and MDD more than MDD alone, but did not significantly differ on ratings of help or pity	8
Dey et al. (2020)	Upper HS students *n*=4932	Experiment: Vignettes	P	SYMHLSS	PD, Unpredictable, Weak-not-sick, SD	S	K10, AUDIT-C, exposure/personal experience	SEM	Migrants had lower SD and PD but higher perceptions of mental illness as weakness. Psychologic distress increased PD. Familiarity with a similar problem led to less stigma.	9
Dupouy et al. (2018)	GP Residents *n*=303	Survey	P	AMIQ	SI, PD	S	representations of SUD as a chronic disease	Independent Samples t-test	Residents with at least 6 hours of SUD training had less stigma towards intravenous drug users than residents who had not had training. Correctly identifying SUD did not predict stigma.	7
Elliott et al. (2024)	USA adults n = 1,607	Experiment:	P	Desire for Social Distance	SD	S	Familiarity with mental illness,	Independent samples	Participants desired greater SD from a vignette with AUD, OUD, or schizophrenia, compared to subclinical distress or Major Depressive Disorder.	7

		Vignettes					Prognostic optimism	t-test, ANOVA		
Ertl et al. (2021)	Treatment-seekers with AUD, *n*=25	Experiment: Alcohol use intervention	S P	PSQ	Confused, staring, hostile behaviour, absence of friendliness	S	AUDIT, Lapses/ relapses, OCDS, PTSDDS, DHSCL	Repeated measures ANOVA	Perceived stigma reduced from pre to post intervention.	8.5
Fernando et al. (2010)	Doctors and Medical Students *n*=648	Experiment: Different Diagnosis	P	SS	PD, RB, Hard to talk to, PO	S	-	t-test, Two-way ANOVA, Percentages	Participants stigmatized AUD and DA more than schizophrenia, depression, dementia, or panic disorder. AUD was seen as less likely to improve, with more RB than schizophrenia and depression. Students had worse attitudes than doctors.	5.5

Francis et al. (2020)	Mental Health Clinicians *n*=32	Experiment: Vignettes	P	SDS, Items from DSS	SD, PD, weak not sick	S	-	Repeated Measures ANOVA	Comorbid MUD and schizophrenia were perceived as more dangerous and desiring more SD than schizophrenia alone. Comorbid AUD and schizophrenia did not differ from the other two conditions. Perceived weakness did not differ by diagnosis.	7
Fung et al. (2021)	PS Students *n*=489	Longitudinal Survey	SP	PWSS	DB, Inferiority	B	SABAS, BSMAS, DASS-21, BMI	Repeated Measures ANOVA, Correlations	PWSS was lower during and post lockdown than pre covid outbreak. PWSS was positively related to depression, anxiety, stress, and problem smartphone or social media use with medium to large effects.	8.5
Galanis et al. (2023)	Adults (35-50 yrs), *n*=1228	Experiment: Vignettes	P	AQ-27, USS-11	Anger, Pity, Fear, SD, Coercion, Help, Segregation, PD, RB, Distrust, Impairment	B	Gaming engagement, LOCR	ANOVA, LOOCV, ROPE	Addiction compared to non-addiction information have negligible impact on stigma of (problem and non-problem) gamers, but did reduce blame. Problem gamers were more stigmatized than non-problem gamers.	9.5

Goodyear et al. (2018)	Adults *n*=2605	Experiment: Vignettes	P	PSAS	RB, PD, Positive/ Negative affect	S	-	2 × 2 × 2 MANCOVA	Female targets, doctor precipitated OU, and familiarity with OU led to more positive affect. User precipitated opioid use led to greater perceptions of RB, PD, and negative affect. 'Addict' terms increased perceptions of RB and negative affect.	8.5
Harnish et al. (2016)	Veterans with SU and a recent arrest, *n*=48	Survey	S, S P	SSMIS, SSMIS-A	Stereotype Awareness, SE, Self-Concurrence, Self-Esteem Decrement	S	GPRA	2 × 4 repeated measures ANOVA	Stigma reduced as the stages progressed from awareness of stereotype, agreement, application of stereotype, to harm. The effect was stronger for SUD than mental illness and they did not differ at the application or harm to self stages.	7.5
Hing & Russell (2017b)	Problem Gamblers *n*=177	Survey	S	SS-PG	Ashamed, Stupid, Inadequate, Weak, RB	B	RSE-10, K-6, SCS, PGSI, COS	LRA, Correlations	K-6, PGSI, and use of electronic gambling machines, were positively correlated with self-stigma. Self-esteem was negatively correlated	8.5

									with self-stigma. These predictors accounted for 38.9% of the variance in self-stigma.	
Hing & Russell (2017a)	Problem Gamblers *n*=177	Survey	S, SP	SS-PG, ALPS, ARPG, DS-PG, EDS-PG	Shame, Status Loss, Stupid, Pity, Weak, Anger, Fear, SD, SE, DB, Devaluation	B	PGSI, ACPG	Correlation and mediation analyses	Anticipated stereotyping, SD, RB, disruptiveness, anger, status loss, and DB were positively correlated with self-stigma (mediated by public stigma), Pity was negatively correlated with self-stigma, when controlling for age, gender, and PGSI.	10
Hing, Russell, Gainsbury, & Nuske (2016)	Adults *n*=2000	Experiment: Vignettes	P	SDS, PDI	SD, PD	S, B	PCS, KIQ, PO, Concealability, LOCR	MLA, proportions	~20% thought a problem gambler would be violent. AUD was the most stigmatized (59.1%), then schizophrenia (52.6%), problem gambling (51.7%), recreational gambling (12.7%), sub-clinical distress (10.8%), PD had the same pattern of results.	8.5
Hing, Russell, &	Adults *n*=2000	Survey	P	PDDS, SDS-6,	Stereotyping, ER, SD, Devaluation	B	LOCR, PGSI, IGC, KIQ, PD,	Hierarchical LRA	Participants endorsed stereotypes about a problem gambler 40.1%-91.1% of the time, were	9.5

Gainsbury (2016)				ER, Stereotyping			PCS, Concealability, Recoverability		willing to engage with them 4.5-45.2% of the time, had ER 12.0-62.5% of the time, and perceived discrimination 58.0-66.3% of the time.	
Hooker et al. (2023)	Primary Care Clinicians (PCC) *n*=88	Experiment: Intervention	P	Difference, Disdain, and Blame Scales	Difference, Disdain, Blame	S	Treatment expectancies, DPPQ, CDSTU, Intent to prescribe buprenorphine	t-test, correlations, regression	No differences in training and attention control on OUD stigma. Stigma was not related to whether the PCC's had a physician or advanced practice degree, or had a waiver to prescribe buprenorphine. However, stigma was related to lower: intentions to get a waiver or to prescribe buprenorphine, willingness to work with people with OUD, and perceived treatment efficacy and compliance.	9.5

Horch & Hodgins (2008)	University Students *n*=249	Experiment: Vignettes	P	r-AQ, Adapted SDS-6, PDI, DDS	RB, Anger, Pity, Help, PD, Fear, SD, Segregation, Coercion, Devaluation, DB	S, B	LOCR, PGSI, IGC, Perceived-Causes	2 × 5 × 5 ANOVA.	Desired SD was greater for individuals with gambling disorder than for cancer or a control condition but did not significantly differ from AUD or schizophrenia. AUD and schizophrenia were perceived more dangerously than disordered gamblers.	7.5
Jackson & Shannon (2012)	Pregnant and in SUD treatment *n*=85	Survey	S P	BTSQ	BTSQ	S	HSRQ, ASI	Logistic regression	15.3% of participants who reported a barrier to treatment seeking endorsed stigma as a barrier. Broader category of 'acceptability' was endorsed by 51.4% of participants.	7
Johnson-Kwochka et al. (2021)	Adults *n*=304	Experiment: Vignettes	P	AQ-SUD, SDS	ER, SI, Lack of Empathy, RB, SD	S	LOCR, CB-SUD	EFA, ANCOVAs, Correlations	Familiarity to SUD was negatively related to stigma. Marijuana use had less pity/concern than OU, AU or stimulant use, higher RB than OU or stimulant use, and less negative ER than OU.	9

Jullian et al. (2023)	French Physicians n = 1,093	Survey	SP	BTSQ	BTSQ	S	AUDIT-C, health behaviours, specialized health services and consultations	Frequencies, Percentages	Only 80 (12.0%) of physicians thought that fear of being stigmatized was one of the main barriers for medical practitioners to seek help for substance addictions.	6.5
Kelly et al. (2021)	Nat. Rep. Adults *n*=3635	Experiment: Vignettes	P	MDSS, AQ-9	RB, SI, PO, continuing care, PD, Coercion, Segregation, Fear, Anger, Pity, Help	S	-	2 × 6 ANOVA	Terms eliciting least to most blame for OU were: chronically relapsing brain disease, brain disease, illness or disorder, problem or disease. Use of 'problem' was related to lower PD, more recoverable, and less in need of continuing care.	8.5
Khalid et al. (2020)	Men in DU treatment	Survey	S, SP	EPS	Labelling, SE, SI, status loss, and bigotry	S	Social Support, Self-Esteem, Depression	Frequencies, percentages	Enacted stigma components were endorsed by 40-80% of participants (e.g., 71% reported bad comments). Perceived stigma components were endorsed by 73-99% of participants. Self-stigma	5

	n=100								components were endorsed by 57-94% of participants.	
Klein et al. (2019)	Mental Health Workers *n*=546	Experiment: Vignettes	P	STC	SD, PD, RB	B	EE, RCMHS	2 × 2 × 2 ANOVA, Regression	Men with CSB were more stigmatized than women. Practitioner gender had no effect. Homosexual clients had less RB for CSB. Heterosexual men who met the criteria for CSB were seen as more PD than women, with ambiguous CSB.	8
Kloss & Lisman (2003)	Mental Health Clinicians *n*=61	Experiment: Vignettes	P	A-MICA	RB	S	UAS	2 × 3 (× 1) ANOVA	Community mental health clinicians rated the dual diagnosis (schizophrenia and alcoholism) vignette as more blameworthy than alcohol treatment clinicians. Endorsement of disease models for alcohol addiction were not related to blame.	5.5

Krendl & Perry (2022)	Adults *n*=7051	Experiment: Vignettes	P	NSS-RII	SD, Prejudice, Competence, Cause	S	-	Regression Analyses	Prejudice and SD was highest for heroin and methamphetamine use, lower for OUD, and lowest for AUD. Recreational onset led to more stigma than medical onset of addiction. Those in recovery had lower stigma than active users.	9
Lang & Rosenberg (2017)	Adults (<65 yrs) *n*=612	Experiment: Different Diagnoses	P	SDS-SU	SD	S, B	LOCR, PAP, SDS-17, SDAS	2 × 5 ANOVA	Participants were unwilling to associate with any addiction. From most to least SD: heroin, alcohol, Gambling, and pornography or marijuana with large effects. LOCR was unrelated to SD.	7.5
Lanzillotta-Rangeley et al. (2021)	Rural Community Residents *n*=173	Survey	P	BSRQ	SD, SE, Concealability, PD, Rights, marginalization	S	Knowledge of OUD, Naloxone, infectious disease, services	χ^2 analysis	Participants who endorsed SUD as a real illness were less likely to stigmatize, marginalize, SE, SD, or perceive people with SUD as dangerous, and more likely to support their rights and employment than those who believe it is not a real illness.	7

Latner et al. (2014)	Adults *n*=625	Experiment: Vignettes	P	UMB, SQ-18, AFA	Dislike, Rights, RB, FF, SD, Unpredictable, PD, Attention-Seeking, appeal Competency	B	PPQ, WLOC	2 × 2 ANOVA	Addiction explanations of over-eating led to reductions in stigma, fear of fat, and blame compared to non-addiction explanations. Obese targets received more stigma than normal weight targets in both addiction and non-addiction conditions.	7
Lau et al. (2020)	Adults *n*=1501	Survey	P	SAS	Stigma, Acceptance	B	Modified IPQ-R, IGDDC	Correlations	Stigma had small-med. positive correlation with cyclicality, negative emotions, treatment control, and consequences, negative relation with illness coherence, and unrelated to RB.	8.5
Ledford et al. (2021)	Undergrad. Students, MTurk	Experiment: Vignettes	P	Modified: PDS, PT, BSDS, BR, support for	PD, Threat, Common Ground, SD, BR	S	Modified SMS, CG, MSV	SEM, t-test	Descriptions of someone with opioid addiction that include a mark of stigma (e.g., describing them as unkempt) and a label, led to higher perceptions of dangerousness. Marks of stigma led to an increase in support for behavioural regulation and SD.	7.5

	n=(S1) 231, (S2) 245			rehab/jail and Naloxone						
C. S. Lee et al. (2008)	Medical Students *n*=123	Experiment: Vignettes	P	CJR	Stability, Help, Prognosis, Pity, RB, Likeability, Anger	S	Judgement of diagnosis	t-test, ANOVA	AUD identification was associated with higher perceptions of responsibility, and lower desire to help.	5
N. M. Lee et al. (2014)	Adults *n*=479	Survey	P	Adapted AMIQ & GSS	DB, Coercion, CA	B	YFAS, EDE-Q	Independent Samples t-test, ANOVA	Obese individuals held more stigma than normal weight participants. Own diagnosis of food addiction diagnosis did not affect public stigma. Coercive treatment strategies were not supported.	7.5
K.-Y. Lee et al. (2023)	Youth w ADHD *n*=100	Survey	S	SSS-S	Affect, Cognition, Behaviour	B	PSMU, PSPU, IGDS9-SF, DASS-21	OLS and logistic regression	Problem smartphone and social media use were related to self-stigma among youth with ADHD, but not related to problem gaming.	9

Loyal et al. (2022)	Adults *n*=342	Survey	P	P3S-PS	Derogatory cognitions, negative emotions and behaviours, ER, information provision	S	Condemnation & rejection, punitive action support, peer smoking	EFA, correlations	Men and Non-smokers had more derogatory cognitions, and negative emotions and behaviours, of pregnant smokers. P3S-PS was positively related to supporting punitive actions and condemnation/rejection for pregnant smokers.	7.5
Lu (2024)	USA Adults *n* = 1,438	Experiment: Vignettes	P	SDS-SU, Stigma Beliefs	SD, Stereotyping	S	Emotions	SEM	Whether a description of a relapse was present or absent in an AUD recovery story did not affect stigma. However, pity was positively associated with stigma and compassion was negatively associated with stigma, and anger was positively associated with stigma beliefs but negatively associated with desired SD.	8.5

Luty et al. (2006)	Rural Residents *n*=1079	Experiment: Vignettes	P	AMIQ, AQ-21	SI, PD, RB, Anger, Fear, Pity, Segregation, Help, Coercion	S	-	PCFA, Group Comparison, Correlations	Positive attitudes were held for Christian, diabetic, and depression. Among negative attitudes, attitudes for heroin users and the criminal were more negative than alcohol users, and schizophrenia.	6
Mahmoud et al. (2021)	Adult Nurses *n*=234	Survey	P	Adapted AQ-27 & SDS	PD, Fear, SD, RB	S	Personal SU, RSDS, Adapted: SUSS, FMI, PC-AAPQ, PS-SUD	LRA	Motivation to work with people with opioid use problems positively related to experience with SU (work or family, but not self or friends) and negatively related to stigma.	8
Mannarini & Boffo (2015)	University Students *n*=360	Experiment: Vignettes	P	Composite Measure	PD, Social Distance	S	MDCBS, MDTRS, OMI, CAMI-3	Latent Class Analysis	Alcohol and Drug addiction are more stigmatized than anxiety, depression, bulimia, and schizophrenia.	7

Marie & Miles (2008)	Adults *n*=(S1) 435, (S2) 104	Experiment: Vignettes	P	Adapted: SDS-11, AS Subscale	SD, PD	S	SD Scale to assess familiarity	2 × 4 ANOVA	Less SD was desired from someone with depression than Schizophrenia, AUD, or SUD. PD was negatively related to SD. Schizophrenia was seen as more dangerous than all other conditions, and AUD was more than depression.	5.5
McGinty et al. (2015)	Nat. Rep. adults *n*=3940	Experiment: Vignettes	P	GSS-SDS, MDS	DB, SD	S	Support for beneficial policies	Regressions	Participants desired greater SD from untreated vignettes than treated vignettes. Participants desired more SD from people with a drug addiction than with mental illness.	8.5
Meadows et al. (2017)	MTurk and University Students	Survey	S	AFAQ-R, WSSQ	Dislike, RB, self-devaluation, fear of stigma	B	YFAS, RS, IES, AS, EAT-26, MBSRQ-GOS-VS, FCQ-T, BIS-15, CES-D	Independent Samples t-test, χ^2	Self-perceived food addiction was not related to changes in self-stigma or fear of stigma	8.5

	n=(S1) 614, (S2) 658									
Miquel et al. (2018)	GPs *n*=867	Survey	P	BTSQ	BTSQ	S	AUDIT-C, risk of hypertension, difficulty	Percentages	Stigma as a barrier to screening for AU was endorsed by 16.5% of GPs. Fear of annoying the patient or not wanting to repeat questions were also stigma-related barriers reported.	6.5
Montemarano & Cassin (2021)	Undergrad. students *n*=757	Experiment: Vignettes	P	AFA-Q, AFAT, FPS-S, UMB-FAT	Undisciplined, Inactive, Unappealing, RB Judgement, SD, Attraction, dislike, FF	B	PPQ	2 × 2 factorial ANOVA	Food addiction explanations of weight had more favourable judgements and perceptions of psychopathology than personal choice explanations. Most of these effect sizes were small to very small. Higher BMI led to more stigmatizing judgements.	8.5
Moore et al. (2020)	Incarcerated women	Survey	S	Adapted DSSS	Perceived Stigma of treatment, SE, AES, internalized stigma,	S	TLFB, PSS-14, SF-12, SU, SIP-2R, AU-	Block multivariate LRA	Education, stress, AU history, treatment readiness, pressure to get treatment, exchanging sex or DU (<3mth) were positively related to	9

	with AUD *n*=185						crime, CMR, sex trading, homeless		internalized stigma. Education, treatment readiness, AU severity, stress, were positively related to AES.	
Morgiève et al. (2019)	Adults *n*=2600	Experiment: Video-Vignettes	P	CAQ	SE, prejudice, DB	S	-	Regressions, Factor Analysis	Participants were more likely to think that alcohol addiction leads to violence to others than bipolar disorder, OCD and anorexia. 50% of participants desired SD from Alcohol addiction, more than other mental illnesses.	4.5
Noblett et al. (2015)	Trainee-Doctors *n*=52	Experiment: Vignettes	P	AMIQ	SI, PD	S	Training Experience	One-Way ANOVA	Attitudes were more positive towards physical than mental health issues. Personality disorder, schizophrenia, and heroin addiction were viewed worse than alcoholism, and depression. Trainee doctors were suspicious of reasons for attending ED.	7

Opsal et al. (2016)	Psychiatric or SU in-patients *n*=192	Survey, Quasi-Experiment	S P	PCQ	Coercion	S	EASI, TGSI, SC-90-R, MINI	Independent Samples t-test, LRA, χ^2 Analyses	Voluntarily admitted SUD patients had higher internal sources of PCQ than involuntarily admitted patients, but groups did not differ in overall PCQ. Legal coercion was higher for involuntarily admitted patients, but endorsed by both groups.	8.5
Papatsaraki et al. (2024)	Adults *n* = 376	Survey	S	WBIS	RB, Competency, SI	B	DASS-21, YFAS, LOT, BRS, PANAS	Correlations, Hierarchical Regression	WBIS subscales of self-devaluation (r = 0.11, p =.038) and weight-related distress (r = .34, p < .001) had small positive correlations with food addiction.	5.5
Pennington et al. (2023)	Adults *n* = 1,613	Experiment: Vignettes	P	MDSS, AQ-9, PPPS, Financial	RB, SI, PO, continuing care, PD, PP, treatment stigma; personal SE/ prejudice, DB	S	Manipulation Check	Independent samples t-tests	Drug use received more SD, PD, stigma, and discrimination, but less blame than a health concern. The term 'brain disease' was associated with more blame towards people with SUD than	9

				Discrimination					the term 'problem' but had small effects at most on other aspects of stigma.	
Peretti-Watel (2003)	Nat. Rep. France (15-75 yr) *n*=2009	Survey	P	FDQ	RB, sick, family troubles, hanger-on, PD, corrupting	S	Attitudes to risk reduction policy	MLR, Cluster Analysis, χ^2 Analyses	73% of participants thought heroin users were dangerous, 22% labelled them "hangers-on", few thought users could have an ordinary life, 28% were considered hostile towards users.	7
Pérez-Pedrogo et al. (2020)	Adults with SUD: in prison or HIV programs (*n*=412)	Survey	S	SASSS, SRRS	Self-devaluation, fear of enacted stigma, stigma avoidance, values disengagement, rejection	S	SSI-SA, RSE-10, GSES, AAQ-SA, PHQ-9, ISS, SU, CIDI Substance Abuse Module, HFSS	CFA, Pearson Correlations	SASSS was positively correlated with; HIV felt Stigma *r* = .56, depression symptoms *r* = .43, shame *r* = .67, stigma-related rejection *r* = .32, and negatively correlated to; self-esteem *r* = -.29, psychological flexibility *r* = -.57, and self-efficacy self-esteem *r* = -.31.	8

Perry et al. (2020)	Nat. Rep. *n*=1169	Experiment: Vignettes	P	NSS-RII	Labelling, SD, PD, competence, CA	S	-	LRA, Logistic Regressions	Less SD was desired from persons with subclinical distress and depression compared to OUD, AUD, and schizophrenia. OUD was seen as less dangerous than schizophrenia and AUD but more than subclinical distress and depression.	8
Peter et al. (2019)	Adults *n*=822	Experiment: Vignettes	P	AQ-27, SDS	PD, Coercion, Segregation, SI, RB, Fear, Anger, Pity, Help	B	LOCR	One-Way ANOVA, Correlations	Gamblers/gamers were more stigmatized than someone in a financial crisis. More SD was desired from casino gamblers than gamers. Gamblers were seen as more dangerous than gamers.	9.5
Probst et al. (2015)	Patients with AUD *n*=1008	Survey	S	BTSQ	BTSQ	S	CIDI, problem awareness, other problems,	Percentages	Stigma and Shame was the second most reported reason for not seeking treatment, accounting for 28.6% of participants who did not receive treatment (80.36% of all participants did not receive treatment) in the preceding 12 months.	9.5

							desire to cope alone.			
Quigley et al. (2020)	University Students, Adults *n*=(S1) 333, (S2) 395	Experiment: Labels	P	SDS, GPS, Adapted RDS, DDS	PD, CA, SD, devaluation, DB	S, B	AC, LOCR, PGSI, BIDR-IM, MISS	One-way ANOVA, MANOVAs	Different gambling labels resulted in similar stigma, but more stigma than depression, OCD, or asthma. Gambling had some similarities with compulsive buying and AUD but seen as more dangerous, disruptive, and devaluing than compulsive buying.	8.5
Racine et al. (2017)	Adults *n*=2378	Experiment: Intervention	P	FAD-Plus	RB	S	ASSIST-LITE, Neuroscience Knowledge, SUD among Peers	t-test, OLS	Neuroscientific explanations (and imagery) of addiction did not significantly affect perceptions of responsibility or volition. However, text and imagery did reduce perceptions of volition towards cocaine addiction compared to a control.	8

Razeghian Jahromi et al. (2023)	People with SUD *n* = 80	Survey	S P	SS-28	Discrimination, disclosure, positive aspects	S	BDEFS	Pearson's correlation	Stigma among people seeking help for substance use problems was positively associated with executive dysfunction.	7.5
Ruddock et al. (2019)	Adults *n*=(S1) 439, (S2) 523	Experiment: Vignettes	P	Modified FPS-S, AFA, EQ	FF, Dislike, RB, Undisciplined, Inactive, Unappealing	B	DEBQ, SPFA, ABS, AEBS	One-Way ANOVA, MRA	Medical diagnosis of food addiction led to greater stigma than the self or no diagnosis. BMI was negatively related to stigma. Belief in addiction as a disease was positively related to stigma.	9
Rundle et al. (2021)	MTurk *n*=1072	Experiment: Vignettes	P, P P	PPPS	PP, treatment stigma; personal SE/ prejudice, DB	S	PAAS	One-way ANOVA, MRA	AUD and comorbid AUD/MDD did not differ but had more stigma than MDD or diabetes. Endorsing psychological or nature models of addiction was negatively related to stigma, but moral models were positively related to stigma.	6.5
Salameh et al. (2021)	Pregnant with mental	Survey	S P	BTSQ	BTSQ	S	self-rated health and need for	χ^2 Analyses	Stigma was the third most common barrier reported to treatment seeking pregnant women and affected women with SUD (38.1%) or	7

	health problems or SU *n*=1627						treatment, DSM-IV, K-6.		comorbid mental health and SU issues (36.7%) more than those with just mental health issues (22.6%).	
Sarkar et al. (2019)	SUD Patients *n*=201	Survey	S	ISMIS	SE, DB, SI, stigma resistance	S	WHOQOL-Brief	Correlations, Independent Samples t-test, ANOVA	OUs had more severe internalized stigma. Internalized stigma was negatively correlated with QoL. Alienation was higher among participants than withdrawal, discrimination, SE, or stigma resistance.	9
Smith et al. (2020)	MMT Patients *n*=93	Survey	S	MMT-SMS, SU-SMS	AES, Internalized	S	DU history, MMT history	CFA, Correlations	Methadone dose was negatively related to internalized stigma. Anticipated stigma was positively associated with heroin use, withdrawal symptoms, and living with a drug user.	8
Uygur et al. (2020)	SUD or AUD	Survey	S	ISMIS	SE, DB, SI, stigma resistance	S	RES, BDI, BAPI, MSPSS,	Correlations	Internalized stigma has a small negative relationship with psychological flexibility.	7.5

	Patients *n*=191						AAQ-SA, SCS-10			
van Boekel et al. (2014)	Healthcare Workers *n*=347	Survey	P	MCRS, AQ-20	SI, Frustration, Anger, Help, RB, Fear, Pity, PD Coercion, Segregation	S	Personal Drinking habits, LOCR, MC-SDS, ABAAQ	ANOVA, MRA	Addiction services workers held the most positive attitudes to patients with SUD, then psychiatry services, and lastly GPs. Socially desirable responding and familiarity was positively related to regard while RB, fear, and anger were negatively.	8.5
Wakeman et al. (2016)	Doctors *n*=149	Survey	P	ASQ	Attitudes	S	Exposure, SUD clinical practice and preparedness	Independent Samples t-tests	Hospital physicians believed SUD was a choice, not treatable or satisfying to treat, and deserving of punishment more often than PPP. Nearly all felt SUD patients were more challenging.	6
Washburn et al. (2023)	Adults *n*=469	Experiment:	P	SCMHC, STSM	Positive/negative outcomes, shame,	S	DSES, DCFS, Familiarity, ATSPPH-SF	EFA, Correlations	No differences based on vignette's gender or an interaction with respondent gender on stigma domains. Familiarity with behavioural health	6.5

		Vignettes			secrecy, treatment avoidance				issues and spirituality were negatively related to stigma.	
Wild et al. (2021)	Adults *n*=4645	Survey	P	Modified SDS-WHO	SD	S	LOF, SUSAS, Harm Reduction support/exposure	SEM	There was a negative relationship between familiarity with PWUD, and media exposure to harm reduction with Stigma and a positive relationship of endorsement of disease model to Stigma.	9.5
L. T. Wu et al. (2011)	Adolescents with OUD *n*=1788	Survey	SP	BTSQ	BTSQ	S	DSM-IV OUD Criteria, CJS, health, enabling	Percentages	22% of participants who felt they needed treatment endorsed not wanting others to find out or concerns of neighbours developing negative opinions as reasons not to seek treatment.	8
Wyler et al. (2022)	Insurance experts or	Survey	P	MCRS	SI, Help, Anger/Frustration	S	Opinions on AUD, Opinions of	Correlations, Pairwise comparisons	Addiction therapists had higher regard for AUD clients than lawyers or insurance medical experts. No correlation between MCRS scores and frequency of working with AUD.	8

	therapists *n*=79						legal precedent			
Xin et al. (2022)	Clin. Social Workers *n*=309	Survey	P, PP	DUSS	Stigmatization, PP Stigma	S	Acceptability of treatment goals, DU	Correlations	Acceptability of non-abstinence was negatively correlated with stigma with small to medium effect for Tobacco, Cannabis, Alcohol, Cocaine, Hallucinogen, Opioids, Methamphetamine.	8.5
Yashikhina et al. (2023)	Medical Students *n* = 152	Experiment: Intervention	P	BSDS	SI	S	-	Paired Samples t-test	Medical students desired social distance from people with AUD or drug addiction did not change from pre to post a psychiatry course.	4.5

Note. Reporting quality is the score given by the first reviewer (CG) and the recommended adjustment of -0.74 based on differences between the first and second reviewer (ML) should be considered on interpretation. (Sx): Indicates which study for papers which included more than one study, study 2 of Boysen et al. (2020) was excluded as it did not relate to addiction. AAQ-SA: Acceptance and Action Questionnaire - Substance Abuse, ABAAQ: Attitudes and Beliefs about Alcoholism and Alcoholics Questionnaire, ABS: Addiction Belief Scale, AC: Adjectives Checklist, AEBS: Addiction-Like Eating Behavior Scale, AES: Anticipated and Enacted Stigma, ACPG: Anticipated Characterization of Problem Gambling, AFA: Anti-Fat Attitudes Scale, AFAQ-R: Anti-Fat Attitudes Questionnaire Revised, AFAT: AntiFat Attitudes Test, ALPG: Anticipated Level of Public Stigma, AM-BS: Attitude Measurement - Brief Scale, A-MICA: Attributions of Mentally Ill Chemically Addicted, AMIQ: Attitude toward Mental Illness Questionnaire, APF: Active or Passive Facilitation, APH: Active or

Passive Harm, AQ-27: Attribution Questionnaire (27-items), AQ-SF: Attribution Questionnaire Short Form, ARPG: Anticipated Reactions to Problem Gamblers, AS: Affect Scale, ASBD: Ascent Scale of Blatant Dehumanization, ASI: Addiction Severity Index, ASQ: Attitude Statements Questionnaire, ASSIST-LITE: Ultra-Rapid Screening for Substance Use Disorder, ATSPPH-SF: Attitudes Toward Seeking Professional Psychological Help - Short Form, AU: Alcohol Use, AUD: Alcohol Use Disorder, AUDIT: Short Alcohol Use Disorder Identification Test, B: Behavioural Addiction, BAPI: Addiction Profile Index, BARC-10: Brief Assessment of Recovery Capital, BDEFS: Barkley Executive Function Questionnaire, BES: Binge Eating Scale, BIAS: Behaviors from Intergroup Affect and Stereotypes Scale, BIDR-IM: Balanced Inventory of Desirable Responding - Impression Management Subscale, BIS-15: Barratt Impulsiveness Scale - Short Form, BR: Behavioural Regulation, BRS: Brief Resilience Scale, BSDS: Modified Bogardus (1933) Social Distance Scale, BSMAS: Bergen Social Media Addiction Scale, BSRQ: Bias or Stigma Related Questions, BTSQ: Barrier to Treatment Seeking Question, CA: Causal Attributions, CAMI-3: Community Attitudes to the Mentally Ill, CAQ: Crazy'App Questionnaire, CB-SUD: Causal Beliefs about Substance Use Disorders, CDSTU: Clinical Decision Support Tool Use, CES-D: Center for Epidemiological Studies Depression Scale, CFA: Confirmatory Factor Analysis, CG: Common Ground, CHQ-12: Chinese Health Questionnaire-12, CJR: Clinical Judgement Ratings, CMR: Circumstances, Motivation, and Readiness, COS: Coping Orientation Scale, CSB: Compulsive Sexual Behavior, CIDI: Composite International Diagnostic Interview, DB: Discrimination Behaviors, DCFS: Devaluation of Consumer Families Scale, DDS: Devaluations-Discrimination Scale, DEBQ: Dutch Eating Behavior Questionnaire, DHSCL: Depression-section of the Hopkins Symptoms Checklist, DPPQ: Drug Problems Perceptions Questionnaire, DS: Dangerousness Scale, DS-PG: Discrimination Scale for Problem Gambling, DSES: Daily Spiritual Experiences Scale, DSS: Depression Stigma Scale, DSSS: Depression Self-Stigma Scale, DU: Drug Use, DUSS: Drug Use Stigmatization Scale, EASI: European Addiction Severity Index, EAT-26: Eating Attitudes Test, ED: Emergency Department, EDE-Q: Eating Disorder Examination Questionnaire, EDS-PG: Experiences of Devaluation for Problem Gambling, EE: Evaluation of Etiology, EFA: Exploratory Factor Analysis, EPS: Enacted, Perceived, and Self Stigma, EQ: Employability Questions, ER:

Emotional Responses, ERQ: Emotional Reactions Questions, ESES: Eating Self-Efficacy Scale, FAD-Plus: Free Will and Determinism Instrument, FDQ: Folk Devils Questionnaire, FF: Fear of Fat, FMI: Familiarity with Mental Illness, FPS: Fat Phobia Scale, FCQ-T: Food Cravings Questionnaire - Trait, FPS-S: Shortened Fat Phobia Scale, FSD: Frequency of Stigma or Discrimination, FTCD: Fagerstrom Test of Cigarette Dependence, GLM: Generalized Linear Multivariate Model, GQA: General Quiz on Alcohol, GNAT: Go/No Go Association Task, GOI-VS: Goal Orientation Inventory - Validation Seeking Subscale, GPRA: Government Performance and Results Act Questionnaire, GPS: General Perceptions Scale, GSES: General Self-Efficacy Scale, GSS-SDS: General Social Survey-Social Distance Scale, HFS: Human Flourishing Scale, HFSS: HIV Felt Stigma Scale, HSRQ: Health Services Research Questionnaire, IARSS: Adapted from the Internalized Aids-Related Stigma Scale, IDU: Injecting Drug Use, IES: Intuitive Eating Scale, IGC: Involvement in Gambling Checklist, ISMS: Internalized Stigma of Mental Illness Scale, ISS: Internalized Shame Scale, ISSA: Internalized Stigma of Substance Abuse Scale, IGDDC: IGD Diagnostic Criteria, IGDS9-SF: Internet Gaming Disorder-Short Form ISSI: Internalized Stigma of Smoking Inventory, K10: Kessler Psychological Distress Scale, KIQ: Key Informants Questionnaire, LOCR: Level of Contact Report, LOF: Level of Familiarity Questionnaire, LOT: Life Orientation Test, LOOCV: Leave-One-Out Cross-validation, LFS: Luo Functioning Scale, LRA: Linear Regression Analysis, LSR: Least Squares Regression, MBSRQ: Multidimensional Body Self-Relations Questionnaire, MCRS: Medical Condition Regard Scale, MCSDS: Marlowe Crowne Social Desirability Scale, MDCBS: Mental Disorders Causal Beliefs Scale, MDS: McGinty Discrimination Scale, MDSS: Multi-Dimensional Stigma Scale, MDTRS: Mental Disorder Therapy Relationship Scale, MINI: Mini International Neuropsychiatric Interview, MISS: Mental Illness Stigma Scale, MLR: Multivariate Logistic Regression, MMT-SMS: Methadone Maintenance Treatment Stigma Mechanisms Scale, MOS: Medical Outcomes Study Social Support Survey, MRA: Multiple Regression Analysis, MSPSS: Multidimensional Scale of Perceived Social Support, MSV: Message Shock Value, MUD: Methamphetamine Use Disorder, NSS-RII: National Stigma Studies - Replication II, OBCS: Objectified Body Consciousness Scale, OCDS: Obsessive Compulsive Drinking Scale, OLS: Ordinary Least Squares Regression, OMI: Opinions about Mental

Illness, OTI: Opiate Treatment Index, OUD: Opioid Use Disorder, P: Public Stigma, P3S-PS: Pregnant Smoker Stigma Scale - Public Stigma, PAAS: Pubic Attitudes and Addiction Survey, PANAS: Positive and Negative Affect Schedule, PAP: Perceptions of Addiction Potential, PAQ: Patient Attitudes Questionnaire, PC-AAPQ: Person-Centred Alcohol and Alcohol Problems Questionnaire, PCFA: Principal Component Factor Analysis, PCQ: Perceived Coercion Questionnaire, PCS: Perceived Causes Scale, PD: Perceived Dangerousness, PDDS: Perceived Devaluation Discrimination Scale, PDI: Perceived Dangerousness Item, PDS: Perceived Dangerousness Scale, PGSI: Problem Gambling Severity Index, PHQ-9: Patient Health Questionnaire, PP: Perceived Public Stigma, PPQ: Perceived Psychopathology Questionnaire, PSAS-8: Perceived Stigma of Addiction Scale, PSMI: Perceived Stigma toward Mental Illness, PSMU: Problematic Social Media use, PSPS-TV: Perceived Stigma Toward People Who Use Substances - Taiwan Version, PSPU: Problematic Smartphone Use, PSQ: Perceived Stigmatization Questionnaire, PSS: Public Stigma Scale, PSS-14: Perceived Stress Scale, PS-SUD: Professional Satisfaction when caring for SUD Patients, PT: Perceived Threat, PTSDDS: Post Traumatic Stress Disorder Diagnostic Scale, PWID: People Who Inject Drugs, PWIL Personal Wellbeing Index, PWSS: Perceived Weight Stigma Scale, RB: Responsibility and Blame (and Willpower), RC-10: Brief Assessment of Recovery Capital, RCMHS: Ratings of Clients' Mental Health Status, RDS: Reasons for Depression Scale, ROPE: Region of Practical Equivalence, RS: Dietary Restraint Scale, RSDS: Reynold's 13-itme Social Desirability Scale, RSE-10: Rosenberg Self-Esteem Scale, S (in *Type of Stigma*): Self-Stigma, S (in *Type of Addiction*): Substance Addiction, SABAS: Smartphone Application-Based Addiction Scale, SAS: Stigma and Acceptance Scale, SASSS: Substance Abuse Self-Stigma Scale SC-90-R: The Symptom Checklist, SCMHC: Stigma Concerns about Mental Health Care Scale, SCS: Self-Consciousness Scale, SCS-10: Self-Concealment Scale, SD: Social Distance, SDS-6: Social Distance Scale (6 items), SDS-11: Social Distance Scale (11-items), SDS-17: Social Desirability Scale, SDAS: Subjective Definitions Addiction Scale, SDSS: Semantic Differential Scale of Stereotyping, SDS-SU: Social Distance Scale for Substance Users, SDS-WHO: Modified World Health Organization Social Distance scale, SE: Stereotype Endorsement ('stereotyping') or Agreement, SEM: Structural Equation Modelling, SF-12: Short Form Health Survey, SI:

Social Isolation (Withdrawal/Avoidance/Alienation/Separation), SIP-2R: Short Inventory of Problems, SKS: Staff Knowledge Survey, SMR: Stepwise Multiple Regression, SMS: Stigma Message Sharing, SP: Self-Perceived Stigma, SPFA: Self-Perceived Food Addiction, SQ-18: Stigma Questionnaire, SRRS: Stigma-Related Rejection Scale, SS: Stigma Scale, SS-28: 28-item Stigma Scale, SSI-SA: Simple Screening Instrument for Substance Abuse, SSMIS: Self-Sigma of Mental Illness Scale, SS-PG: Self-Stigma of Problem Gambling, SSS-S: Self-Stigma Scale-Short, STC: Stigmatization Towards Clients, STSM: Stigma Towards Substance Misuse, SUD: Substance Use Disorder, SUSAS: Short Understanding of Substance Abuse Scale, SU-SMS: Substance Use Stigma Mechanism Scale, SUSS: Short Understanding of Substance-use Scale, SYMHLSS: Swiss Youth Mental Health Literacy and Stigma Survey, TDQ: Taiwan Depression Questionnaire, TGSI: The Global Symptom Index Score, TLFB: Timeline Followback, TST: Treatment-seeking threshold, UAS: Understanding of Alcoholism Scale, UMB: Universal Measure of Bias, UMBFAT: Universal Measure of Bias of Fat, WBIS: Weight Bias Internalization Scale, WC: Warmth and Competence, WHOQOL-BREF: The World Health Organization Quality of Life-Brief Version, WLOC: Weight Locus of Control, WSSQ: Weight Self-Stigma Scale, YFAS: Yale Food Addiction Scale, YFAS-C: Yale Food Addiction Scale for Children**.**

Supplementary Table 2

Supplementary Table 2.

Summary of Most Commonly Used Stigma Measures (n = 21) Identified in Reviewed Studies (n=99) [Chapter 2]

Tool	Original Author	Inclusion in Studies in this Review	No. of Studies (No. of Cites)	No. of Items	Type of Stigma	Relevant Conditions	Validation
AFA	Crandall (1994)	5	115 (2082)	13	Public Stigma	Overweight, Obesity, Food Addiction	AFA subscales dislike and fear of fat were positively correlated with food addiction, but willpower was not related (Burmeister et al., 2013). However, only fear of fat was consistently correlated with other eating disorder scales and the WBIS (Burmeister et al., 2013). Ruddock et al. (2019) reported no effect of food addiction diagnosis on AFA. Latner et al. (2014) reported that fear of fat and willpower was lower for participants who read addiction compared to non-addiction explanations of over-eating.

AFAQ-R	D. M. Quinn & Crocker (1999)	1	115 (433)	18	Public Stigma	Overweight	Meadows et al. (2017) found little to no difference between food addiction (presence, absence, or self-perceived) on AFAQ-R subscales.
AFAT	Lewis et al. (1997)	2	115 (264)	9-47 used	Public Stigma	Overweight, Obesity, Binge Eating	Binge eaters received more blame and lower ratings of attractiveness compared to non-binge eaters (Bannon et al., 2009). Montemarano & Cassin (2021) did not report validation of the AFAT.
r-AQ	Watson et al. (2004)	1	635 (295)	9	Person-Specific	Schizophrenia, AUD, pathological gambling, cancer	Horch & Hodgins (2008) did not report validation of the r-AQ (listed as the AQ-SF).
AQ-20	Corrigan et al. (2002)	1	635 (835)	20	Public Stigma	Substance Addictions	Cannot draw conclusions about validation of the AQ-20 from Van Boekel et al. (2014) as it is unclear which questions from the AQ-20 were used.
AQ-27	Corrigan et al. (2003)	6	635 (833)	21-27	Person-Specific	Schizophrenia, SUD, gambling disorder, depression, bulimia,	The AQ had a strong positive correlation with the AMIQ (Luty et al., 2006) and SDS (but negative for the subscale pity) (Peter et al.,2019), the subscales fear and responsibility negatively correlated

						anxiety, food addiction, obese, physically disabled	with motivation to work with OUs (Mahmoud et al., 2021). Five subscales had more stigma (others were not significant) for gamers and gamblers than someone in a financial crisis (Peter et al., 2019). The physically disabled label had lower AQ-27 scores than cocaine addict, food addict, or smoker (DePierre et a., 2013). DePue et al. (2024) and Galanis et al. (2023) reported no validation of the AQ-27.
BSDS	Modification by Gillespie-Lynch et al. (2015)	1	669 (345)	3	Person-Specific	Opioid Use	Ledford et al. (2021) reported that danger appraisal had a strong negative correlation with Social Distance (Measured by BSDS), Study 1: $r = -.49$, $p < .01$, and Study 2: $r = -.60$, $p < .01$. Dambrun et al. (2024) and Yashikhina et al. (2023) reported no validation of the BSDS.
DSS	K. M. Griffiths et al. (2004)	1	48 (811)	6 out of 18 used	Public Stigma	Schizophrenia, AUD, methamphetamine use	Francis et al. (2020) did not report validation of the DSS.

FPS-S	Bacon et al. (2001)	3	161 (301)	14	Public Stigma	Overweight, Obesity, Food Addiction	FPS-S was positively correlated with SD and weakly to responsibility of a food addict, but unrelated to sympathy/concern, or anger/disgust (DePierre et al., 2013). Person-specific FPS-S was higher for vignettes with food addiction compared to a control condition with no food addiction information (Ruddock et al., 2019).
IA-RSS	Kalichman et al. (2009)	1	319 (510)	4	Self-Stigma	Injecting Drug Use	Brener et al. (2022) did not report any validation of the modified version of the IA-RSS.
ISMI	Ritsher et al. (2003)	1	348 (1642)	29	Self-Stigma	Substance Use	Can Gür et al. (2020) reported that the ISMI was used to provide criterion-concurrent validity for the Substance Use Stigma Mechanism Scale (SU-SMS) and had a significant positive correlation (r = .55).
MCRS	Christison et al. (2002)	2	94 (156)	11	Person-Specific	Substance use, Schizophrenia	Avery et al. (2013) and Wyler et al. (2022) had no validation of the MCRS. Van Boekel et al. (2014) reported that fear, anger, and attributions of responsibility were related to lower regard.

MISS	Adaptio n by Day et al. (2007)	1	79 (182)	28	Public Stigma	Gambling, Depression, OCD, AUD, Asthma	Quigley et al. (2020) reported that the subscales interpersonal anxiety, relationship disruption, poor hygiene, and professional efficacy were endorsed more and treatability less, for gambling than asthma, but did not differ for visibility or recovery.
PDDS	Link (1987)	5	62 (2118)	12-13	Perceived and anticipate d public Stigma	Depression, OCD, CBD, Asthma, AUD, Cancer, Schizophrenia, Gambling	Horch and Hodgins (2008) had no validation of the PDDS. However, Quigley et al. (2020) reported that Asthma had significantly less perceived stigma (measured by the PDDS) than gambling addiction (or depression, OCD, AUD, CBD). Billian et al. (2024), K. L. Brown and Russell (2019), and Hing, Russell, and Gainsbury (2016), did not report validation of PDDS for addiction specifically.
PSQ	Lawrenc e et al. (2006)	1	97 (122)	11	Self-perceived ratings	Alcohol Use	Ertl et al. (2021) PSQ decreased following treatment for alcohol use.
SDS-SU	Adapted for SU	3	46 (116)	7	Person-Specific	SU and behavioural addictions.	Neither S. A. Brown (2011) nor Lang and Rosenberg (2017) reported validation of the SDS-SU.

	by Brown (2011)						Lu (2024) reported that SDS-SU was negatively associated with anger.
SSMIS	Corrigan et al. (2006)	1	107 (1686)	40	Self-stigma, self-perceived	Mental health, Substance Abuse	Harnish et al. (2016) did not report any validation of the SSMIS.
SS-PG	Hing & Russell (2017a, b)	2	55 (23)	19	Self-Stigma	Problem Gambling	Hing and Russell (2017a) reported that SS-PG was positively correlated with Problem Gambling Severity, $r = .40$, $p < .05$, and psychological distress, $r = .44$, $p < .05$.
SSS-S	Mak & Cheung (2010)	4	162 (201)	9	Self-Stigma	Substance Use	C. C. Chang et al. (2020) reported that the SSS-S explained 13% of variance in PSPS-TV, with a positive relationship. K.-Y. Lee et al. (2023) reported that SSS-S was related to problem smartphone and social media but not problem gaming. Chen et al. (2022) also reported significant correlations of Problem social media $r = .22$,

							smartphone *r* = .30, and gaming *r* = .17, with self-stigma. C.-W. Chang et al. (2023) reported significant small positive relationships of the cognitive, affective, and behavioural scales of the SSS-S with problem gaming (*r* = .19, .24, .16), problem use of social media (*r* = .20, .27, .19) and smartphones (*r* = .32, .36, .28).
WBIS	Durso & Latner (2008)	3	424 (524)	11	Self-Stigma	Overweight, Obesity	The WBIS (at baseline) was correlated food addiction (at three-month follow-up), *r* = 21, *p* < .01 (Ahorsu et al., 2020). The WBIS correlated with the fear of fat subscale of the AFA, *r* = .46, *p* < .01, but not willpower or dislike (Burmeister et al., 2013). Papatsaraki et al. (2024) reported that the WBIS subscales were positively correlated with food addiction (*r* =.11, *p* =.038; *r* = .34, *p* < .001).
WSSQ	Lillis et al. (2010)	1	198 (242)	12	Self-Stigma	Overweight, Obesity	Meadows et al. (2017) reported that the WSSQ is significantly correlated with food addiction symptoms, *p* < .001, *r* = .34-.45.

Note. AFA: Anti-Fat Attitudes Scale, AFAQ-R: Anti-Fat Attitudes Questionnaire Revised, AFAT: AntiFat Attitudes Test, AQ-20: Attribution Questionnaire (20 items), AQ-27: Attribution Questionnaire (27-items), r-AQ: Attribution Questionnaire Short Form, BSDS: Bogardus Social Distance Scale, CBD: Compulsive Buying Disorder, DDS: Devaluations-Discrimination Scale, DSS: Depression Stigma Scale, FPS-S: Shortened Fat Phobia Scale, IA-RSS: Internalized Aids-Related

Stigma Scale, MCRS: Medical Condition Regard Scale, MISS: Mental Illness Stigma Scale, OU: Opioid Use, PSQ: Perceived Stigma Questionnaire, SDS-SU: Social Distance Scale for Substance Users, SSMIS: Self-Sigma of Mental Illness Scale, SS-PG: Self-Stigma of Problem Gambling, SSS-S: Self-Stigma Scale – Short, SU: Substance Use, WBIS: Weight Bias Internalization Scale, WSSQ: Weight Self-Stigma Scale.

Supplementary Table 3

Supplementary Table 3.

Summary of Components of Each Theme [Chapter 3]

Themes and *Subthemes*	**Features of Theme**	**Example**
Public understanding of problem gaming		
Defining Gaming Addiction	Screen time indicates addiction.	"I think it would be a handy diagnosis to have considering the amount of time people can play MMORPG's and other games." [39M]
	Addiction is more than screen time.	"Yes, but I do not think simply playing a lot means you are necessarily addicted." [45F]
	Neurological addiction responses to video games.	"If the condition triggers the same mechanisms in the brain that a drug would, then I believe it can be considered an addictive disorder." [44M]
	Not everyone will get addicted to games, and addictive personalities may play a role.	"Yes, for those who are predisposed to being addicted to stimulations. Gaming is not inherently 'addictive'." [38M]
	Experience of harm from gaming.	"I would consider it a disorder only if it was having a negative impact on other areas of their life." [36F]
	Tolerance to gaming.	They want to game more and more" [48M]
	Withdrawal symptoms when stopping gaming.	"When his gaming time was limited, he would become moody and irritable" [49M]

	Loss of control over gaming.	"It could be if the gamer finds it difficult to stop" [43M
	Pre-occupation with gaming.	"It would dominate my free time and thoughts" [47M]
	Lack of interests outside of gaming.	"I think it could be considered an addictive disorder when all the person wants to do is play games." [40F]
	Using gaming as a coping mechanism.	"I think gaming can be used as a relief/escape from the real world and that can become problematic just like any other relief/escape activities" [35F]
Game types, features, and the gaming industry	Games are diverse.	"Playing casual mobile games is very different to engaging in a committed guild-based game with responsibilities or games where you work through them solo." [38F])
	Participants reported personal problems with Mobile games and MMOs.	"I can't have Candy Crush or the many related games on my phone, I have to keep them off my phone completely or I play them obsessively." [40F] "I have personally been addicted to playing an MMO." [44F]
	Gambling mechanisms in games were considered problematic and could lead to gambling addiction.	"I think the other thing that needs to be considered when it comes to problem gaming is the predatory gambling mechanics, such as loot boxes, which will pull in people who already have a gambling addiction and younger games that could develop one." [39M]
	Highly immersive games lead to gaming being more time consuming.	"Some role-playing games are very immersive and time consuming and if you cannot control yourself, you get sucked up into it." [44M]

	Social gaming causes more problematic gaming.	"I believe gaming is addictive especially when your peers are playing. My son doesn't want to miss out so can be on there for hours if I let him." [49F]
	Achievement and reward structures can lead to more addictive gaming.	"Certain games that have rewards or progression to next levels may make some players addicted" [40F]
	Games are designed to be addictive.	"Games are specifically engineered for engagement to make them addictive. ON PURPOSE." [49M]
	Game developers are responsible for gaming addiction.	"The gaming industry should be taking more responsibility" [46M]
	The gaming industry should be regulated.	"I think game developers, on all platforms including mobile game should be regulated to some extend to avoid exploitative actions, same as social media platforms." [44F]
	Features to assist in controlling gaming should be available.	"I really like the proactive timers that come up telling you how long you have been playing." [41F]
Alternative Explanations for Gaming Problems	Gaming is a choice, even when gamers experience problems.	"Rather, it is about individuals' preference for it that causes them to spend more time at it. Addiction, however, is compulsive" [47M]
	Problem gaming should be included in a broader diagnostic category	"It would be better to have a category of sorts that addictive gaming would fall under that would include other addictive disorders rather than singling out just gaming." [37M]

	related to addiction, not specific to gaming.	
	Problem gaming is the symptom of another illness or problem.	"I don't believe that condition exists as a stand-alone issue, those suffering from the so called 'problem gaming' symptoms are clearly engaged in coping mechanisms for depression, anxiety, low self-esteem, or social and emotional isolation of young men." [38F]
	Problem gaming can be an addiction, but it does not constitute a disorder.	"I think it is addictive, but would not describe it as a disorder" [48M]
	Gaming disorder is not a correct formulation because gaming has many benefits.	"I think the general public already consider gaming to be unhealthy and addictive. I disagree. Gaming is mostly educational, didactic and contributes to rational thinking and to reflex improvement." [35F]
	Parents are responsible for their child's gaming.	"I think it's a parenting thing." [36F]
Culture and Context of Attitudes Towards Gaming		
Hobbies as Addictions	Gaming is just like any other hobby or source of entertainment.	"I think gaming is as valid a hobby as watching movies, television, reading, or sports." [38M]
	Problem gaming is like a drug addiction.	"Yes, I think problem gaming shows a lot of similarities with addictive disorders" [41M]

	Problem gaming is not like a drug addiction.	"I don't think the body is necessarily dependent on that unlike drugs etc" [37F]
	People should respond to gaming addicts the way they would react to people with any other addiction or hobby.	"As long as further support is then provided, e.g. for things like drinking, gambling, there are support networks to help." [39M] "It seems that some people view gaming as a less worthy hobby or entertainment than watching TV, movies, or reading books when I feel they are quite similar." [38M]
	Credibility of problem gaming as an addiction is based on similarities with other activities.	"Since society takes gambling addiction seriously, I think it only makes sense that it takes gaming as well" [38M] "Yes, I think it can be as addictive as substances" [44M] "It's just a hobby albeit not a very healthy hobby if you spend too much time on it compared with sports etc" [37F]
Attitudinal Change Over Time	It will take time to change perceptions of gamers following the introduction of a GD category.	I think the real issues of public perceptions of gamers and gaming will only change with time. For example, see how slowly the stigma of mental health issues is changing, it's getting there, but it just takes time." [36F]
	Change in perceptions of gaming will be positive, negative, or slow and hard to influence.	"Over the time it would be helpful" [37F] "It would cause a negative backlash like it did in the 1980s" [45M] "No, people are set in their ways." [35M] "Perhaps eventually, though I suspect that change would be slow in coming, possible generation" [38M]
	Gaming has become more normalized	"Gaming is much larger now, and mostly everyone I know does some form of gaming, even the older people on their smart phones." [35M]

	regardless of a GD category.	
	Gaming will continue to become normalized as technology becomes more widespread.	“As computers make their way into a majority of homes across the world, the accessibility will make gaming, and to a smaller extent problem gaming, more widespread.” [45M]
	Gaming became more normal due to COVID-19 restrictions.	“That particular year is one where everyone was asked to bunker down at home and not go out. Gotta find something to do, right? I'm sure there were kids playing a lot more videogames than usual in general” [38F]
Stigma responses to gaming		
Recognition of Illness	Awareness and education about gaming disorder.	“Information about a gaming disorder and helping others to identify the problem could help in creating solutions.” [40F]
	Recognizing gaming disorder will assist with early detection.	“It would be helpful as it could detect the problem much earlier helping to prevent further damage.” [41F]
	Recognizing gaming disorder will increase its perceived seriousness.	“With gaming disorder diagnosis most people would start to realize that gaming disorder is really a serious problem.” [44F]
	Perceived increasing prevalence or rarity.	“With the fast spreading of technology, I think there will be an increasing number of serious gamers” [40M] “I think "problem gamers" are so rare that it's not worth creating a diagnosis or medical disorder for it” [42M]

	Concerns about over-diagnosing or inaccurately diagnosing gaming disorder.	“More people would think that all gamers are problem gamers, when in fact they aren't.” [39M]
	The recognition of gaming disorder may not affect anything else.	“Just putting a name to something does not change anything.” [36M]
	Rejection of the gaming disorder category.	“I feel that there might be some pushback labelling it a mental health disorder.” [41M]
	Recognizing own gaming problems.	“Yes, they would know what they are doing is wrong” [41F]
	Avoiding being diagnosed with gaming disorder.	“I think it would make people afraid of seeking treatment because they might get a diagnosis.” [43M]
Stereotyping	The category of gaming disorder will reduce or increase stigma.	“Yes, it might make it more acceptable” [50F] “I think it might make perception worse” [37F]
	Gaming disorder is silly.	“I think saying there is a gaming disorder is ridiculous move.” [36M]
	Gaming disorder is an excuse.	“No, it might give them an excuse for their behaviour” [48M]
	Gaming disorder will harm the credibility of the medical community.	“I think it would be harmful and unnecessary for the medical community as a whole.” [35F]

Gamers are to blame if they experience problems.	“It's a choice.” [44F/36F/37M]
The gaming industry is responsible for promoting addictive behaviour.	“Game publishers are probably most responsible for promoting addictive behaviour” [37O]
Gamers are geeky or nerdy.	“Probably just make people think you are a big nerd.” [36F]
Gaming or problem gaming is childish.	“It is considered a child's hobby” [37M]
Gaming is lazy, unambitious, and a waste of time.	“The idea of a "gaming disorder" might reinforce the perception of "lazy" gamers” [39M]
Gamers have no life.	“Seen my share of no life gamers” [39M]
Rude or toxic online behaviour.	“What has really turned me off massive multiplayer games is the amount of teenage boys being sexist, joking about rape and abuse of women, homophobic and throwing about racist comments.” [36M]
Gamers are considered dangerous.	“Violent criminals, who are rarely reported as having read violent books, but quite often as having played violent games” [39F]
Devaluation of gamers and gaming.	“It would very much demonise the gaming 'community'” [36M]
Role of the media in creating stereotypes.	“Gamers can get unfair representation in the media (likely to shoot someone because they game etc)” [45M]

	A GD category would lead to the view that all gamers as unwell.	"If a person spends hours at the gym, cooking, watching TV, or other hobbies, nobody bats an eye. But when a person wants to play video games in their free time, it's a "problem" all of a sudden." [40M])
	Perceptions of a GD category are expected to be similar to other addictions or mental illnesses.	"Given the stigma associated with other mental disorders, some of which are completely outside the control of those suffering from them, I doubt it would have any sort of positive affect on public perception, unfortunately." [45M]
	Older people are expected to have more negative attitudes towards gamers than younger people.	"Older generation would never understand.... " [-M] "I think that present day parents who grew up with gaming themselves are far more likely to be understanding of their children's relationship with gaming than the generations that came before them." [36M]
	People who are gamers or are familiar with gamers are expected to have better attitudes towards gamers than those with no experience of gaming.	"People who don't game at all may potentially see it as more dangerous for the children." [38F]
Affective Responses	More, less, or no change in empathy, pity, or understanding for gamers following the	"Some people may be a little more understanding" [48F] "I think it could make things worse because people wouldn't understand" [39M]

	introduction of a diagnostic category.	"I don't think it would change perceptions because most people don't care about those with addictions to drugs or alcohol so gaming would not matter." [43M]
	The GD category may increase frustration, fear, and hatred towards problem or non-problem gamers.	"I think a separate diagnosis stands to foster paranoia and fear, affecting non- or mild gaming parents and teachers and leading to more extreme reactions about gamers" [41M]
	A GD category may cause gamers to experience shame, embarrassment, or guilt.	"Causing them more guilt feelings and feeling bad about themselves." [47F]
Interventions & Helping Behaviours	A GD category will increase treatment accessibility due to specialized treatments and support with medical expenses.	"I think official recognition would help, and mean that treatments were more easily accessible." [47F] "This way they could seek specialized treatment." "If the person has medical insurance, they may be able to tap into mental health services through the provider, as a result of the diagnosis." [40M]
	A GD category will increase the likelihood of seeking help.	"Once it is classified, I believe people would be more willing to seek help and offer help." [46F]
	A GD category would increase work and school-based support systems.	"If it's diagnosed then it can be treated seriously by HR/Management/Family etc" [41M]

Views varied as to how inevitable they thought treatment would be following a GD diagnosis.	“I think it also helps some people identify that they have a habit they need to change, and diagnoses can be a launch pad for personal change.” [35M]
	“The diagnosis would need to accompany treatment and a public awareness campaign to combat negative stereotypes and labels.” [38M]
	“There aren't enough resources to treat life-threatening addictions so I'm not sure that this kind of addiction treatment would be funded very well and thus I don't know how useful a diagnosis may be” [49M]
Treatment should be provided for problem gamers.	“More help and support should be available” [-M]
Treatment for problem gamers should/should not involve medication.	“Depends on what kind of treatment is offered. Medication may cause other side effects which could be harmful in the long run.” [48M]
	“If there is some kind of medication to control the edge then it can be really helpful” [-F]
Treatment for problem gamers should be therapy-based.	“If the therapy is behavioural it would help, if they put drugs that would bring more problems” [38M]
Help based on a GD diagnosis would be misguided.	“Pretending this is a separate condition 'gaming disorder' is a distraction” [38F]

	Recognizing GD will have an empowering impact on problem gamers.	"It may sound counterintuitive, but a diagnosis can be empowering." [46F]
	More research is needed into GD.	"It might also lead to further research about non-drug/alcohol addictive tendencies." [35M]
	The gaming industry should be involved in prevention of problem gaming.	"It seems difficult to reconcile the need for large scale expensive medical intervention in place of encouraging or regulating addictive gaming" [35M]
Discrimination & Avoidance	A GD category will cause gamers to avoid gaming or game in secret.	"It could cause people who play games to hide" [35M]
	A GD category will lead to discrimination against problem and non-problem gamers.	"Potentially further marginalise 'gamers'" [42M]
	A GD category will lead to treatment avoidance, for fear of being labelled with a diagnosis.	"I think it would make people afraid of seeking treatment because they might get a diagnosis." [43M]
	A GD category will further isolate problem gamers.	"If we were to diagnose people with gaming disorder we would just outcast them." [42F]

Rejection of the need for coercive or segregation treatment strategies.	"Counselling could be the way forward but forcing it would reverse the intended outcome." [37M] "Locking people up in a hospital or being afraid of them seems really drastic" [49F]

Supplementary Table 4

Supplementary Table 4.

Regression Analysis of Problem Phone use on Stigma, Mediated by Psychological Distress, using Process [Chapter 4]

		Complete Model				Single-Variable effects	
Effects	Variables	B	95% CI	*p*	R^2	β	*p*
Total	Psychological Distress	.89	-.41, 2.18	.18	.018	.14	<.001
	Problem Phone Use					-.018	.59
Direct		-.39	-1.81, 1.03	.59	.0018	.04	.18
Indirect		1.27	.61, 1.97			.06	

Note. 5000 bootstrap samples

Supplementary Table 5

Supplementary Table 5.

Regression Analysis of Problem Phone use on Stigma, Mediated by Ban Non-Adherence, using Process [Chapter 4]

		Complete Model				Single-Variable Effects	
Effects	Variables	B	95% CI	*p*	R^2	β	*p*
Total	Ban Non-Adherence	.89	-.41, 2.18	.18	.006	.06	.051
	Problem Phone Use					.03	.33
Direct		.65	-.67, 1.96	.33	.002	.18	<.001
Indirect		.24	-.03, .57			.01	

Note. 5000 bootstrap samples

Supplementary Table 6

Supplementary Table 6.

Frequency rates N (%) of Perceived Stigma of Problem Mobile Phone Use and Within Group percentages [Chapter 5]

Time	Ban Condition	Stigma Absent	No Opinion/Indifferent	Stigma Present
Baseline	No Ban	124 (24.8%)	254 (50.9%)	121 (24.2%)
	Ban	206 (32.8%)	314 (49.9%)	109 (17.3%)
	Total	330 (29.3%)	568 (50.4%)	230 (20.4%)
Follow-up	No Ban	118 (24.2%)	2283 (58.1%)	86 (17.7%)
	Ban	162 (27.1%)	341 (57%)	95 (15.9%)
	Total	280 (25.8%)	624 (57.5%)	181 (16.7%)
Total	No Ban	242 (24.5%)	537 (54.5%)	207 (21.0%)
	Ban	368 (30.0%)	655 (53.4%)	204 (16.6%)
	Total	610 (27.6%)	1192 (53.9%)	411 (18.6%)

Supplementary Table 7

Supplementary Table 7.

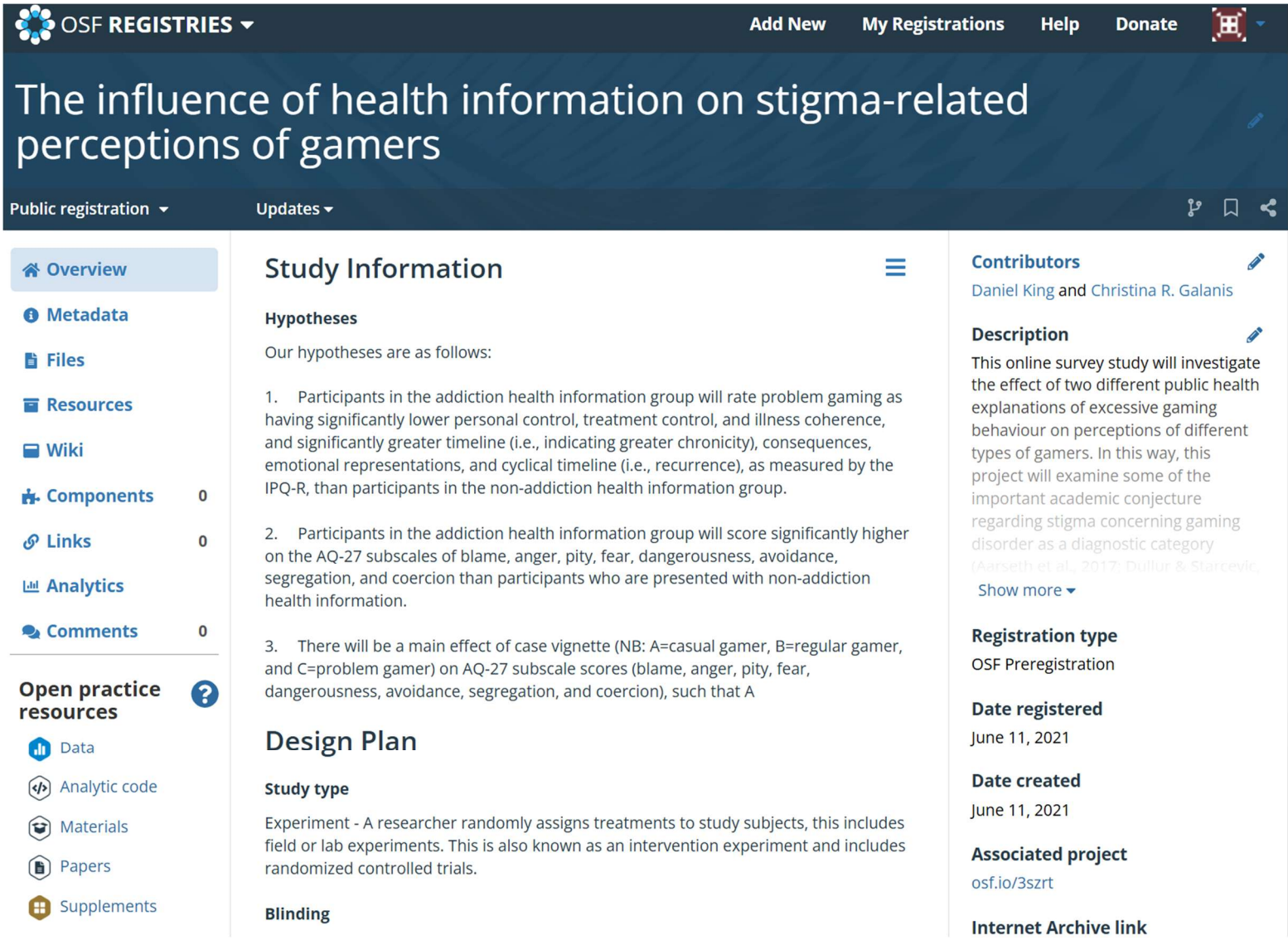
Inferential Statistics of Perceived Stigma of Problem Mobile Phone Use from LMM for Time × Ban Group Interaction, Including Covariates of Age and Gender (male/female) and Nested Effects of School [Chapter 5]

Independent Variable	Numerator df	Denominator df	F	Significance
Time × Ban	1	1029.68	.012	.91
Time	1	1030.37	.58	.45
Ban	1	1.51	3.68	.23
Age	1	29.50	7.40	.01
Gender	1	1029.53	8.15	.004

Appendices

Appendix A:

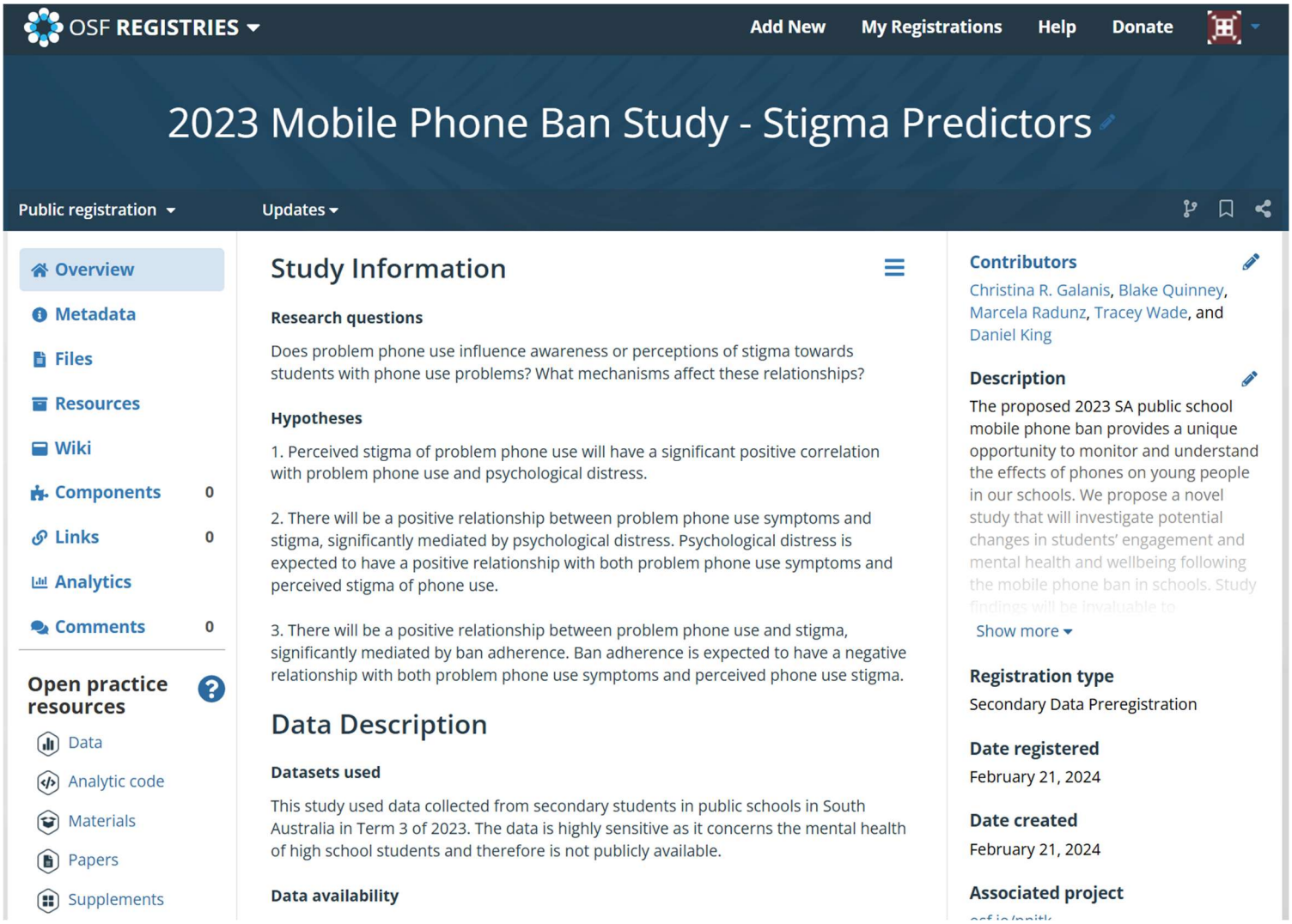
Open Science Framework Preregistration for Study 2[2]



[2] King, D., & Galanis, C. R. (2021, June 11). The influence of health information on stigma-related perceptions of gamers. https://doi.org/10.17605/OSF.IO/NKFM4

Appendix B:

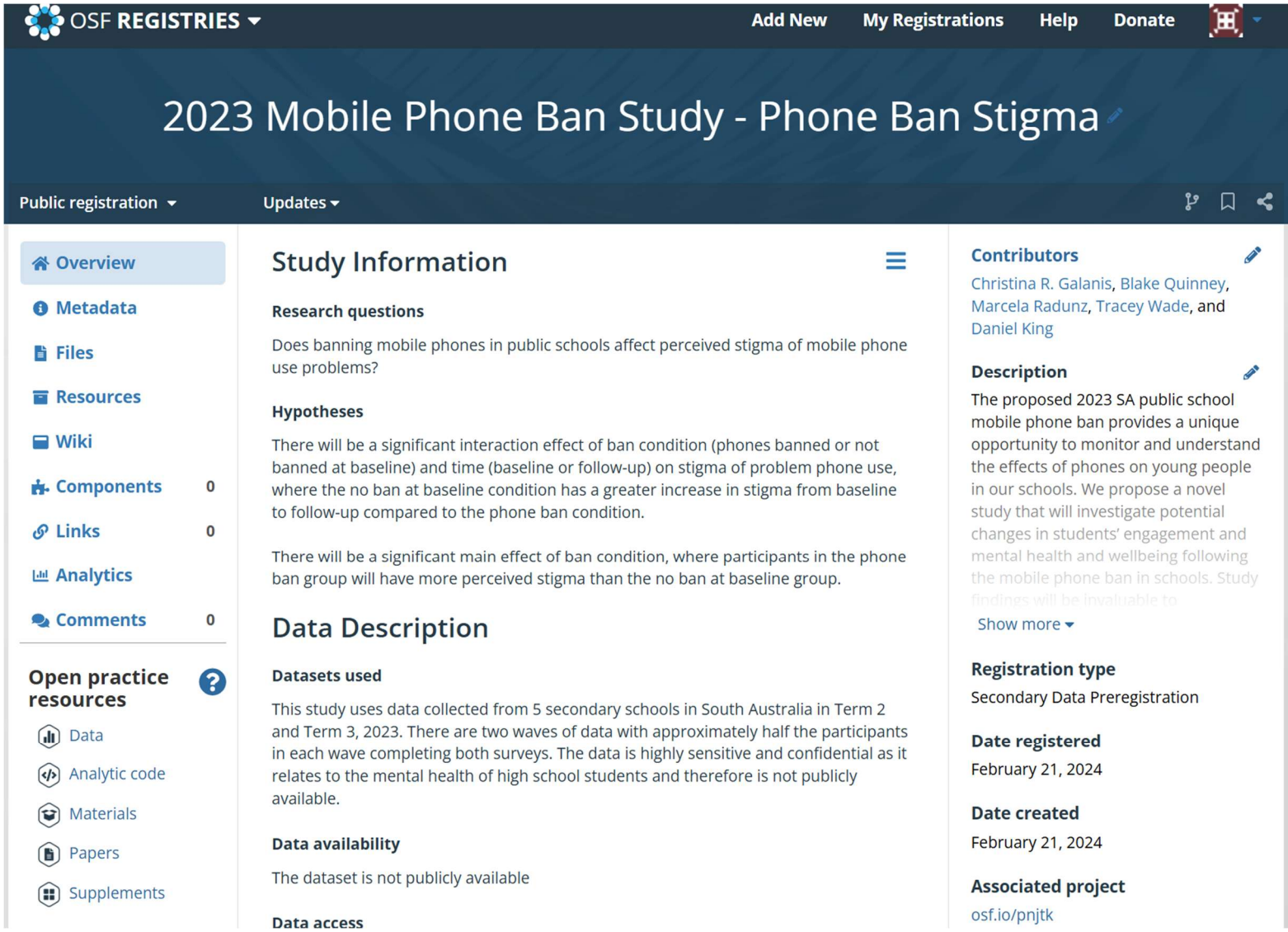
Open Science Framework Preregistration for Study 3[3]



[3] Galanis, C. R., Quinney, B., Radunz, M., Wade, T., & King, D. (2024, February 21). 2023 Mobile Phone Ban Study - Stigma Predictors. Retrieved from osf.io/wrm28 [CC BY 4.0]

Appendix C:

Open Science Framework Preregistration for Study 4[4]



[4] Galanis, C. R., Quinney, B., Radunz, M., Wade, T., & King, D. (2024, February 21). 2023 Mobile Phone Ban Study - Phone Ban Stigma. Retrieved from osf.io/89mjk [CC BY 4.0]

Appendix D:

Baseline Questionnaire for Study 3 and 4[5]

PARTICIPANT INFORMATION SHEET AND CONSENT FORM

Title: Evaluating the mobile phone ban in SA public schools

My name is Daniel King, and I am an Associate Professor in Psychology. My job involves studying the ways that people use digital technologies, including phones, computers, social media, and games, and understanding the effects it has on our lives.

I am asking you to take part in this research project called *'*Evaluating the mobile phone ban in SA public schools'*.*

You do not have to take part.
It is okay to say no.

I am asking you to take part in a survey about the mobile phone ban in your school.

This means you will be answering questions in a survey about what may have changed for you since mobile phones were banned, or if phones are not yet banned at your school, what you think might change*.* This survey is also about understanding you as a person and how you generally feel and how you use your mobile phone and how it affects you.

We will use the answers you give to understand how students feel about the SA school mobile phone, which will help to improve school policies about digital devices.

- **What do I have to do and when will I do it?**

This study involves two surveys about 1 month apart. Each survey takes up to 20 minutes.

What would I be asked to do?	When?	Who else will be there?
The study involves answering questions in an online survey. There are no	*The study is planned to run in Term 2, 2023.*	*The survey is for you to complete on your own in private. You can do this*

[5] This survey was developed for the following project: King, D., Quinney, B., Galanis C. R., Wade, T., Radunz, M. (2023, November 27). 2023 Mobile phone ban study - Master registration. Retrieved from https://osf.io/pnjtk/ [CC BY 4.0]

right or wrong answers. Most questions are multiple choice.		*survey without any assistance.*

- **What are the benefits (good things) about taking part?**

By completing the survey, as well as contributing to psychological science, you will help your school to understand how mobile phones impact on student learning and your social experience of school life. Your responses will help us to build an overall picture of the importance of phones at school which can inform policies about phones in school.

- **Will I get paid for taking part?**

If you would like to take part, we will offer you the chance to win a $1000 voucher to spend at JBHIFI or Apple Store toward the purchase of a new mobile phone or other item. We are also offering a chance to win 1 of 50 movie vouchers valued at $15. Completing two surveys means two entries in the prize draw,

- **What are the risks (bad things) about taking part?**

The survey is not expected to pose any risks to you. Some questions may feel uncomfortable if they refer to issues or experiences already affecting you. You do not have to share anything about yourself that you do not want other people to know. But if you are feeling uncomfortable or sad let the researchers know straight away. If you need some extra help, here are some phone numbers you can call or websites you can visit:

- Lifeline – 13 11 14, www.lifeline.org.au
- Beyond Blue – 1300 22 4636, www.beyondblue.org.au
- Kids Helpline – 1800 55 1800, www.kidshelpline.com.au

- **What happens if I do not want to take part anymore?**

If you change your mind before, during or after the survey you can leave the project without telling people why. To stop taking part, tell the researcher or teacher or you can close the internet browser and leave the online survey at any time. Anything you tell before that cannot be destroyed.

- **What happens at the end of the project?**

When the project ends, you do not have to do anything else. We will use the information you tell us to complete our project and will write a report.

- **What will happen to the information about me?**

We will ask you to provide information like your name, your birthday, and gender. We ask for your name only to help us join your two surveys together to understand changes over time. Your name will be deleted from our data afterwards. You will not be mentioned by name in the research. We are only interested in studying groups and not any individuals.

None of this information will be shared or used in other projects unless we ask you first. You can tick a box to tell us if you want us to do that.

The information you tell us will be kept on a computer that needs a password at Flinders University. We will keep this information for 10 years, then we will destroy it.

- **Who do I contact if I want to know more?**

Below are the names of the people you can ring or e-mail if you want to talk more about this project.

Chief Investigator
A/Prof. Daniel King
College of Education, Psychology, & Social Work
Flinders University
Tel: +61 8 74219733
Email: daniel.king@flinders.edu.au

Co-Investigator
Prof. Tracey Wade
College of Education, Psychology, & Social Work
Flinders University
Email: tracey.wade@flinders.edu.au

- **Who approved this work?**

The project has been approved by Flinders University's Human Research Ethics Committee (insert project number here).

This project is supported by Flinders University, College of Education, Psychology, & Social Work and has been approved by Flinders University's Human Research Ethics Committee [insert project number here]

If you have any complaints or are worried about the way this study is run, you may contact the Flinders University's Research Ethics & Compliance Office team via telephone 08 8201 2543 or email human.researchethics@flinders.edu.au.

Thank you for taking the time to read this information sheet which is **yours to keep**. If you want to take part in this work, please **read and sign** the **Consent Form**.

CONSENT FORM

If you do not want to take part – do not sign this form
It is okay to say no

Project Title	Evaluating the mobile phone ban in SA public schools
Chief Investigator	A/Prof. Daniel King Phone 08 74219733 E-mail Daniel.king@flinders.edu.au
Co-Investigator(s)	Prof. Tracey Wade Christina Galanis Marcela Radunz

CONSENT STATEMENT

- I have read the Participant Information Sheet, or someone has read it to me in a language that I understand
- I understand I am being asked to provide consent to take part in this research study
- I understand that I can contact the researchers if I have more questions about this project
- I have had the chance to ask questions and I am happy with the answers
- No one has forced me to take part in this project and understand that I am free to stop taking part at any time
- I understand that I will be given a signed copy of this document to keep

I consent to (please tick each one to continue):

☐ answering questions on a form
☐ sharing my information with other researchers
☐ my non-identified information being used in other projects

Please enter your first name:	
Please enter your last name:	

Start of Block: Demographics

JS

What is your Date of Birth?

	Month	Day	Year
Please Select: (1)	▼ January (1 ... December (12)	▼ 1 (1 ... 31 (31)	▼ 2000 (1 ... 2020 (21)

What is your gender?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / third gender (3)
- ○ Other (4) _____

What is the postcode of your home address?

_____

Page Break

What grade are you in?

- ○ 7 (7)
- ○ 8 (8)
- ○ 9 (9)
- ○ 10 (10)
- ○ 11 (11)
- ○ 12 (12)

What is the name of the school you attend?

_____

What language do you speak at home most of the time?

- ○ English (1)
- ○ Other (please specify) (0)

_____

Page Break

What is your mother's highest level of education?

- ○ Did not complete year 12 (1)
- ○ Finished year 12 (2)
- ○ TAFE or trade qualification (e.g., Certificate II or IV) (3)
- ○ Bachelor degree (4)
- ○ Postgraduate degree (Masters, PhD) (5)

What is your father's highest level of education?

- ○ Did not complete year 12 (1)
- ○ Finished year 12 (2)
- ○ TAFE or trade qualification (e.g., Certificate II or IV) (3)
- ○ Bachelor degree (4)
- ○ Postgraduate degree (Masters, PhD) (5)

End of Block: Demographics

Start of Block: Phone Ban Check

Has your school implemented the "*Phones off while school's on*" phone ban?

- ○ No (0)
- ○ Yes (1)
- ○ Not Sure (2)

Skip To: End of Block If Has your school implemented the "Phones off while school's on" phone ban? = No

How many WEEKS have phones been banned at your school? Please give your best guess.

_____

End of Block: Phone Ban Check

Start of Block: Technology

Do you own a mobile phone?

- ○ No, I do not own a mobile phone (1)
- ○ Yes, I got my first phone in the last year (2)
- ○ Yes, for more than a year (3)

Skip To: SM Posting If Do you own a mobile phone? = No, I do not own a mobile phone

Display this question:
If Has your school implemented the "Phones off while school's on" phone ban? = Yes
Or Has your school implemented the "Phones off while school's on" phone ban? = Not Sure

BEFORE the mobile phone ban, did you usually use your mobile phone at school?

- ○ No, I did not use a phone at school (1)
- ○ Yes, mainly during class breaks (recess/lunch) (2)
- ○ Yes, I used my phone in class and during breaks (3)

Display this question:
If Has your school implemented the "Phones off while school's on" phone ban? = No

Do you CURRENTLY use your mobile phone at school?

- ○ No, I did not use a phone at school (1)
- ○ Yes, mainly during class breaks (recess/lunch) (2)
- ○ Yes, I use my phone in class and during breaks (3)

Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = Yes

Or Has your school implemented the "Phones off while school's on" phone ban? = Not Sure

How has your phone use changed since the mobile phone ban came into effect at your school?

- ○ I am following the ban and not using my phone at school. (1)
- ○ I am still using my phone or a spare phone at school occasionally. (2)
- ○ I am still using my phone whenever I feel like it. (3)

Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = No

How do you think your phone use might change when the mobile phone ban comes into effect at your school?

- ○ I plan to follow the ban and not use my phone at school. (1)
- ○ I plan to continue using my phone or a spare phone at school occasionally. (2)
- ○ I plan to continue using my phone whenever I feel like it. (3)

How often do you share/post on social media? Do not include times when you are only viewing or checking your social networking accounts. Your best guess is fine.[6]

- ○ Hourly or more often (1)
- ○ Several times a day (2)
- ○ Every day (3)
- ○ Almost every day (4)
- ○ Once or twice a week (5)
- ○ A few times a month (6)
- ○ Once a month or less (7)
- ○ Never (8)
- ○ I don't have any social media accounts (9)

Page Break

Display this question:

If Do you own a mobile phone? = Yes, I got my first phone in the last year

Or Do you own a mobile phone? = Yes, for more than a year

The next statements are about your relationship with your mobile phone and what you do on it.[7]

[6] Growing Up in Australia (2021) [CC BY 4.0]

[7] Adapted from Growing Up in Australia (2021) [CC BY 4.0]

In the past 6 months:	Very rarely (1)	Rarely (2)	Sometimes (3)	Often (4)	Very often (5)
I spend a lot of time thinking about my mobile phone or planning to use it. (1)					
I feel I need to continually use my mobile Phone. (2)					
I use my phone to forget about my personal problems. (3)					
I have tried and not succeeded in stopping using my phone. (4)					
I become anxious or agitated when I am not able to use my phone. (5)					
I use my phone so much that it has a negative impact on work/study, mood, relationships. (6)					

Page Break

Which best describes your gaming?

- ○ I play on PC/Console and phone (4)
- ○ I play PC/Console only (3)
- ○ I play on my phone only (2)
- ○ I don't play video games or almost never play video games (1)

Skip To: End of Block If Which best describes your gaming? = I don't play video games or almost never play video games

How often do you play video games?

- ○ Up to 6 times in the past year (1)
- ○ Once a month or less often (2)
- ○ A few times a month (3)
- ○ Once a week or more often (4)
- ○ Almost everyday (5)

In a typical **week** how many **hours** do you play video games...

_____

Do you feel like you play video games too much?

- ○ Yes (1)
- ○ Sometimes (2)
- ○ No (3)

Page Break

The next statements are about your relationship with video games.

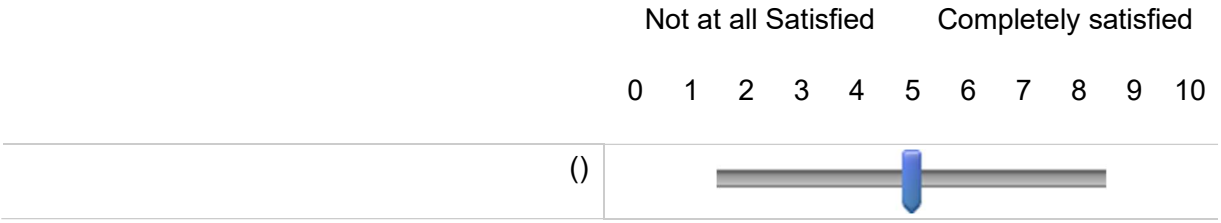
In the past 6 months:[8]

	Very rarely (1)	Rarely (2)	Sometimes (3)	Often (4)	Very often (5)
I spend a lot of time thinking about playing games or planning to play. (1)	○	○	○	○	○
I feel I need to continually play a video game once I start. (2)	○	○	○	○	○
I use games to forget about my personal problems. (3)	○	○	○	○	○
I have tried and not succeeded in reducing or stopping my gaming. (4)	○	○	○	○	○
I become anxious or agitated when I am not able to play games. (5)	○	○	○	○	○
I play games so much that it has a negative impact on work/study, mood, relationships. (6)	○	○	○	○	○

End of Block: Technology

Start of Block: General Wellbeing

Overall, how satisfied are you with your life as a whole these days? [9]



How much do you agree with the following statements?[9]

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
My life has clear meaning or purpose. (1)	○	○	○	○
I have discovered a satisfactory meaning in life. (2)	○	○	○	○
I have a clear sense of what gives meaning to my life. (3)	○	○	○	○

[8] Adapted from Growing Up in Australia (2021) [CC BY 4.0]

[9] Organisation for Economic Co-operation and Development (2017)

How you have felt in the past 30 days?[10]

	Never (1)	Rarely (2)	Sometimes (3)	Always (4)
Happy (1)	○	○	○	○
Scared (2)	○	○	○	○
Lively (3)	○	○	○	○
Miserable (4)	○	○	○	○
Proud (5)	○	○	○	○
Afraid (6)	○	○	○	○
Joyful (7)	○	○	○	○
Sad (8)	○	○	○	○
Cheerful (9)	○	○	○	○

[10] Organisation for Economic Co-operation and Development (2017)

In the past 4 weeks, about how often did you feel...[11]

	None of the time (1)	A little of the time (2)	Some of the time (3)	Most of the time (4)	All of the time (5)
Tired out for no good reason? (1)	○	○	○	○	○
Nervous? (2)	○	○	○	○	○
So nervous that nothing could calm you down? (3)	○	○	○	○	○
Hopeless? (4)	○	○	○	○	○
Restless or fidgety? (5)	○	○	○	○	○
So restless that you could not sit still? (6)	○	○	○	○	○
Depressed? (7)	○	○	○	○	○
That everything was an effort? (8)	○	○	○	○	○
So sad that nothing could cheer you up? (9)	○	○	○	○	○
Worthless? (10)	○	○	○	○	○

[11] Growing Up in Australia (2021) [CC BY 4.0]

If you would like to talk to someone about issues related to these questions, please call Beyond Blue support service on 1300 224 636, or the Kids Help Line on 1800 551 800.

Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = Yes

Or Has your school implemented the "Phones off while school's on" phone ban? = Not Sure

How much has the **mobile phone ban** contributed to any change in your mood?

- Not at all (0)
- A little bit (1)
- Somewhat (2)
- Very much (3)
- Extremely (4)

End of Block: General Wellbeing

Start of Block: School Life

How much do you agree with the following statements?[12]

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
I usually manage one way or another. (1)	○	○	○	○
I feel proud that I have accomplished things. (2)	○	○	○	○
I feel that I can handle many things at a time. (3)	○	○	○	○
My belief in myself gets me through hard times. (4)	○	○	○	○
When I'm in a difficult situation, I can usually find my way out of it. (5)	○	○	○	○

[12] Organisation for Economic Co-operation and Development (2017)

How often do you feel...[13]

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
That you lack companionship? (1)	○	○	○	○	○
Left out? (2)	○	○	○	○	○
Isolated from others? (3)	○	○	○	○	○

[13] Growing Up in Australia (2021) [CC BY 4.0]

Thinking about your school: to what extent do you agree with the following statements? [14]

	Strongly Disagree (4)	Disagree (3)	Agree (2)	Strongly agree (1)
I feel like an outsider (or left out of things) at school. (1)	○	○	○	○
I make friends easily at school. (2)	○	○	○	○
I feel like I belong at school. (3)	○	○	○	○
I feel awkward and out of place in my school. (4)	○	○	○	○
Other students seem to like me. (5)	○	○	○	○
I feel lonely at school. (6)	○	○	○	○

[14] Organisation for Economic Co-operation and Development (2017)

Currently, how would you rate...[15]

	Very low (5)	Low (4)	Average (3)	High (2)	Very High (1)
Your motivation to study? (1)	○	○	○	○	○
Your ability to concentrate on your studies? (2)	○	○	○	○	○
Your level of achievement in your studies? (3)	○	○	○	○	○
Your level of stress related to your studies? (4)	○	○	○	○	○

Page Break

[15] Growing Up in Australia (2021) [CC BY 4.0]

During the past 12 months, how often have you had the following experiences in school?[16]

	Never or almost never (1)	A few times a year (2)	A few times a month (3)	Once a week or more (4)
Other students left me out of things on purpose. (1)	○	○	○	○
Other students made fun of me. (2)	○	○	○	○
I was threatened by other students. (3)	○	○	○	○
Other students took away or destroyed things that belonged to me. (4)	○	○	○	○
I got hit or pushed around by other students. (5)	○	○	○	○
Other students spread nasty rumours about me. (6)	○	○	○	○

[16] Organisation for Economic Co-operation and Development (2017)

If you have experienced bullying behaviour, did this happen...

- ○ Online (1)
- ○ Offline (2)
- ○ Both Online and Offline (3)
- ○ I have not experienced bullying (4)

During the past 12 months, how often have you...

	Never or almost never (1)	1-2 times in the past year (2)	3-6 times in the past year (3)	Once a month or less often (4)	A few times a month (5)	Once a week or more often (6)	Almost every day (7)
Consumed at least 1 alcoholic drink? (1)	○	○	○	○	○	○	○
Smoked a cigarette? (2)	○	○	○	○	○	○	○
Engaged in gambling using your own real money? (3)	○	○	○	○	○	○	○
Purchased cryptocurrency or NFTs? (4)	○	○	○	○	○	○	○

End of Block: School Life

Start of Block: Phone Stigma

This measure was removed due to copyright restrictions. The measure was an adapted version of the Stereotype Awareness subscale of the Self-Stigma of Mental Illness Scale. Please refer to the following references for details of the original scale:

Corrigan, P. W., Watson, A. C., & Barr, L. (2006). The self–stigma of mental illness: Implications for self–esteem and self–efficacy. Journal of Social and Clinical Psychology, 25(8), 875–884. https://doi.org/10.1521/jscp.2006.25.8.875

Horch, J. D., & Hodgins, D. C. (2015). Self-stigma coping and treatment-seeking in problem gambling. International Gambling Studies, 15(3), 470–488. https://doi.org/10.1080/14459795.2015.1078392

End of Block: Phone Stigma

Start of Block: Body Questions

This measure was removed due to copyright restrictions. The measure was the Weight Concern Scale which can be found in the following manuscript:

Killen, J. D., Taylor, C. B., Hayward, C., Haydel, K. F., Wilson, D. M., Hammer, L., Kraemer, H., Blair-Greiner, A., & Strachowski, D. (1996). Weight concerns influence the development of eating disorders: A 4-year prospective study. Journal of Consulting and Clinical Psychology, 64(5), 936–940. https://doi.org/10.1037/0022-006X.64.5.936

Start of Block: Self-Injury

This measure was removed due to copyright restrictions. The measure included items from the revised Self-Injurious Thoughts and Behaviours Interview. Details about the original measure can be found in the following reference:

Fox, K. R., Harris, J. A., Wang, S. B., Millner, A. J., Deming, C. A., & Nock, M. K. (2020). Self-Injurious Thoughts and Behaviors Interview-Revised: Development, Reliability, and Validity. Psychological Assessment, 32(7), 677–689. https://doi.org/10.1037/pas0000819

End of Block: Self-Injury

Start of Block: BAN_GROUP OQ

Display this question:
If Has your school implemented the "Phones off while school's on" phone ban? = Yes
Or Has your school implemented the "Phones off while school's on" phone ban? = Not Sure

We are interested in hearing your opinions and feedback.

Display this question:
If Has your school implemented the "Phones off while school's on" phone ban? = Yes
Or Has your school implemented the "Phones off while school's on" phone ban? = Not Sure

What are some of the best aspects of having a mobile phone at school?

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Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = Yes

Or Has your school implemented the "Phones off while school's on" phone ban? = Not Sure

Do mobile phones at school ever create any problems for you (e.g., social, learning, mood)? Any examples?

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Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = Yes

Or Has your school implemented the "Phones off while school's on" phone ban? = Not Sure

Do you think that schools should have mobile phone rules for students? What do you think would be helpful?

_____

_____

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_____

_____

Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = Yes

Or Has your school implemented the "Phones off while school's on" phone ban? = Not Sure

We really appreciate your feedback and insights, do you have any other comments or experiences you would like to share?

_____

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End of Block: BAN_GROUP OQ

Start of Block: NO_BAN_GROUP OQ

Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = No

We are interested in hearing your opinions and feedback.

Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = No

What are some of the best aspects of having a mobile phone at school?

_____

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Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = No

Has having a mobile phone at school ever created any problems for you (e.g., social, learning, mood)? Any examples?

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Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = No

Do you feel that schools should have mobile phone rules for students? What do you think would be helpful?

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Display this question:

If Has your school implemented the "Phones off while school's on" phone ban? = No

We really appreciate your feedback and insights, do you have any other comments or experiences you would like to share?

_____

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End of Block: NO_BAN_GROUP OQ

Start of Block: End of Survey

Thank you!

We are grateful for your participation in this survey.

You have entered the draw to win 1 of 50 movie vouchers.

If this survey has raised any issues for you or you would like help, there are a number of services that can assist you. You can also refer to the Youth Services card sent to you in your pre-interview package.

- Kids Helpline - 1800 551 800
- Lifeline Australia - 13 11 14
- Beyondblue - 1300 224 636

Please click the **next arrow** below **to submit** if you are ready to finish.
Note that you will not be able to go back into this online survey once you have submitted.

End of Block: End of Survey