Vision Thinking and Motivation for Collective Change

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Contents

Abstract

The concept of vision, as projected by leaders, is associated with innovation and transformation in organisations, politics and throughout history. Yet little is known about what happens at the individual and group member level, when people (followers) develop their visions. I specify this development of visions as *vision thinking*; it is positive prospection about the future of one's group, or a collective or entity one identifies with. Vision thinking is worthy of attention due to its potential to inspire individuals to act for change as a collective. But does engagement in vision thinking motivate people toward collective action, and if so, how?

In this thesis, my original contribution to knowledge is the operationalisation of the concept of vision thinking; development and confirmation of a model that explains how vision thinking is associated with motivation for collective action; identification of mechanisms in vision thinking that promote motivation via efficacy and social identity; and detection of psychological and social influence factors that affect engagement in vision thinking. These understandings, with further development for practical application, will facilitate leaders to direct the motivation of their followers towards collective change, within organisations and society.

Findings are from six experimental studies (including face-to-face, online, individual thinking, and group member interaction studies) and one correlational study within a state government department. The research shows that vision thinking can be characterised and operationalised as thinking comprising the formation of mental representations, creativity, positiveness, and unrestraint. The studies support a vision thinking collective action model where vision thinking is positively associated with motivation for collective action via the collective action predictors: social identity, efficacy, anger, and (with less evidence) hope.

Two key mechanisms for promoting collective action motivation were identified. First, vision thinking can make what is initially perceived as impossible seem more possible, which in turn is associated with efficacy and motivation for collective action. The collective nature of vision

thinking appears to underpin the mechanisms that raise perceived possibility and efficacy. This increased perception of possibility and heightened efficacy, and associated greater motivation, is also sustained during possibility assessments *after* vision thinking (e.g., during planning). Second, findings support that the unique characteristics of vision thinking contribute to the formation of a social identity over and above established mechanisms for identity formation (including group interaction factors). Social identity, in turn, is associated with greater motivation for collective action.

While vision thinking can be induced, the thinker's capacity to engage in vision thinking is affected by their personal context. Creativity, interest in what is to be envisioned, and unexpectedly, system justifying tendencies, facilitate engagement. A clash with beliefs and threat regarding what is to be envisioned, hinder engagement. Vision thinking instruction that is more prescriptive of the outcomes to be imagined, can help engagement, particularly when clash with beliefs and threat is experienced by the thinker. There are indications that the nature of vision thinking—especially the unrestrained aspect—helps the thinker engage in vision thinking.

The research presented in this thesis contributes to the collective action, collective prospection, and leadership research. Ultimately, a better understanding of vision thinking enables leaders to tap into the vision thinking processes of follows, to target their own vision so that followers can take the vision on board—engage with it in their own minds—and be moved by it.

Declaration

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed.....

Date.....

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CHAPTER 1: Vision Thinking and Motivation for Collective Change

As humans we are uniquely thinkers and doers. A vision is at the nexus between our thinking and our doing— thinking can lead us to imagine, see, or sense how something could be, which in turn can guide our actions. There is power in a vision that promotes action. There is strength in action that comes from a collective. And so, a vision based on positive change for a collective, shared by a collective, is highly efficacious. If such a vision is something that can be inspired or shaped by others, by leaders, this process becomes a tool to promote positive change for the collective, in organisations, in society.

When one already wants an outcome that benefits the collective, believes that it is possible, knows others are on board, and senses group momentum for change, one could well have a vision and be motivated to act for the collective. There are various ways to arrive at this point. But surprisingly, the process and effectiveness of disregarding possibility and purposely creating in one's mind a positive vision related to the collective, is not understood. This lack of understanding is startling because visionary leaders communicate their vision to followers, presumably so followers can take the vision on board—recreate it in their own minds—and be moved by it. Furthermore, many paths to vision creation require the thinker, at least as a subset of the process, to cast aside the current reality with its constraining thoughts of what is possible, so an alternative to the here and now can be envisaged. I call this process *vision thinking.*

Broadly, I specify vision thinking as positive prospection about a collective. It is when people imagine positive futures for their group, or an entity they identify with, such as an organisation. Although people can engage in prospective thinking that is entirely about themselves, individual focused prospection is excluded from my definition of vision thinking.

Current Research Context

Despite the value placed on concepts that relate to vision thinking, for transforming organisations or societies, the processes and effectiveness of this type of thinking have not been widely studied, nor systematically placed within the research literature. There has been little connection of vision thinking to the collective action research; the leadership and organisation research does not clearly define it or verify its effectiveness; and the prospection literature focuses largely on prospection that relates to the self rather than the collective.

Collective Action Research

Given a clear intent of vision thinking is to inspire change within a collective, it is surprising that there has been minimal application of the concept within the collective action research. Collective action is a powerful force for change, simply because the voice of many is more able to deliver impactful messages, put pressure on decision makers, influence policy, and represent citizens within a democracy. Collective action is relevant not just at a society wide level, but also within organisations, workplaces, communities, and smaller social groups. Vision thinking, with its relevance on all these collective levels, has clear ties to collective action. Vision thinking is about imagining a positive future for one's group, or for the collective, and the most pertinent outcome is collective action inspired by this thinking. Yet, research on vision thinking has not examined its capacity to inspire collective action (refer to the section below on *Leadership and organisation research*), nor has the collective action research historically paid much attention to vision thinking. Traditionally the collective action research has focused on perceived injustice arising from relative deprivation, which promotes group-based anger and consequently action readiness, as the key driver of collective action (Folger, 1986, 1987; D. M. Mackie & Smith, 2002; Postmes, Branscombe, Spears, & Young, 1999; H. J. Smith & Ortiz, 2002; Van Zomeren, Postmes, & Spears, 2008;

Van Zomeren, Spears, Fischer, & Leach, 2004). Recently, however, consideration of concepts related to vision thinking and positive futures has emerged in the collective action research literature: Greenaway, Cichocka, van Veelen, Likki, and Branscombe (2016) found that hope inspires support for social change; Iyer, Zhang, Jetten, Hao, and Cui (2017) demonstrated that perceiving positive cognitive alternatives for one's group enhanced self-efficacy to act towards the cognitive alternative; and several articles have explored the role of utopian thinking in promoting collective action (Badaan, Jost, Fernando, & Kashima, 2020; Fernando et al., 2018; Fernando, O'Brien, Burden, & Judge, 2019; Fernando, O'Brien, Judge, & Kashima, 2019). The parallels between vision thinking and utopian thinking require further exploration.

Recent research in social psychology has begun to examine the role of utopian thinking in promoting collective action for social change (Badaan et al., 2020; Fernando et al., 2018; Fernando, O'Brien, et al., 2019; Fernando, O'Brien, et al., 2019; Kashima & Fernando, 2020). This work defines utopian thinking as *imagining ideal societies* (Fernando et al., 2018; Fernando, O'Brien, et al., 2019). While aspects of utopian thinking align with vision thinking there are some important distinctions. Utopian thinking is about whole of society ideals (a narrative or picture of an alternative world), whereas vision thinking can apply to any size collective (ranging from societies to small groups) and can focus on whole of society ideals or just a single issue or goal. Vision thinking emphasises the form of the thinking that one can engage in to envision radically different, positive alternatives. Whereas utopian thinking, as it has been studied to date, is more concerned with the effects of the content of the thinking.

The empirical research on utopian thinking provides evidence that utopian thinking increases motivation for social change action (Fernando et al., 2018; Fernando, O'Brien, et al., 2019). Fernando, O'Brien, et al. (2019) and Badaan et al. (2020) have also put forward

theoretical suggestions and models for studying how utopian thinking promotes political engagement. Consistent with a whole-of-society view of utopian thinking, the effect of engaging in such thinking is theorised to increase tendencies to challenge the current system, broaden hope for better alternatives, and promote political engagement (Fernando et al., 2018). The present investigation of vision thinking, in contrast, focuses on the challenges and goals of a specific group and investigates the appraisals, emotional investment and identity formation related to collective action. The analysis builds on the Social Identity Model of Collective Action (SIMCA) (Van Zomeren et al., 2008) an established model for understanding what leads to collective action. The SIMCA places shared social identity, efficacy, and perceived injustice as interconnected predictors of collective action. Although the researchers looking at utopian thinking have pondered links from utopian thinking to collective action via elements of the SIMCA (Badaan et al., 2020; Fernando, O'Brien, et al., 2019), the theoretical models they propose do not link utopian thinking squarely with SIMCA; the only aspect of SIMCA that has been empirically investigated in relation to utopian thinking is the path to collective action via efficacy. The present work on vision thinking will propose links from vision thinking to collective action in accordance with the SIMCA, via each collective action predictor (see the section below *Pathways from vision thinking to collective action*).

So, the collective action research has recently looked at utopian thinking as a motivator of collective action. The parallels between utopian thinking and vision thinking (i.e., imagining positive futures for a collective) mean that this shows promise for the capacity of vision thinking to promote collective action. Utopian thinking and vision thinking are not the same, however; there are differences in the purpose and focus of the thinking. The processes in vision thinking may facilitate a more precise analysis of how such prospective thinking ties in with collective action predictors and promotes collective action.

Leadership and Organisation Research

The leadership and organisation research has connected with the concept of vision thinking, however, the research has not clearly defined vision thinking, examined the mechanisms of thought occurring for those who engage in it, nor verified its effectiveness, including for inspiring collective action.

Vision is associated with innovation and transformation in organisations, politics and throughout history. For example, Alexander the Great's achievements were driven by a vision to conquer the Persian empire and continually expand his empire; he used rhetoric skills to communicate his vision and inspire his followers to serve this mission. Nelson Mandela became South Africa's first president elected in a fully representative democracy and the country's first black head of state, from which his government worked to dismantle the legacy of apartheid. Mandela's attainments were based on his vision to eliminate racism and establish a constitutional democracy in post-apartheid South Africa. An example of organisational transformation based on a vision is the radical shift of Danish Oil and Natural Gas to a green energy company. In 2012 the newly appointed CEO led the company from a state of financial struggle due to the plunge in natural gas prices, to a successful green energy company, based on a vision of a completely new company that would respond to the shift to combat climate change. The use of vision in leadership is widely seen as an effective and powerful means to motivate followers towards a common goal (Boyatzis, Rochford, & Taylor, 2015; Kirkpatrick & Locke, 1996; Stam, Lord, van Knippenberg, & Wisse, 2014; Strange & Mumford, 2005; van Knippenberg & Stam, 2014). There is variation in the way visions are defined, but a common thread is that a vision is a desired, often idealised image of the future of a collective (Kirkpatrick & Locke, 1996; O'Shannassy, 2016; Shipley & Michela, 2006; Strange & Mumford, 2005).

Research about vision broadly falls into two categories. First, in the leadership research literature the focus has been on visionary leadership and vision communication, where the emphasis is on the projection of an image of the future from a leader to their followers. According to van Knippenberg and Stam (2014), the essence of visionary leadership involves communicating a vision to the collective (i.e., vision communication), to persuade others to act towards achieving the vision. The "I have a dream…" speech by American civil rights activist Martin Luther King Junior, that described his vision of racial equality, is an example. As van Knippenberg and Stam (2014) point out, though, there are methodological concerns with much of the research on visionary leadership and vision communication. For example, visions have been confused with goals; there are often confounded comparisons, for example when the vision itself is confounded with the way it is communicated; or there is a confounding context, such as comparing visionary leadership in one situation with other forms of leadership in a different situation. Despite these methodological concerns, van Knippenberg and Stam (2014) emphasise the fundamental role of visionary leadership in effective leadership, and in driving innovation and change. Their critical point is that research on visionary leadership should be evidence-based, using quantitative research to test theory. In any case, research on visionary leadership and vision communication is leader centric. It tends to focus on followers' perceptions of their leaders (e.g., as charismatic, inspirational, visionary, or as transformational leaders), or, where it does investigate outcomes relating to follower performance (e.g., motivation, commitment to the organisation), it mostly focuses on measuring these outcomes rather than the psychological processes involved in the group members' (followers) engagement with, and thoughts about, the vision.

Second, in the organisational management literature the focus is on the role of the vision itself, rather than the leader. Here, the interest is in using a shared vision to direct

behaviour toward a goal. Visioning, defined in The Oxford Dictionary as 'the act of developing a plan, goal or vision for the future' is a well-established practice, sometimes used as part of strategic planning, in corporate and community organisations, and for community planning. However, there is minimal empirical research that has investigated the effect of shared vision on organisational outcomes. O'Shannassy (2016) comments on the lack of research literature in the field of shared vision and strategic intent and proposes a research agenda to examine how strategic intent in organisations can be developed. Boyatzis et al. (2015) confirms the dearth of empirical research around shared vision and pulls together recent research to respond to this gap; the research focuses on leadership effectiveness, coaching, and the effects of personal vision on engagement, rather than on how shared vision informs motivation for collective change. The research to support if, and if so, how, a shared vision helps to deliver outcomes related to collective change (of which improved organisational performance is a subset), is limited.

So, despite the value placed on the concept of vision as a tool for leadership and change, the research is scattered and doesn't necessarily affirm its effectiveness nor explain why it may work. Research in the leadership sphere is weighted towards visionary leadership and vision communication. It tends to focus more on leaders, and followers' perceptions of their leaders, rather than the vision thinking undertaken by followers. The organisational management literature provides more of a focus on the concept of shared vision, yet it is unclear whether shared vision leads to more effective outcomes.

Prospection Research

Finally, a third area of research relevant to vision thinking is the research on prospection (the psychology concerning how people think about the future). Prospection has been an active area of research in the last decade. Areas of research within this field that are particularly pertinent to vision thinking include: identification of the modes of future thinking

(i.e., simulation, prediction, intention, planning) (K. K. Szpunar, Spreng, & Schacter, 2014); self-efficacy for future actions (Maddux & Kleiman, 2018); positive fantasies and their sometimes demotivating effects (H. B. Kappes & Morewedge, 2016; H. B. Kappes & Oettingen, 2011; Oettingen, 2012; Oettingen & Mayer, 2002); goal pursuit (A. Kappes & Oettingen, 2014; A. Kappes, Singmann, & Oettingen, 2012) ; and pragmatic prospection (how people derive value from thinking about the future) (Baumeister, Vohs, & Oettingen, 2016). The prospection research literature, however, has focussed almost exclusively on prospection concerning the individual. Very recently researchers have begun to ponder collective prospection, that is, how individuals, or group members jointly, think about the future of their group. For example, Seligman, Railton, Baumeister, and Sripada (2016) consider how the prospection of an individual is inherently linked to the collective, as the act of prospection is learned from others, and the future is in any case constructed by others socially and culturally. P. M. Szpunar and Szpunar (2016) introduce the concept of collective future thought and propose its implications for memory studies. Yet, to date, within the field of prospection research there is no published empirical research on collective prospection. The nature, processes and outcomes of collective prospection have not been probed.

So, vision thinking has not been clearly defined, placed, or studied within the research literature. Little research attention has been paid to what happens at the individual and group member level, when people engage in vision thinking. Yet vision thinking is worthy of attention because of its potential to inspire a collective of people to act for change. The outcomes of vision thinking concern a collective, and developing a vision with a collective, or with a collective in mind, has the capacity to contribute to identity formation within that collective, through the sharing and defining of ideals and values, and the development of a shared consensus. So, it is important to define and understand the process and outcomes of vision thinking. What are the unique characteristics of vision thinking; how is it defined?

What are the cognitive and social psychological processes involved? How might group interaction impact on these processes and on behavioural outcomes? By what mechanisms might vision thinking promote collective action to foster change? The present research will investigate psychological processes involved in vision thinking and examine how vision thinking, either conducted alone, or in interaction with others, may lead to outcomes that facilitate and promote collective change.

A Psychological Perspective on Vision Thinking

The present research will seek to understand the nature of vision thinking—as it is experienced by those engaging in it—and its propensity for motivating collective action for change. First, vision thinking needs to be placed within the existing psychological literature. To introduce the concept of vision thinking, I referred to it as a form of positive prospection that relates to a collective. According to K. K. Szpunar et al. (2014), prospection involves several modes: simulation—the construction of mental representations ; prediction - the estimation of likelihood; intention— setting a goal; and planning— the organisation of steps for the future state to be realised. These modes of prospection operate in an interrelated and iterative manner. However, as identified by K. K. Szpunar et al. (2014), the extent to which these modes affect each other remains relatively unexplored. For example, little is known about the extent to which the level of detail in a simulation influences prediction and planning, or how perceived likelihood impacts intentions and the quality of plans.

Vision thinking is a form of prospection weighted towards simulation, but also connected with prediction, intention, and planning. In other forms of prospection, simulation is often fleeting – given minimal focus before the mind shifts to other activities. In vision thinking, the creation of positive or ideal mental representations of the future is the core activity. Evaluation of, and responses to, the simulations is also inherent in the thinking, but

the emphasis in vision thinking is on simulation of an alternative that is preferred to the current reality.

The core research question is: does, and if so how does, vision thinking promote motivation for collective change? Simulation, the focal aspect of vision thinking, is central to this investigation. Visions are often associated with the ideal, or at the very least they embody a positive image (a simulation) that discounts obstacles. Concepts such as goal setting, although distinguishable from vision thinking, help inform how vision thinking may activate motivation. Goal setting theory recognises the importance of having achievable but challenging goals to induce motivation (Burdina, Hiller, & Metz, 2017; Heath, Larrick, & Wu, 1999; Locke, 1968). So, while goal setting is differentiated from vision thinking via its focus on *achievable* goals, goal setting theory provides the useful insight that the perceived possibility of attaining the goal is a critical influencer of motivation. Prediction, as another mode of prospection, is therefore important to the investigation of if and how vision thinking may lead to the factors of interest in promoting collective change. The interplay between simulation of a positive or ideal future and the perception of possibility in attaining this simulated future state, will form a core part of the investigation of vision thinking. Forming intentions, and planning, the other two modes of prospection, will not be given emphasis in the proposed research. The current interest is on what initiates the motivation for collective change, not the steps that are put in place to achieve it.

So, vision thinking is defined, and will be studied in this research as prospection that is heavily weighted towards simulation, and which involves simulation of a positive, often ideal, future of a collective, by an individual or jointly by a collective. The research investigates the psychological processes involved in vision thinking, and examines if, and if so, how, vision thinking—including during interaction between group members—promotes outcomes that support and drive collective action.

The Collective Action Framework

Collective action describes the actions individuals take to improve the circumstances or advance the goals of the psychological group for which they are a member (S. C. Wright, Taylor, & Moghaddam, 1990). Of course, it could also include a response to the vision by a reduced number of individuals acting collectively, or even individual members of the collective acting as individuals rather than as a part of the collective, to pursue a more positive future for the collective.

According to the Social Identity Model of Collective Action (SIMCA) (Van Zomeren, 2013; Van Zomeren et al., 2008) there are three factors that act as motivators to engage in collective action: efficacy, emotion, and shared identity. Self-efficacy is a judgement of one's capacity to execute a course of action needed to attain an outcome (Bandura, 1982; Gallagher, 2012). In a group context, efficacy can translate to a judgement about the group's ability to perform what is required to achieve the desired outcomes of the group (Mummendey, Kessler, Klink, & Mielke, 1999). People are more likely to participate in collective action when they believe the outcomes are likely and worth the effort and costs (Klandermans, 1984, 1997). Group efficacy belief is a solid predictor of collective action (Corcoran, Pettinicchio, & Young, 2011; Mummendey et al., 1999; Van Zomeren et al., 2008; Van Zomeren, Spears, & Leach, 2010). So, self-efficacy (at the individual level) and group efficacy (at the collective level) are key to the pursuit of collective change.

Emotions are identified as another motivator in the model of collective action. The earlier model of collective action contained *subjective sense of injustice* rather than emotions in general (Van Zomeren et al., 2008); the revised model replaced subjective sense of injustice with emotions (Van Zomeren, 2013). In this later model, emotions are depicted as arising from a cognitive appraisal of the context or environment, and as activating states of action readiness. Group based anger is widely recognised as an effective emotion for inciting

collective action (Leonard, Moons, Mackie, & Smith, 2010; Diane M. Mackie, Devos, & Smith, 2000; E. R. Smith, 1993; Van Zomeren et al., 2004). There is also support for the motivating effect of hope in the context of collective action (Bury, Wenzel, & Woodyatt, 2020; Greenaway et al., 2016; Wenzel, Love, & Thomas, 2022). Clearly, both individual and group emotions (i.e., emotions shared by the collective) are pertinent to promoting people to take collective action, as individuals and as a collective, respectively. In various ways, emotions impact on the motivation to act for a desired collective outcome.

Finally, a shared social identity is a well-established predictor of collective action (Simon et al., 1998; Sturmer & Simon, 2004; Thomas, Mavor, & McGarty, 2011; Thomas, McGarty, & Mavor, 2009; Van Zomeren, Leach, & Spears, 2012). A social identity is a *sense of self* based on an awareness of belonging to a social group that is important and meaningful (Turner, 1985). A social identity is represented by shared values, norms, and beliefs (Turner, 1982, 1991). According to social identity theory, social identification can lead group members to act for collective change to enhance the status of their group and advance their social identity. Social identity leads to collective action when group boundaries are impermeable (i.e., there is no option or impetus to leave the group), and when the status of the group is perceived as illegitimate and unstable (i.e., there is a perception that the status of the group should and can be changed) (Tajfel & Turner, 1979).

Social identity is also a fundamental consideration in leadership (Haslam, Reicher, & Platow, 2011; Steffens et al., 2014), a field very relevant to vision thinking. Forming or strengthening a shared social identity for the group (being led) is an important aspect of leading change. Research over the last decade has shown that to gain influence, leaders need to be seen as representative of the shared beliefs, values, and norms of the group, and they need to be perceived to be working for the group to advance the group's collective interest – they need to be seen as a prototype of that social identity. The implication for leaders is that

they need to form an identity for the group, and for themselves as a representative of that group, that facilitates their capacity to influence the group (Haslam, 2004; Haslam et al., 2011; Haslam, Reicher, & Platow, 2015; N. K. Steffens, A. Haslam, M. K. Ryan, & T. Kessler, 2013a; Steffens et al., 2014; van Knippenberg & Hogg, 2003). So, a shared social identity is not only a predictor of collective action, but specifically in the context of vision thinking with its connection to leadership, it connects the leader to the visions of the group members and facilitates the leader to influence the group members.

Self-efficacy and group efficacy, individual and collective emotions, and a shared social identity are key factors involved in driving collective change. Therefore, along with motivation for collective change, they will be the key outcomes of interest for vision thinking, investigated in this research.

Vision Thinking as an Instigator of Collective Action

To understand how vision thinking could promote the collective action predictors (efficacy, social identity, emotions), it is necessary to: 1) identify the characteristics that define vision thinking as a unique activity; 2) consider the processes that occur during vision thinking; and 3) investigate the mechanisms in the vision thinking process that could incite the collective action predictors.

The Defining Characteristics of Vision Thinking

What is *unique* about vision thinking? Vision thinking is a form of prospection with an emphasis on simulation of a positive or ideal future. I propose there are four key elements to vision thinking that together uniquely define it: freedom from restraint; formation of a mental representations of the future; creativity; and positiveness.

First, vision thinking is unrestrained. During vision thinking, the thinker makes a leap from the current reality to simulate or create a more positive or ideal future. There is

permission or promotion to transcend the current reality to arrive at a more positive future without the need to consider whether this is possible or how it would be achieved. In this phase of thinking, the focus is on simulating a future, not on assessing its feasibility or deciding how to make it a reality. So, the thinker is freed from considering pragmatics that can limit thought and the generation of ideas.

Second, vision thinking involves the formation of mental representations of how the future could be. The exact form this takes could vary. For example, one manifestation could be the formation of *visual images*, and another the generation of an *idea* or even a *sense* of how the future could be. Importantly, these representations may act as reference points to further support the vision thinking process. For example, further ideas and visions may be created on the bases of earlier representations, or earlier representations may become clearer or more expansive with further elaboration. When vision thinking occurs in a group context, these representations, in-so-much as they are shared across the group membership, could become the common point of focus for development of the vision. These representations of the future also provide something with which the current reality can be compared, and they act as a beacon or guiding light for future direction.

Third, vision thinking is a creative process. Creativity is generally recognised as involving the generation of ideas and the combination of concepts in new ways that are valuable (Mumford, 2003). Generating a vision— forming a mental representation of the future—is thus, a creative process. The unrestrained nature of vision thinking promotes this creativity by removing limitations and opening the thinking space to new possibilities. In fact, more engagement in vision thinking requires greater creative input; so, in this sense, creativity becomes a measure of vision thinking. But also, creating something, such as a vision, requires an input of time, effort and thinking; an investment is made in creating the vision. Here the distinction between participating in vision thinking on one hand and being

the target of visionary leadership or vision communication on the other, is clear: vision thinking is comparatively active and involves personal investment.

Finally, vision thinking involves creating positive or ideal visions of the future. The nature of the thinking is wholly positive. The positiveness of the thinking drives the output—the mental representations—to exist as a guiding beacon that represent aspirations of what is good, moral, or worthwhile.

Having defined the characteristics that uniquely define vision thinking—unrestraint, formation of mental representations, creativity, positiveness—we consider the processes involved in vision thinking that are informed by these characteristics, and simultaneously address the differences between individual vision thinking and vision thinking in interaction with others.

The Vision Thinking Process

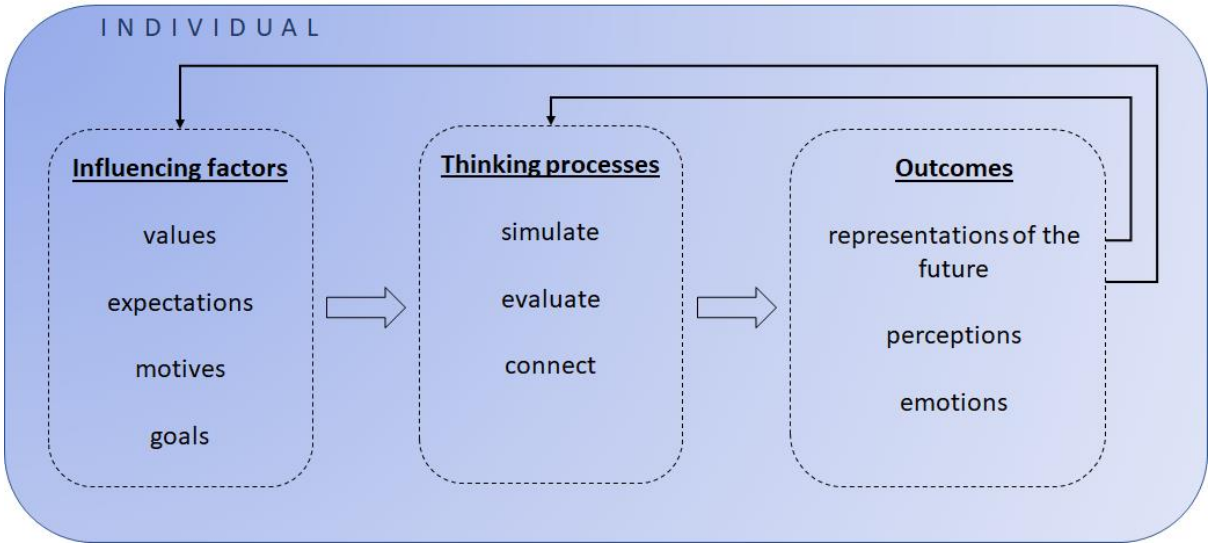
Vision thinking can occur at both the individual level (where individuals are forming positive visions for their collective) and the group level (where group members engage in vision thinking in interaction with each other). The individual level concerns the cognitive processes that occur for the individual. The group level concerns how vision thinking in interaction with others affects the individual's cognitive processes, and how those who interact perceive themselves as group members.

Individual Vision Thinking. Figure 1.1 proposes a model that describes how vision thinking occurs for the individual. This model is not intended to provide a detailed or exact representation of vision thinking, but rather to offer a framework for considering the factors involved, to facilitate theory development and testing. The model proposes three aspects: influencing factors, thinking processes, and outcomes. First, the thinker brings influencing factors to the vision thinking process; these factors influence the content of the simulation

and the thinker's own response to what is simulated. Influencing factors include values, expectations, motives, and goals.

Figure 1.1

Individual Vision Thinking Model



Second, the thinking process is divided into three subsets: simulating a mental representation of the future (the imagined future); evaluating the mental representation; and connecting with the mental representation. Simulating a mental representation of the future is the essence of vision thinking. The thinker may also evaluate and respond to what is simulated. This may happen in various and sometimes subtle ways, but one mode of evaluation may be comparing what is simulated with the current reality. Another mode of evaluation may be assessing the likelihood or feasibility of what is simulated or imagined. (Importantly, possibility assessments of the simulation are likely an inherent side effect of simulation and so impossible to separate out of the vision thinking process, however, more robust vision thinking minimises possibility assessment.) In turn, the output of such evaluations would affect further simulation. The thinker may also mentally connect with what they simulate. For example, this could involve placing the self or one's group in the imagined

future – mentally *trying on* this alternative and assessing how it feels. Again, the output from this process could influence further simulation.

Third, thinking processes (including simulation, evaluation, connection) produce outcomes. One outcome is the mental representation that is formed during the simulation process. For example, this could be an image of how the thinker perceives the future could or should be (if there is a moral aspect to the thinking). Perceptions also arise from the thinking processes, such as a sense that there is an alternative to the current reality, or a view that things should be different, or an inclination that an alternative is possible, or a belief that one could make a difference. Finally, vision thinking incites emotions. These emotions are influenced by the content of the simulation, the way it is evaluated and connected with, and the perceptions that are formed.

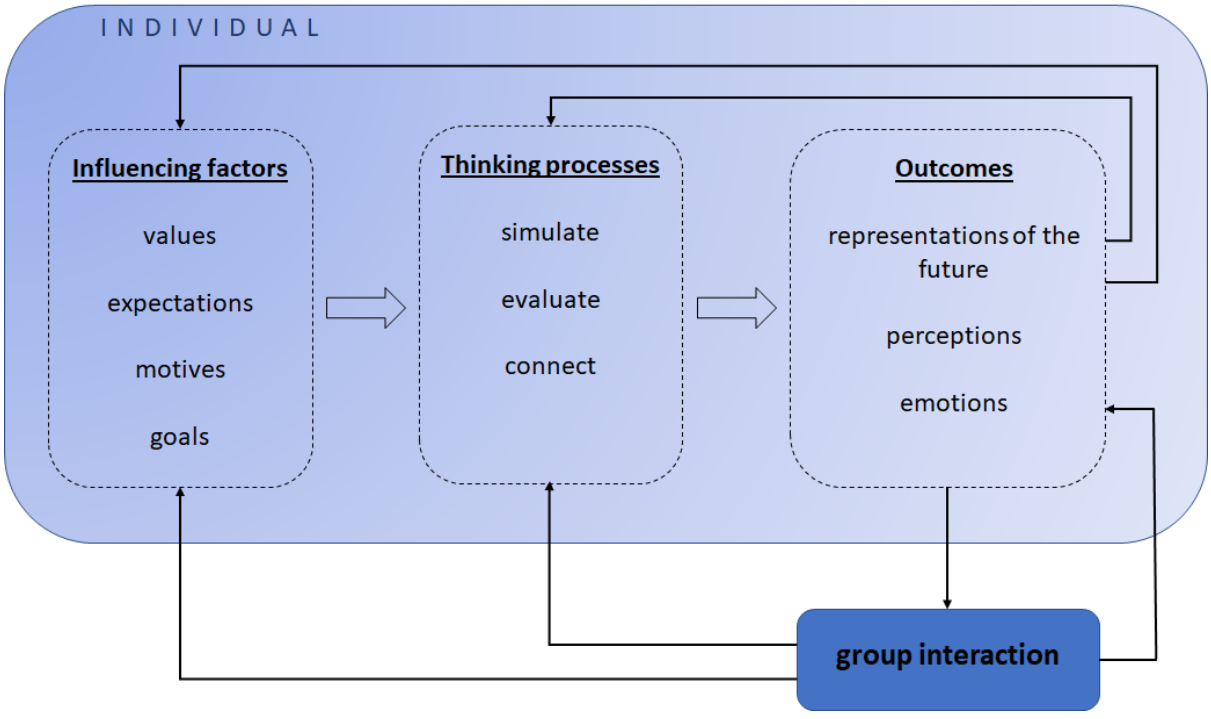
Finally, vision thinking is an iterative process. The outcomes from vision thinking feedback into the vision thinking process. For example, further simulation builds on what has already been simulated; emotions and perceptions arising from an earlier stage of the simulation process influence further simulation. The outcomes of vision thinking may also affect the influencing factors (the values, expectations, motives, and goals of the individual).

Vision Thinking in Interaction with Others. Vision thinking can also occur in a group context, where individuals simulate positive or ideal futures for their group in interaction with others. I propose that in this interactive mode of vision thinking, the same cognitive processes occur for the individual as describe above in the individual vision thinking model, however, now, these processes both influence and are influenced by the interaction of group members. Figure 1.2 depicts this model of interactive vision thinking (the model's purpose is to show the connection and flow of processes; theoretical underpinnings that inform group processes and outcomes will be discussed in the next section

below). The group interaction is the shared building of a positive vision of the future. The external output of this group interaction (i.e., the output that each group member experiences before they internalise it in their own way) is the communication of group members' contribution to the shared vision; this includes both the content of the vision and the emotions that group members express. This external output (represented by the lines exiting the *group interaction* box in Figure 1.2) influences the internal vision thinking context of the individual. The features of the visions that are described by group members, and the perceptions and emotions relayed by others in relation to these visions can affect the *influencing factors* (values, expectations, motives, and goals) of the individual and the *thinking processes* of the individual (simulation, evaluation, and connection with their own internal visions). Similarly, what feeds into the group interaction—indicated by an arrow entering the *group interaction* box—are individual's representations of the future (their vision) that they share with the group, and the emotions and perceptions they express in relation to their vision.

Figure 1.2

Vision Thinking in Interaction with Others



Having identified the characteristics that make vision thinking unique and proposed a model to describe the basic processes of vision thinking, we can now consider how vision thinking could promote the collective action predictors.

Pathways from Vision Thinking to Collective Action

The Social Identity Model of Collective Action has social identity, efficacy, and emotions (the collective action predictors) as separate but jointly contributing factors to collective action. I propose that vision thinking evokes each of these collective action predictors to enhance motivation to take collective action. I suggest that the pathways from vision thinking to motivation for collective action via efficacy, emotions and social identity are all activated by the emotions and perceptions that arise during the vision thinking process, and additionally for the social identity pathway, by the way the vision thinking processes align group members.

Shared Social Identity. Self-categorisation theory explains how an individual forms a social identity (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Reflecting on self-categorisation theory in the context of vision thinking will expound how vision thinking could promote the formation of a social identity. According to self-categorisation theory, interaction between individuals in a setting that emphasises their similarity can lead individuals to categorise themselves as group members, with a shared social identity (Turner et al., 1987). Such things as perceived similarity to others in attitudes and values, being in the same circumstances, a common fate, shared goals, proximity and social contact, shared outcomes, shared threat, and a common enemy can be the basis for a common categorisation of self and others and the formation of a shared identity (Turner et al., 1987; Turner, Oakes, Haslam, & McGarty, 1994; Turner & Reynolds, 2012).

Identity Formation and Individual Vision Thinking. The processes and attributes of vision thinking align with the self-categorisation account of how individuals form identities as group members. The positiveness of vision thinking and the formation of this positiveness into a mental representation provides a platform for building a social identity. According to social identity theory, people seek identities that make them feel good or give a positive view of themselves (Tajfel, 1982). In vision thinking the thinker generates positive thoughts to create an image or representation of a future that is positive to the self (as the individual uses their own interpretation and perspective of what is positive to build the representation) and positive to the collective (as the requirement of vision thinking is that it is positive for the collective). The connection of the thinker to the vision, to which the thinker also perceives the collective is connected (because it is formed to serve the collective), provides the basis for formation of a shared social identity as per self-categorisation. This dual connection highlights similarity between the self and the collective (e.g., that the same things matter to both the self and the collective, that the self and the collective perceive the same things as positive); it emphasises shared outcomes and goals (i.e., there is a common target - the vision); it highlights shared circumstances (i.e., the self and the collective are in the same situation to which creation of the vision responds); and depending on the theme of the vision thinking it could highlight a common fate and threat (i.e., that both the self and the collective are susceptible to the same issue that the vision thinking overcomes). In vision thinking, the thinker develops a mental representation (a vision) that acts as a consensus about a future that would be valuable to the group. A social consensus is crucial to the process of self-categorising as a group member, and to the expression of social identity (Postmes, Baray, Haslam, Morton, & Swaab, 2006).

The unrestraint of vision thinking contributes to the self-categorisation process because it enables the formation of a *positive* mental representation where this may otherwise

be unattainable. The value of vision thinking derives from the construction of an image of the future that is more positive than the current reality, so that it can motivate positive change. The unrestrained nature of vision thinking frees the thinker to construct a more positive future, despite the complexities and barriers to change that hold the current reality as it is.

Creativity is also key to self-categorisation. Not only could a mental representation not exist without a creative process, but the fact also that vision thinking is a creative process means the thinker is more connected to the vision. As indicated above, connection to the vision is crucial to support self-categorisation. Engagement in a creative process that requires an input of thought and effort, leads to an investment in the outcome (Collins & Amabile, 1999). Being invested in the mental representation, means the thinker values it and is connected to it, setting the foundation for the self-categorisation process that arises from vision thinking.

Identity Formation and Vision Thinking in Interaction with Others. The self-categorisation processes described above, that are supported by the four vision thinking components, and lead to the formation of a social identity, apply at the individual level of vision thinking. When vision thinking occurs in interaction with others there are likely to be additional factors affecting self-categorisation.

Vision thinking in interaction with others creates a setting where group members influence each other's thinking. In vision thinking, group members develop a consensus about a future that would be valuable to the group. Individuals create mental representations that are then shared with the group so that others can iteratively respond to what is shared, build on their own representations, and then share them with the group. A shared vision is created when individual's representations are aligned with the representations that have been communicated by the collective. This process of reaching consensus necessarily brings

alignment of group members, providing the context for self-categorisation as group members. Additionally, the unrestrained nature of vision thinking diminishes opportunities for conflict because pragmatics don't have to be addressed, thus facilitating the formation of a shared identity. Furthermore, because the mental representations that are shared by the group are positive, this is likely to lift the positivity of group members and to assist group cohesion and thus identity formation.

Finally, the creative nature of vision thinking could also enhance the formation of a shared identity among interacting group members. Creative engagement between group members leads to identity formation via a bottom-up *inductive* process where group members interact and share their distinctive perspectives to build a consensus about group norms and shared identity (Jans, Postmes, & Van der Zee, 2012; Postmes, Haslam, & Swaab, 2005; Postmes, Spears, & Lea, 2000; Postmes, Spears, Lee, & Novak, 2005). The process of group members forming a vision replicates this inductive social identity process because group members share their distinctive perspectives to build towards a common point, the vision. So, the creative process in vision thinking provides a meaningful framework for identity formation. Engaging in vision thinking, in interaction with others—where group members are interacting to establish a shared positive vision—may be especially effective at creating a shared social identity among group members.

Efficacy. The second pathway from vision thinking to collective action engagement is via efficacy. Both self-efficacy and collective efficacy are relevant to vision thinking and collective action. While self-efficacy is an individual's belief in their ability to achieve results (Bandura, 1982), collective efficacy is the individual's shared belief, that the collective can attain the desired outcome (Bandura, 2000; Van Zomeren, Leach, & Spears, 2010). Referring to the earlier definition of collective action in this paper, action by either a collective or an

individual is deemed collective action provided it is action in pursuit of benefits for the collective.

Efficacy via Increased Perceived Possibility. One way vision thinking may promote efficacy is via an increase in the perceived possibility of the occurrence of a positive end state, resulting from imagining an ideal or more positive future. Research has shown that construction of future hypothetical events can raise the perceived possibility of those events occurring.

An experiment by Carroll (1978) showed that asking participants to imagine that a particular candidate had won the US presidential election led participants to believe it was more likely that the candidate would win the election. A similar study by Carroll also found that asking participants to imagine a football team enjoying a successful season with a major bowl bid, led participants to believe it was more likely that the team would achieve a major bowl bid. These studies also showed that having participants explain what they imagined made no difference to their perceived likelihood of the outcome occurring— it was the act of imagining itself. Carroll proposed that this effect might depend on requiring vivid, detailed imagination, as earlier studies (Abelson, 1976, as cited in Carroll, 1978) found that imagining the occurrence of a simple event without any depth of imagining (like spilling a cup of coffee) failed to change the perceived likelihood. Gregory (1982), with a series of four experiments, showed that participants who imagined events happening to them had a stronger belief that the events would in fact occur. However, it appears that care must be taken with how the imagination task is set up. S. Sherman, J., Cialdini, Schwartzman, and Reynolds (1985) found that if it was difficult and effortful to imagine an event, the reverse happened, perceived likelihood of the event decreased.

It follows then, if people are asked to imagine a future positive outcome, and they are encouraged to imagine with vividness and detail, and they do not find this task excessively difficult or effortful, then their perceived likelihood of that positive outcome eventuating may increase. The unrestrained nature of vision thinking (i.e., without the need to assess feasibility) may facilitate the ease of the imagination task. Studies by Wenzel et al. (2022) showed that when participants were asked to imagine ideal futures relating to both a sustainable environment and economic equality, that the perceived possibility of improved outcomes in these areas increased. If the act of imagining an alternative end state makes it seem more possible, then it follows that the end state would be perceived as more attainable, hence heightening belief in the ability to attain the outcome.

Furthermore, in line with social identity theory (Tajfel, 1978; Tajfel & Turner, 1979), in a context of social disadvantage, a perception of instability of the collective's situation, is associated with greater efficacy for change (Doosje, Spears, & Ellemers, 2002; Mummendey et al., 1999; Van Zomeren et al., 2004). According to social identity theory, the perception of a cognitive alternative (an imagined alternative) to the status quo, underscores the instability and illegitimacy of the group's status, thus mobilising group members to collective action. In recent research, J. D. Wright, Schmitt, Mackay, and Neufeld (2020) illuminated the concept of cognitive alternatives by developing a measure for the extent to which participants imagine positive alternatives to a current environmental challenges; they found evidence for its predictive validity for pro-environmental behaviour and activism. So, cognitive alternatives (mental representations) that arise from vision thinking, can rouse a perception of instability and then efficacy for change.

Group Efficacy from Positive Interaction. Another way vision thinking may promote efficacy is through the interaction involved in sharing a positive future vision. The act of sharing and discussing a vision could influence one's perception of other group members,

including their efficacy to work towards the vision. In an environment where the content of the discussion is positive, and individuals see other group members generating ideas and images of positive futures, without restraint or consideration of feasibility, the vibe, energy, and perceived enthusiasm of other group members could advance the perception that others in the group are willing to work towards the vision. A sense that group members are willing to work towards an outcome, would likely lift perceptions of group efficacy and in turn individual efficacy.

Efficacy via Increased Identification with the Group. Research that informs the social identity model of collective action (Drury & Reicher, 2005), shows that as identification with the group strengthens, individual's group efficacy beliefs are heightened via perceive stronger social support from the group. So, if vision thinking builds a shared social identity, as proposed above, it would indirectly lead to group efficacy.

Emotions. The third proposed pathway from vision thinking to collective change is via emotions. In the social identity model of collective action, emotions are depicted as motivating factors that direct individual's responses to deal with their environment (Van Zomeren, 2013). In a collective action context that involves a form of injustice (e.g., a disadvantaged group), anger, or its counterpart outrage, has been shown to be the most pertinent emotion for motivating collective action because it is an approach emotion associated with redressing the injustice (D. M. Mackie & Smith, 2002; Van Zomeren et al., 2008; Van Zomeren et al., 2004). Other emotions are also possible motivators of collective action, and I suggest that multiple emotions could simultaneously motivate collective action, for example outrage or anger about the current state of things along with hope for an alternative. The pertinent emotions will be context dependent; they will depend on both the theme of the vision thinking, and emotions the thinker already experiences in relation to the theme.

Outrage. I propose that vision thinking may promote outrage or anger where there is already some degree of discontent. The creation of a vision of a more positive alternative to the current reality provides a comparison condition. Furthermore, this comparison condition is something in which the thinker has invested creative effort, increasing their propensity to connect with it and value it. Comparison of the current reality with the vision may heighten discontent—a similar mechanism to the activation of discontent associated with relative deprivation arising from comparison of existing circumstances with a referent (alternative imagined) condition (Folger, 1987; Folger, Rosenfield, Rheaume, & Martin, 1983). In turn, this may trigger a sense that the current reality could and should be different, hence moving discontent towards anger or outrage.

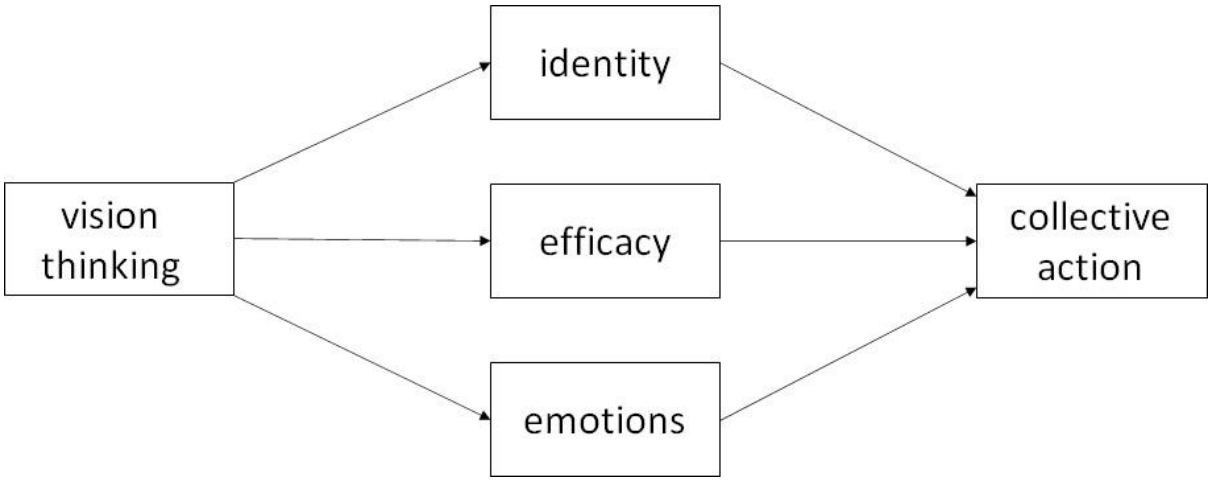
Hope. Hope can increase motivation in the context of collective change and imagining a positive future can elevate hope. Therefore, another proposed pathway from vision thinking to motivation for collective change, is via hope. One of the basic cognitive components of hope identified by Miceli and Castelfranchi (2010), is the belief that the hoped for outcome is possible. As discussed above, imagining a positive outcome can increase the perceived possibility of the outcome occurring. In fact, a study by Wenzel et al. (2022) found that imagining a positive world where climate change had been combatted, raised the perceived possibility of this occurring, and in turn raised hope. Additionally, the study found that hope led to support for social change. Greenaway et al. (2016) also found that an experimental manipulation of hope promoted greater support for social change. So, imagining positive futures—as in vision thinking—can led to increased support for social change (an important element for promoting motivation to take collective action) via perceived possibility and hope.

Vision thinking and the components that uniquely define it—positiveness, unrestraint, mental representations, and creativity—offer a promising path to motivation for collective action via social identity, efficacy, and emotions.

Figure 1.3 represents the proposed vision thinking collective action model, depicting vision thinking leading simultaneously to social identity, efficacy, and emotions that in turn promote motivation for collective action.

Figure 1.3

Vision Thinking Collective Action Model



Overview

In this thesis I will operationalise and explore the concept of vision thinking, to understand how it may motivate people to act for collective change. I seek to ascertain the core components that uniquely define vision thinking and distinguish it from other types of thinking (Chapter 2). I will examine if vision thinking leads to motivation for collective action via the collective action predictors within the established social identity model of collective action (Chapter 2 and reinforced in following chapters). Then I will look at how the personal context of the thinker, including personality, cognitive propensities, and personal circumstances, affect their engagement in vision thinking (Chapter 3). Following this, I will investigate how, through social influence factors, the level of freedom or prescription

imposed on the thinker, affects their engagement in vision thinking (Chapter 4). Next, I will explore the effect of perceived possibility (of the vision) on vision thinking and on the pathway from vision thinking to motivation via efficacy (Chapter 5). Finally, I will explore how vision thinking might be social identity forming, by investigating the differences between individual vision thinking (i.e., done alone) and group vision thinking (i.e., done in interaction with others) in how they inform the pathway from vision thinking to motivation via social identity (Chapter 6). Finally, I will integrate the findings, including considering them within the context of leadership (Chapter 7).

CHAPTER 2: The Essential Components of Vision Thinking and the Overall Effect of Vision Thinking on Collective Action

Vision thinking—prospection that focuses on the simulation of a positive or ideal future relating to a collective, for example, a disadvantaged group, an organisation, society, or humanity in general—has been alluded to and acknowledged in organisational practice, by leaders throughout history, and in research literature (Boyatzis et al., 2015; Kirkpatrick & Locke, 1996; Stam et al., 2014; Strange & Mumford, 2005; van Knippenberg & Stam, 2014). However, it has not been defined, systematically studied, nor the outcomes confirmed. To study vision thinking—that is, to study the individual's thought processes when engaging in vision thinking, and the outcomes—we need to affirm its psychological components. In this chapter, I investigate the unique combination of characteristics that define vision thinking and examine if vision thinking comprised of these characteristics promotes collective action motivation via efficacy, social identity, and emotions as per the social identity model of collective action.

The Components that Define Vision Thinking

What is the essence of vision thinking, what makes it distinct from other forms of thinking? In Chapter 1, I proposed and presented an argument for four components of vision thinking that in combination uniquely define it. Vision thinking is unrestrained; the thinker is freed from considering the practicality and feasibility of what they are imagining, so their thought and generation of ideas is not limited. Vision thinking also involves a mental representation of the future state under consideration by the thinker – effectively this is the *vision.* Vision thinking is creative, it generates something new (the mental representation). And vision thinking is positive; the content of the mental representation and the thought that generated it are without negativity; they are positive and possibly ideal. So, vision thinking is characterised by unrestraint, mental representations, creativity, and positiveness.

Vision Thinking and the Collective Action Predictors

In Chapter 1, I presented an argument for how vision thinking might raise social identity, efficacy and the emotions hope and anger (i.e., the collective action predictors identified in the social identity model of collective action). To recap: I propose that vision thinking may promote self-categorisation processes that lead to the formation of a shared social identity with others one is vision thinking with, or with the collective the vision thinking refers (e.g., if the vision thinking is about mitigating climate change the collective is those who are affected by climate change and want to stop it). Positiveness, mental representations, unrestraint, and creativity work together and the generation of positive mental representations of the future may form the bases for consensus, which is fundamental to the process of self-categorising oneself as a group member (Postmes et al., 2006).

Second, I propose that vision thinking might increase efficacy, via several means. Because vision thinking is about imagining a positive future outcome, it may raise the perceived possibility of the imagined outcome occurring (Carroll, 1978; Gregory, Cialdini, & Carpenter, 1982; Wenzel et al., 2022), hence heightening belief that one can attain the outcome (i.e., efficacy). Additionally, interacting with others while the group creates a positive future vision, and absorbing the positivity projected by the group could increase the perception that others have efficacy, lifting one's own efficacy. Furthermore, identification with the group (which I proposed above occurs via the self-categorisation enhancing qualities of vision thinking) is known to increase efficacy (Drury & Reicher, 2005).

Third, I proposed vision thinking can increase the emotions hope and anger. Comparisons of the idealised imagined future with the current situation may evoke discontent, similar to the activation of discontent associated with relative deprivation that arises from comparison of existing circumstances with a referent (alternative imagined) condition (Folger, 1987; Folger et al., 1983). In turn, this may trigger a sense that the current

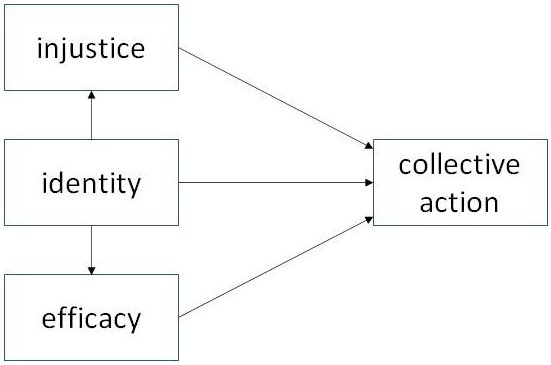
reality could and should be different, hence moving discontent towards anger or outrage. Regarding hope, there is already evidence in the research literature that imagining a positive future can elevate hope (Wenzel et al., 2022), and evidence that hope can inform support for collective action (Greenaway et al., 2016; Wenzel et al., 2022).

Vision Thinking and the Social Identity Model of Collective Action

Social identity models of collective action that highlight the role of identity, efficacy, and emotions as precursors to support for collective action. A meta-analysis conducted by Van Zomeren et al. (2008) supported the development of the integrative social identity model of collective action (SIMCA). (Note that I have replaced *injustice* in SIMCA for hope and anger.) In SIMCA the collective action predictors (social identity, efficacy, injustice) directly predict collective action, plus: social identity predicts injustice (social identity underpins the group-based sense of injustice), and social identity predicts efficacy (social identity reinforces efficacy for less empowered group members) (refer to Figure 2.1).

Figure 2.1

The Social Identity Model of Collective Action (SIMCA)



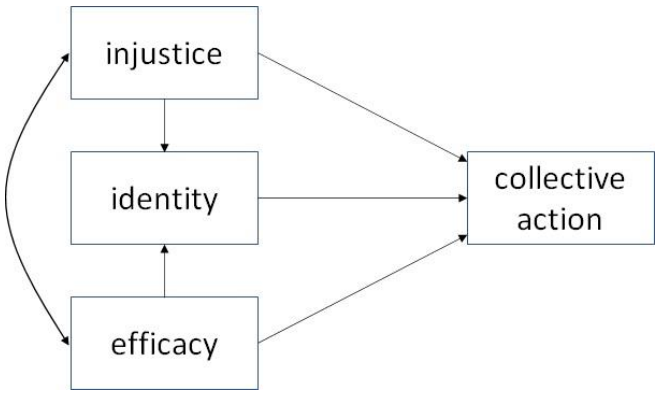
Note. In addition to injustice, identity and efficacy predicting collective action, identity also predicts injustice and efficacy.

An alternative to SIMCA is the encapsulated model of social identity in collective action (EMSICA) (Thomas et al., 2009). In EMSICA social identity, efficacy, and injustice all directly predict collective action, as per SIMCA, and like SIMCA social identities have a

central part in promoting collective action; the model represents the idea that new social identities can form from shared responses of injustice and efficacy. Refer to Figure 2.2. A study by Thomas et al. (2011) that employed multigroup structural equation modelling demonstrated that both SIMCA and EMSICA fit the data well. Thomas, McGarty, and Mavor (2016) showed that EMSICA is the most relevant model for emerging social identities that arise from group interaction, whereas as empirically supported by Van Zomeren et al. (2008), SIMCA is more applicable to established identities.

Figure 2.2

The Encapsulated Model of Social Identity in Collective Action (EMSICA)

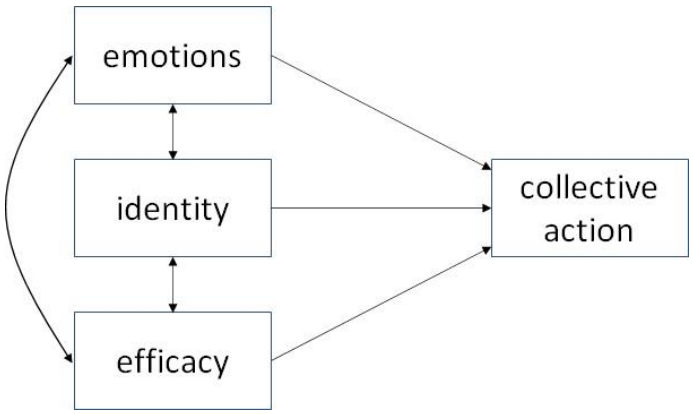


Note. Injustice, identity, and efficacy predict collective action, and shared responses of injustice and efficacy can lead to new social identities.

Indeed, Van Zomeren, Postmes, and Spears (2012) have revised the SIMCA to consider more dynamic reciprocal relationships between the collection action predictors. In the present research, the relationships between the collective action predictors will therefore be modelled as bidirectional (or non-directional) correlational relationships, investigating the extent to which each predictor mediates any effects of vision thinking. Figure 2.3 depicts the vision thinking collective action model that will form the basis of the research.

Figure 2.3

A Social Identity Collective Action Model with Correlated Collective Action Predictors



Note. The model pertinent to vision thinking.

The Present Research

The present research uses three studies to test if unrestraint, positiveness, the formation of mental representations, and creativity, collectively define vision thinking, and to test if vision thinking comprised of these attributes leads to motivation for collective action via a social identity collective action model. Three studies across a wide variety of settings are used. The first study involves members of small groups interacting with each other within a laboratory setting to produce a vision (i.e., vision thinking in interaction with others). The second study examines the vision thinking tendencies and related collective action outcomes of employees in a government department after the implementation of a new workplace strategy. The third study involves participants engaging in an individual vision thinking task online.

STUDY 2.1

Study 1 used in-person small group interaction and was based on the theme of improving the participants' university. The study a) sought to confirm the components of vision thinking: unrestraint, mental representations, creativity, positiveness; and b) explore if

vision thinking leads to motivation for collective action via the collective action predictors (identity, efficacy, and emotions).

Method

The study was conducted in a laboratory setting, with an experimental manipulation that required members of small groups to interact with each other to complete a task based on the theme of improving the participants' university. Each group was randomly allocated to either a group visioning (vision thinking) or a group planning (control) task. Participants then individually completed an online survey that measured the nature of their thinking (vision thinking components), collective action predictor tendencies (social identity, efficacy, emotions), and their motivation for collective action based on the theme of the task.

Participants

Currently enrolled students in undergraduate introductory psychology classes at Flinders University participated in the study. In the absence of any prior information about expected effect sizes, a sample of 100 participants was targeted; this would be sufficient to have at least 10 participants per estimated parameter in the tested model, and, as an approximation, to detect a moderate effect size of $d = 0.50$ with a power of 0.80 in a *t*-test between the groups (Faul, Erdfelder, Lang, & Buchner, 2007). The sample ($N = 99$) comprised 64 females and 35 males ($M_{age} = 22.26$, $SD = 7.30$). Participants were recruited via the faculty research participation website. The first 87 participants were granted course credit for their participation; a further 12 were compensated with $15.

Materials

Manipulations

The two experimental conditions were a visioning task and a planning (control) task. The control task was required to ensure that any effects from the visioning task were due to

the unique nature of vision thinking not merely the act of working together in a group on a positive pursuit.

For each task there was a one-page instruction leaflet (refer to Appendix A); the relevant leaflet was both provided to each participant and read out to them, in their group, before the task commenced. Each leaflet included instructions that were specific to the condition (refer below) as well as instructions that were the same for each condition, such as the protocol for working in a group, notification that there would be a prize of $30 per person for the group with the best vision/plan (to encourage participants to try), a statement about the purpose of a university for students (to help ensure each vision/plan had a similar intent), plus a list of some things to consider for improving the university (to help activate participants' thinking).

Visioning Task. The visioning task required group members to develop an ideal/utopian vision of Flinders University. The leaflet for the visioning task provided participants with the following instructions specific to the visioning task:

> Your task as a group is to create a picture or vision of an ideal/utopian Flinders University of the future (in terms of how it caters for students). Importantly, try to be as creative, expansive, and unlimited in your thinking as you can – don't hold back. Don't worry if you mention things that you think might already exist, and don't worry about the feasibility of ideas. Be as creative as you can and remember to focus on building an ideal/utopian vision of Flinders University in the future, with no time or money constraints.

The leaflet specified that the best vision—for determining the prize—would be the one that was the most creative, most ideal, most clearly articulated, and most beneficial to students.

Planning Task. The planning task required group members to develop a plan for improving Flinders University. The leaflet for the planning task provided participants with the following instructions specific to the planning task:

> Your task as a group is to develop a plan for how Flinders University can be improved (in terms of how it caters for students). The plan that you develop needs to be realistic, able to be implemented within 12 months and within a budget of about $100,000 (just do your best job with estimating what you could achieve within these limits).

The leaflet specified that the best plan—for determining the prize—would be the one that was the most realistic (able to be implemented); best fit with time and budget constraints, most clearly articulated, most beneficial to students.

Measures

Unless otherwise stated, all items were scored on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Vision Thinking Components. All vision thinking components, here and throughout the following chapters, were measured on a 7-point scale (1 = *Not at all*, 7 = *A great deal*) as self-report measures. The formation of mental representations was measured with one item: *During the visioning (planning) exercise, to what extent did you find yourself forming images of what the future could be like?* Creativity had one item: *How much creative thinking do you feel you engaged in during the course of the exercise?* Positiveness was measured with one item: *To what extent was what you imagined positive or negative overall?* (1 = *Extremely negative*, 7 = *Extremely positive*). Unrestraint had one item: *To what extent do you think your own thinking was concerned about whether the ideas generated during the group exercise were possible/practical?* (reverse scored).

Identity. Two types of social identity were measured: identification with the task group and identification with the group promoting the cause.

Task Group. Identification with the group one completed the visioning/planning exercise with was measured to test identification with fellow group members resulting from direct interaction when participating in the exercise. Three items measured identification with the task group (α = .73): *I have respect for my group; I am like other members of my group; I would like to continue working with my group.*

Group Promoting the Cause. Identification with a group promoting the cause to improve Flinders University was measured to test if identification extended beyond the immediate group to a positive cause related to the exercise). Identification measures were derived from Ellemers, Kortekaas, and Ouwerkerk (1999). Three items measured identification with a group promoting the cause (α = .86): *It would be satisfying to be part of a group that promotes further improvements, for students, to Flinders University; I could imagine being committed to a group that advocates for further improvements, for students, to Flinders University; I can see myself engaging with a group that cares about further improving Flinders University for students.*

Efficacy. One item measured individual efficacy: *I could have a positive impact on promoting further improvements, for students, to Flinders University.*

One item measured task group efficacy: *If my group worked together, we could have a positive impact on promoting developments, for students, to Flinders University.*

Hope. Hope was the only emotion measured; anger/outrage was not measured as it was deemed inapt for the specific theme of this visioning/planning task (i.e., the theme came from a neutral base from which to ponder positive improvement, not from a negative base

from which anger or outrage could stem). One item measured hope: *How hopeful are you that Flinders University will make significant improvements for students?*

Motivation. There was a single item for each of individual motivation: *I am motivated to promote further developments for students at Flinders University*; and motivation to work with the task group: *I would be motivated to work with my group to promote further developments for students at Flinders University.*

Procedure

Each laboratory session involved one group of between three to six participants. Sessions were randomly assigned as either the visioning or the planning condition.

Once in the laboratory, participants individually completed an online survey at a computer station that recorded their demographics and introduced the task. Participants were then asked to move to the centre of the room and position their chairs in a circle facing each other. A research assistant guided participants through the phases of the task. The visioning/planning task was divided into three phases plus an ice-breaker task.

The first phase of the task required participants to silently generate ideas to contribute to their group's ideal/utopian Flinders University of the future (or the group's plan for improving Flinders University). Participants wrote their idea at the top of a piece of paper then passed it on. Others built on the idea or added different ideas of their own. The purpose was to give group members the opportunity to generate some initial ideas to contribute to the group interaction task. This phase of the task took four minutes.

Participants then undertook a short ice-breaker exercise to build some familiarity among group members to aid group interaction during the following phases of the task. Although an ice-breaker exercise can contribute to social identity formation, participants from both conditions undertook the same exercise. The research assistant told participants:

"Because you probably don't know each other and I'm expecting you to work as a group, we are going to do a quick ice-breaker exercise." Participants were given one and a half minutes to come up with at least five things that they had in common.

The second phase of the task required participants to work together to develop either an ideal/utopian vision of Flinders University or a plan for improving Flinders University, depending on the condition the group was assigned to. Participants were told they needed to work together and share and discuss ideas to build either a future vision or a realistic plan, depending on the condition. Participants in the visioning group were encouraged to be as creative and innovative as possible. Participants in the planning group were reminded that their plan needed to be as realistic as possible. Participants were not permitted to write during this phase; this was to avoid distraction and keep the focus on the whole group interaction. Participants had four minutes to complete the task and were given a warning when there were two minutes remaining.

In the third phase the group captured their vision (or plan) in writing. A member from the group self-nominated as a scribe. All participants were provided with a template that the scribe was required to complete with input from the other group members. The template required the scribe to 1) List five key features of the group's vision (or plan); 2) Describe what the vision (or outcomes of the plan) would be like for Flinders University students. Groups had five minutes to complete this task and were given a warning when there were two minutes remaining. The entire visioning/planning task took 15 minutes.

Finally, participants individually completed an online survey that measured their identity, efficacy, hope, and motivation for collective action in relation to the theme of the task, and their vision thinking components.

Results

To determine if multilevel analysis was required, the intraclass correlation coefficient (ICC) was calculated for all the collective action predictors and motivation measures, and for the vision thinking components (mental representation, positiveness, creativity, unrestraint), for each condition (visioning task, planning task). The function *lmer()* in the *R* package *lme4* was used. The results are presented in Appendix B. Several variables had an ICC over 0.1 so further investigation to assess the need for multilevel analysis was done. Comparison of a baseline model (run for each of the two variables with the highest ICCs, i.e., *identity with my group*, *efficacy of my group*) which included only the intercept, with a model that allowed the intercepts to vary indicated the fit improved when the intercepts varied (there was a significant improvement in fit with $p = .008$ and $p = .011$ respectively for each variable). In both cases only the model with the random intercept improved the fit, random slopes did not.

So, the dataset was analysed using multilevel analysis to account for non-independence at the group level (i.e., the group in which the task was completed), using a model with random intercepts.

The difference in the collective action predictor and motivation variables between the planning and the visioning task conditions was tested using the package *nlme* (non-linear mixed effect) in *R* version 3.6.3 using a maximum likelihood estimator. There was no significant difference between conditions for any of these outcome variables (refer to Table 2.1).

Table 2.1

Descriptive Statistics and Difference between Means for Dependent Variables

	Planning[a]		Visioning[b]					
Variable	*M*	*SD*	*M*	*SD*	*df*	*t*	*p*	Cohen's *d*
Mot individual	5.57	1.21	5.48	1.23	22	0.37	.71	0.08
Mot group	5.71	1.14	5.76	1.22	22	-0.13	.90	0.04
Identity group	5.89	0.71	5.83	0.77	22	0.46	.65	0.08
Identity cause	5.80	1.00	5.95	0.80	22	-0.86	.40	0.18
Eff individual	5.73	0.93	5.90	1.04	22	-0.83	.41	0.17
Eff group	6.10	0.74	5.96	1.11	22	0.66	.52	0.15
Hope	5.57	1.38	5.24	1.72	22	1.05	.30	0.21

Note. [a]n = 49 (planning task). [b]n = 50 (visioning task). Number of groups = 24.

The lack of difference in these outcome variables between the planning and visioning conditions suggests either the task manipulation did not work (i.e., the different conditions did not differentiate the type of thinking engaged in), or it did but there was no difference in the effect of the different thinking on the outcome variables. To probe further whether the two conditions differed in the degree of vision thinking exhibited and to test the predicted relationships of vision thinking to the outcome variables: 1) the vision thinking latent variable (comprised of the vision thinking components) was first tested for model fit using confirmatory factor analysis; 2) the difference in engagement in vision thinking across the two conditions was tested; 3) the relationship between vision thinking and the outcome variables was tested.

Vision Thinking Latent Variable

The entire sample was used to test the fit for the latent variable vision thinking, ultimately to test if there is a difference in vision thinking between the experimental conditions. It was assumed that: the *measurement* of vision thinking would be invariant between conditions, that is, the components of vision thinking would not vary substantially in their relative strength between conditions: and combining conditions would not cause any distortion to the latent variable[1]. Table 2.2 shows the means, standard deviations and Pearson's correlations for the proposed vision thinking components. Unexpectedly the component *unrestraint* did not correlate with the other components, so it was not expected to load onto vision thinking.

Table 2.2

Means, Standard Deviations and Pearson's Correlations for the proposed Vision Thinking Components

	Planning[a]		Visioning[b]				
Variable	*M*	*SD*	*M*	*SD*	Mental rep	Creativity	Positive
Mental rep	5.96	1.29	6.10	1.11	-	-	-
Creativity	5.73	1.20	5.46	1.25	.49***	-	-
Positiveness	6.30	1.21	6.28	1.29	.52***	.32**	-
Unrestraint	2.37	1.36	2.88	1.59	.08	-.10	-.02

Note. [a]$n = 49$ (planning task). [b]$n = 50$ (visioning task).

** $p < .01$, *** $p < .001$.

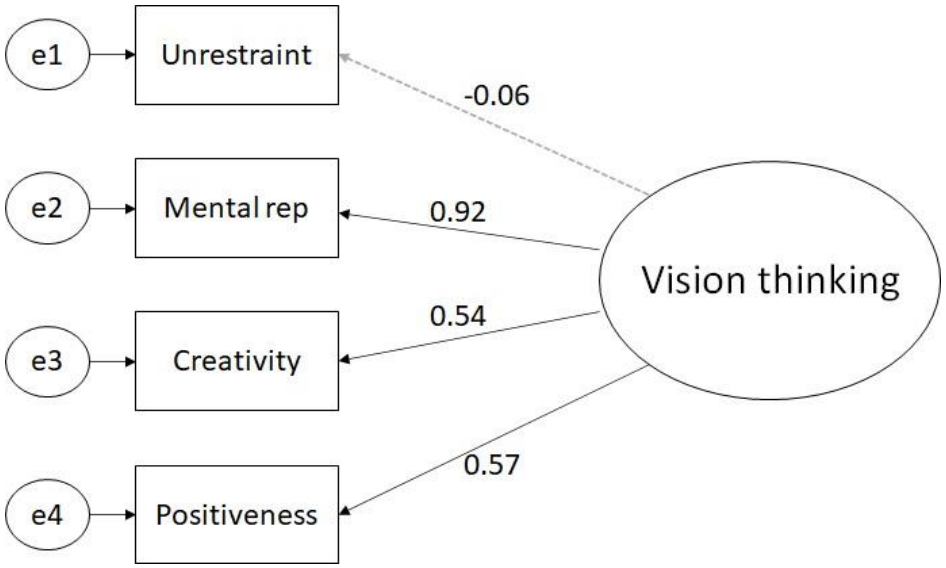
A confirmatory factor analysis (CFA) using multilevel modelling in *R* version 3.6.3 with the package *Lavaan*, to test if the four components loaded onto the factor vision thinking, did not converge on a solution. So, to provide a first pass indication of how the

[1] This reasoning is confirmed by additional analysis (not reported) that showed similar loadings of the vision thinking components onto the factor vision thinking for: 1) the planning condition only; 2) the visioning condition only; 3) both conditions combined.

components load onto vision thinking, a CFA without multilevel modelling[2] and employing bootstrapping from 1,000 bootstrap samples, was conducted. The sample size was 99 and there were no missing data. The standardised loadings are shown in Figure 2.4; the unstandardised loadings and additional parameter estimates are presented in Appendix C.

Figure 2.4

Vision Thinking Components Confirmatory Factor Analysis



Note. Standardised loadings are shown.

Unrestraint did not load onto vision thinking. *Mental representations, creativity* and *positiveness* all loaded positively. The appropriate fit indices all indicate a close fit between the model and the data: $\chi^2(2) = 3.29$, $p = .193$, comparative fit index (CFI) = .98, SRMR = .05, irrespective of the non-significant loading for unrestraint.

For fit indices, Kenny (2020) recommends reporting the chi-square statistic, the RMSEA (but not for small samples with low degrees of freedom, which is the case here), and a combination of CFI and SRMR with a good fit represented by CFI >= .95 and SRMR < .09.

[2] In later analyses for the present study, the latent variable vision thinking is used in models with other variables where there are more degrees of freedom; in these analyses multilevel modelling does converge on a solution. These models (with other variables) therefore confirm the latent variable (using multilevel CFA). Refer to Figures 2.5 and 2.6 below.

Hu and Bentler (1999) recommend dual reporting, reporting either TLI/CFI and SRMR (with a good fit represented by TLI/CFI >= .95 and SRMR < .09), or RMSEA and SRMR. Based on these recommendations, and for consistent reporting throughout this research, the fit indices that will be reported are CFI and SRMR, with a good fit when both indices meet the cut of criteria (CFI >= .95 and SRMR <.09).

Vision Thinking Across Conditions

Structural equation modelling (SEM) using multilevel analysis was run to test if there was a difference in vision thinking between conditions. The latent variable was comprised of the three vision thinking components that loaded positively onto it (mental representations, creativity, positiveness). Condition was mean centred (planning = -0.5, visioning = 0.5). There was no significant difference in vision thinking between conditions: $B = 0.27$ (unstandardised), $SE = 0.19$, 95% CI [-0.11, 0.65], but there was a slight tendency for greater vision thinking in the visioning condition. The lack of a significant difference between conditions indicates that the type of thinking engaged in was similar across both conditions.

Vision Thinking Collective Action Model

Given there was no difference in vision thinking (vision thinking without the unrestraint loading) across conditions, the conditions were combined for a correlational approach, and SEM (with multilevel analysis) was used to test the vision thinking collective action model (i.e., the capacity of vision thinking to lead to motivation for collective action, via efficacy, social identity, and hope). The model was tested with two sets of measures. First, collective action and motivation measures were used that relate to the individual's connection to the task group (i.e., the group with which they completed the planning or visioning task) (refer to Table 2.3). Second, collective action and motivation measures were used that relate to the individual's connection with the cause or social movement (refer to Table 2.5).

Connection with the Task Group

For quick reference Table 2.3 below shows the description of the variables used in the vision thinking collective action model concerning connection with the task group (exact measures pertaining to these variables are presented earlier in the *measures* section).

Table 2.3

Measures for Connection with the Task Group

Variable	Description
Identity	Identification with the group one completed the task with.
Efficacy	Perceived efficacy of the task group to advance the cause.
Hope	Hope for change.
Motivation	Motivation to work with the task group to advance the cause.

Table 2.4 shows the means, standard deviations, and bivariate correlations for the dependent variables.

Table 2.4

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

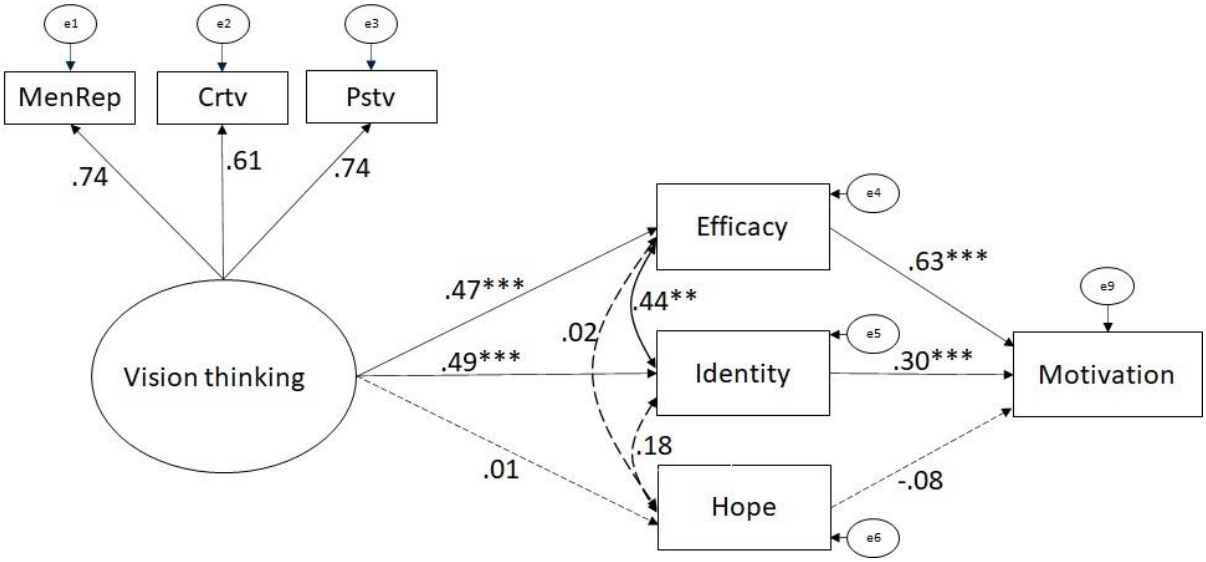
Variable	*M*	*SD*	Identity	Efficacy	Hope
Identity	5.86	0.74	-	-	-
Efficacy	6.03	0.94	.57***	-	-
Hope	5.40	1.56	.16	.18	-
Motivation	5.74	1.17	.63***	.77***	.08

Note. $N = 99$.
*** $p < .001$.

The sample size was 99 and there were no missing data. The standardised loadings are shown in Figure 2.5; the unstandardised loadings and additional parameter estimates are presented in Appendix D.

Figure 2.5

Vision Thinking Collective Action Model— Connection with the Task Group



Note. Standardised loadings are shown.

*** $p < .001$, ** $p < .01$.

The fit indices indicate close fit between the model and the data: $\chi^2(8) = 5.50$, $p = .703$, comparative fit index (CFI) = 1.00, SRMR = .04. Vision thinking was positively related to efficacy and identity, but not significantly related to hope; efficacy and identity were positively related to motivation, whereas hope was not.

The indirect effect from vision thinking to motivation via identity was significant: *B* = 0.19 (unstandardised), *SE* = 0.07, 95% CI [0.05, 0.32]. The indirect effect from vision thinking to motivation via efficacy was also significant: *B* = 0.38 (unstandardised), *SE* = 0.13, 95% CI [0.12, 0.64]. The indirect effect from vision thinking to motivation via hope was not significant: *B* = 0.00 (unstandardised), *SE* = 0.01, 95% CI [-0.02, 0.02].

Connection with the Cause

Table 2.5 below provides the description of the variables used in the vision thinking collective action model concerning connection with the cause (exact measures pertaining to these variables are presented earlier in the *measures* section).

Table 2.5

Measures for Connection with the Cause

Variable	Description
Identity	Identification with the cause.
Efficacy	Individual efficacy to advance the cause.
Hope	Hope for change.
Motivation	Individual motivation to advance the cause.

Table 2.6 shows the means, standard deviations, and bivariate correlations for the dependent variables.

Table 2.6

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	M	SD	Identity	Efficacy	Hope
Identity	5.88	0.91	-	-	-
Efficacy	5.82	0.98	.61***	-	-
Hope	5.40	1.56	.13	.36	-
Motivation	5.53	1.22	.67***	.77***	.20*

Note. $N = 99$.

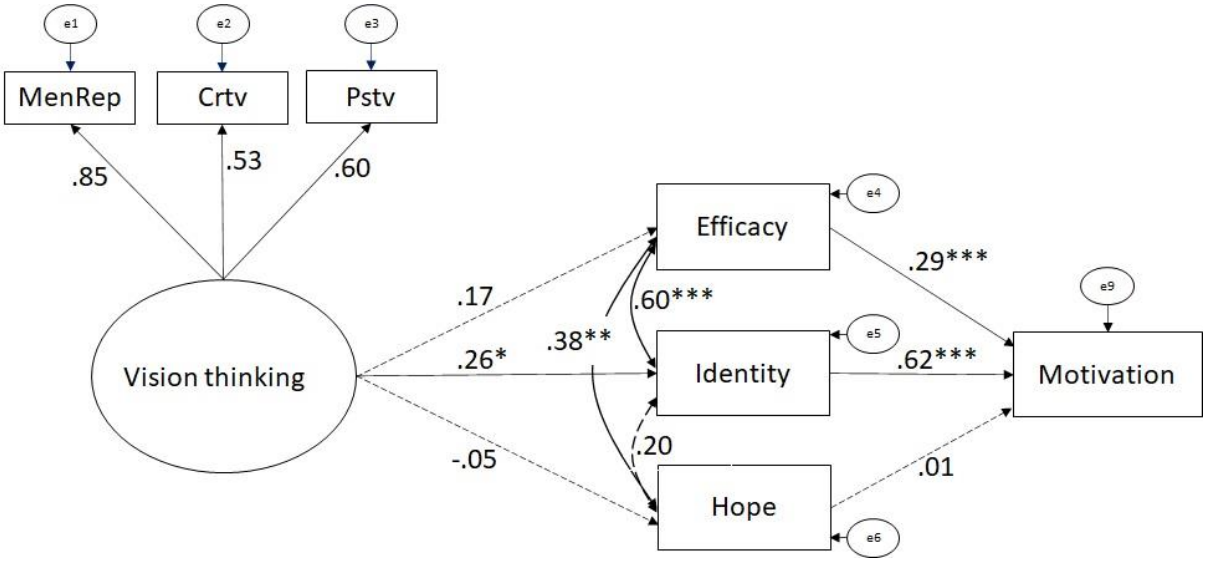
*** $p < .001$, * $p < .05$

The sample size was 99 and there were no missing data. The standardised loadings are shown in Figure 2.6; the unstandardised loadings and additional parameter estimates are presented in Appendix D.

The fit indices indicate a close fit between the model and the data: $\chi^2(8) = 5.89$, $p = .659$, comparative fit index (CFI) = 1.00, SRMR = .04. Vision thinking was positively related to identity, but not significantly related to efficacy or hope; efficacy and identity were positively related to motivation, whereas hope was not.

Figure 2.6

Vision Thinking Collective Action Model – Connection with the Cause



Note. Showing standardised loadings.

*** $p < .001$, ** $p < .01$, *$p < .05$.

There was a significant indirect effect of vision thinking on motivation via identity: *B* = 0.19 (unstandardised), *SE* = 0.10, 95% CI [0.00, 0.39]. The indirect effects via efficacy (*B* = 0.06 (unstandardised), *SE* = 0.05, 95% CI [-0.05, 0.17]) and via hope (*B* = 0.00 (unstandardised), *SE* = 0.00, 95% CI [-0.01, 0.01]) were not significant.

Discussion

The results offer some support for both the composition of self-perceived vision thinking and the vision thinking collective action model. Three of the vision thinking components (mental representations, positiveness, creativity) loaded solidly onto the vision thinking latent construct. The fourth component *unrestraint*, however, did not. Most likely the one item used to measure *unrestraint* was not apposite for capturing the level of unrestraint in participants' thinking. The item: *To what extent do you think your own thinking was concerned about whether the ideas generated during the group exercise were possible/practical?* may have guided participants to focus on aspects of their thinking where

they were considering possibility and practicality, rather than to give a view of the level of unrestraint overall in their thinking. However, even with the component unrestraint absent from the latent variable, for the theme of vision thinking in this study (i.e., to imagine improvements to Flinders University), the other three components may have provided a sufficient representation of vision thinking. Unrestraint may not have been required to further differentiate vision thinking in this context, as the vision thinking may have tended to be inherently unrestrained under the theme (i.e., there were plenty of ways to imagine improvements to Flinders University that were not impossible or highly unfeasible). (Refer to the general discussion in this chapter for further elaboration on this point.)

There was some association between vision thinking (as it was constructed here, i.e., without the unrestraint measure) and the collective action predictors, which in turn were associated with motivation. In both models (connection with the cause, connection with the task group), vision thinking was associated with a shared social identity, as expected. For the *connection with the task group* model, vision thinking was also associated with efficacy, but this was not the case for the *connection with the cause* model. In the *connection with the task group* model, efficacy measured perceived efficacy of the group, whereas in the *connection with the cause* model, efficacy measured the individual's efficacy. Perhaps in a group interaction setting, where group members are interacting to create positive alternatives together, group efficacy is a more immediate or relevant form of efficacy than individual efficacy. In both models, as per the SIMCA, identity and efficacy were associated with motivation for collective action. Hope, however, was not related to vision thinking or motivation for collective action, in either model. The reason could be that the wording of the measure for hope (*How hopeful are you that Flinders University will make significant improvements for students*?) had more of a focus on the efficacy of Flinders University rather than hope for improvements. Finally, there was a mediation path from vision thinking to

motivation via both identity and efficacy in the *connection with the task group* model, and via identity in the *connection with the cause* model.

The studies offer support for the connection of vision thinking to collective action predictors (not all) and motivation. However, we cannot determine causality—that vision thinking led to the collective action predictors—because the experimental manipulation to induce vision thinking in the vision thinking condition (but not in the control condition) did not work. There was no difference in vision thinking between the vision thinking and the control conditions. It appears that participants in the control condition, who were asked to engage in planning, engaged in vision thinking as much as those in the vision thinking condition. This is most likely because the theme of the vision thinking did not involve a high degree of infeasibility, so those in the planning condition were thinking similarly to those in the vision thinking condition (i.e., the thinking involved mental representations, was positive, and creative and inherently unrestrained because there were no obstacles of infeasibility to overcome). So, the conditions were grouped together for analysis to examine the associative relationships between vision thinking and the collective action predictors. However, cautiously, there is an indication of causality. Identification with the task group could only have come from doing the task because group members did not know each other beforehand. Group members who had higher levels of vision thinking had higher identification with their group.

So, although directionality of effects cannot be wholly determined, this study showed clear linkages between self-perceived vision thinking and some of the collective action predictors and motivation.

STUDY 2.2

Study 2.2 was grasped as an opportunity to test the vision thinking collective action predictions in a real setting. The study measured employees' thinking and responses to a newly implemented organisation-wide human resources strategy. The timing of the study was not flexible, and hence there was not the opportunity to take measures both before and after implementation of the strategy, nonetheless, measuring employees' responses to the strategy post implementation provided valuable correlational data and was a good complement to Study 2.1. The study a) sought to confirm the components of vision thinking: unrestraint, mental representations, creativity, positiveness; and b) explore if vision thinking is connected to motivation for collective action via the collective action predictors (identity, efficacy, and emotions).

Method

Study 2.2 is a correlational study that examined employee responses to the recent implementation of a new *Gender equity in leadership strategy* (GEiLs) within a state government department. Participants were surveyed online, after the new strategy was implemented, for their thinking and responses to the strategy in relation to vision thinking, the collective action predictors and motivation for change.

Participants

Participants (N = 105) were permanent employees of the state government department and comprised 67 females, 38 males (M_{age} = 44.04, SD = 9.63), across fourteen functions within the department and ten Australian public service and executive levels, with varying numbers of years in the department (M_{time} = 9.47, SD = 8.27). Participation was voluntary, so response rates dictated the sample size.

Materials

The Gender Equity in Leadership (GEiL) strategy was implemented by the Department of Treasury and Finance, South Australia to achieve equal numbers of women to men in leadership roles within the department. The strategy included timeframes to reach specific targets. The strategy involved changes to both culture and practices within the organisation. Practical aspects of the strategy included support for recruitment, provision of training, and the implementation of flexible working options.

Measures

Unless otherwise stated, all items were scored on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Vision Thinking Components. All self-perceived vision thinking components were measured on a 7-point scale (1 = *Not at all*, 7 = *At times a great deal*), unless otherwise stated.

Unrestraint comprised one item: *Since the time you were first introduced to the Gender Equality in Leadership (GEiL) strategy, in relation to this strategy, did you find yourself imagining the future in an unrestrained way?*

Mental representations comprised four items[3] (α = .90): *Since the time you were first introduced to the Gender Equality in Leadership (GEiL) strategy, in relation to this strategy, did you find yourself:* 1) *imagining things that were different to the current reality (at that time)?;* 2) *imagining or sensing how the future might make you feel?;* 3) *creating an image in your head of what the future might be like?;* 4) *imagining details of what the future might be like?*

[3] These items may also have detected negative mental representations (an issue that was corrected for later studies).

Creativity comprised one item:[4] *Since the time you were first introduced to the Gender Equality in Leadership (GEiL) strategy, in relation to this strategy, did you find yourself imagining positive possibilities?*

Positiveness comprised three items (α = .94): 1) *Overall, how positive, or negative were any details you imagined?* 2) *Overall, how positive, or negative were any feelings you imagined?* 3) *Overall, how positive, or negative were any concepts you imagined?).* The positiveness measures were measured on a 7-point scale (1 = *Extremely negative,* 7 = *Extremely* positive).

Identity. To measure shared social identification with others in the department in relation to the GEiL strategy, identification measures were created for: identification with what the GEiL strategy stands for (four items), e.g., *My values and beliefs align with the GEiL strategy*; identification with the leadership team implementing the GEiL strategy (three items), e.g., *I have respect for the leadership team within the [department] that is implementing the GEiL strategy*; and identification with the department (three items), e.g., *I would like to keep working with [the department]*. Measures were based on recommendation by Ellemers et al. (1999) for social identification measures, and included measures of self-categorisation, commitment to the group and group self-esteem. Refer to Appendix E for the full list of measures. In total ten items measured identity (α = .93).

Efficacy. One item measured efficacy: *I could (continue to) have a positive impact within [the department] in achieving gender equity in leadership.*

[4] The creativity measure is not ideal but is designed to measure self-reported generation of ideas and alternatives (i.e., creative activity) based on retrospective thinking.

Hope. One item measured hope: *Rate how you feel about the Gender Equality in Leadership (GEiL) strategy, now: I am hopeful about the change it represents.* (Anger was not measured to keep the survey positively themed and to respect organisational sensitivities.)

Motivation. One item measured motivation: *I am motivated to (continue to) have a positive impact within the [department] in achieving gender equity.*

Procedure

Approximately three months after the GEiLs was implemented, all current permanent employees of the state government department were invited to participate in the study via an email from the department's senior leadership team. Employees who wished to participate clicked a hyperlink in the email which took them to the online survey platform (Qualtrics). The survey took approximately 5 minutes and included demographic questions).

Results

Vision Thinking Latent Variable

Table 2.7 shows the means, standard deviations and Pearson's correlations for the proposed vision thinking components.

Table 2.7

Means, Standard Deviations and Pearson's Correlations for the Vision Thinking Components

Variable	M	SD	Mental rep	Creativity	Positiveness
Mental rep	3.75	1.51	-	-	-
Creativity	4.38	1.78	.64***	-	-
Positiveness	4.01	2.01	.51***	.66***	-
Unrestraint	3.79	1.87	.71***	.71***	.54***

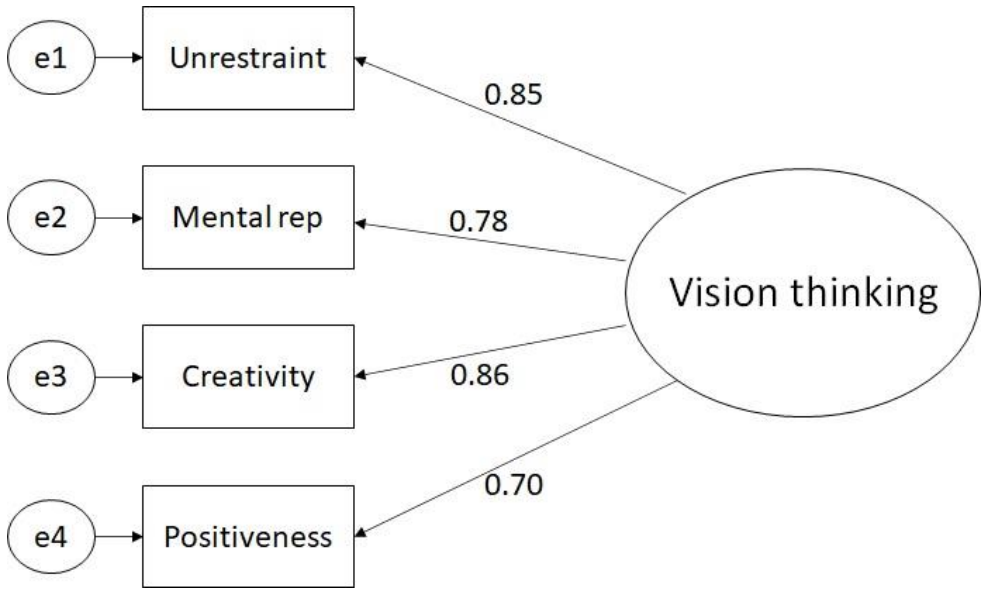
Note. $N = 105$.

*** $p < .001$.

A confirmatory factor analysis using the package *Lavaan* in *R* version 3.6.3 (bootstrapping from 1,000 bootstrap samples) showed the four proposed vision thinking components loaded on to the factor vision thinking. The standardised loadings are shown in Figure 2.6; the unstandardised loadings and additional parameter estimates are included in Appendix F. The appropriate fit indices indicate a good fit between the model and the data: $\chi^2(2) = 7.93$, $p = .019$, comparative fit index (CFI) = .97, SRMR = .03.

Figure 2.7

Vision Thinking Components Confirmatory Factor Analysis



Note. Standardised loadings are shown

Vision Thinking Collective Action Model

Table 2.8 shows the means, standard deviations and bivariate correlations for the collective action predictors and motivation.

Table 2.8

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	*M*	*SD*	Identity	Efficacy	Hope
Identity	5.66	1.04	-	-	
Efficacy	5.44	1.43	.71***	-	
Hope	5.57	1.47	.59***	.50***	
Motivation	5.71	1.24	.74***	.81***	.52***

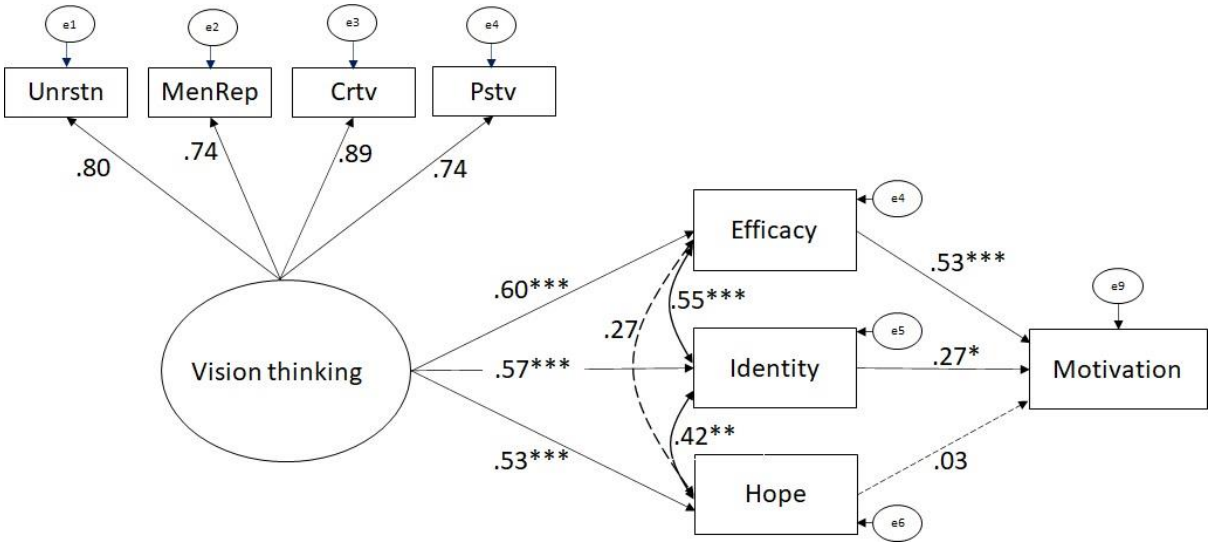
Note. $N = 105$.

*** $p < .001$.

Structural equation modelling using *Lavaan* in *R* version 3.6.3 (from 1,000 bootstrap samples) revealed a good (but not exact) fit between the vision thinking collective action model and the data: $\chi^2(14) = 33.99$, $p = .002$, comparative fit index (CFI) = .96, SRMR = .06. The sample size was 105 and there were no missing data. The standardised loadings are shown in Figure 2.8; the unstandardised loadings and additional parameter estimates are presented in Appendix G.

Figure 2.8

Vision Thinking Collective Action Model Structural Equation Modelling



Note. Standardised loadings are shown.

*** $p < .001$, ** $p < .01$, *$p < .05$.

Vision thinking was positively associated with efficacy, identity, and hope; efficacy and identity (but not hope) were in turn positively associated with motivation. As implied by these relationships, there was a significant indirect effect of vision thinking on motivation via identity: $B = 0.13$ (unstandardised), $SE = 0.07$, 95% CI [0.03, 0.30]. There was a significant indirect effect of vision thinking on motivation via efficacy: $B = 0.26$ (unstandardised), $SE = 0.09$, 95% CI [0.11, 0.46]. The indirect effect via hope was not significant: $B = 0.01$ (unstandardised), $SE = 0.05$, 95% CI [-0.07, 0.12].

Discussion

The study confirmed that the latent construct self-perceived vision thinking comprised the four components mental representations, creativity, positiveness, and unrestraint. The measure used for unrestraint in this study, directly focussed on unrestrained thinking and better informed the latent construct than in the previous study.

There was also support for the vision thinking collective action model. Employees who had higher levels of vision thinking concerning the GEiL strategy, had higher identification with others in the department in relation to the GEiL strategy, higher efficacy for having a positive impact in achieving the desired outcomes of the GEiL strategy (i.e., gender equity), and higher hope for change in relation to the GEiL strategy. Identity and efficacy were associated with higher motivation to have a positive impact on gender equity. However, hope was not related to motivation. Although there is evidence in the research literature that hope is an activating emotion for collective action (Bury et al., 2020; Greenaway et al., 2016), its role as a collective action predictor is not as widely established as is the case for identity, efficacy, and anger. Hope's capacity to affect collective action may be more sensitive to the context in which it arises. Bury et al. (2020) found that hope kicked in as a motivational instigator of collective action for climate change at low odds of success.

The context of the GEiL strategy involved high odds as the strategy had already been implemented and had the ongoing support of senior management. Hope may be more prevalent as a collective action predictor in a context involving lower likelihood of success.

Overall, the study offers support for the vision thinking collective action model. However, Study 2.2 is a correlational study so there is no evidence of causality from this study. Nevertheless, there was temporal precedence modelled in the measures that, with due caution, indicate a directional influence. The items measuring the vision thinking components were based on employees' thinking from when the GEiL strategy was first implemented whereas the items measuring the collective action predictors and motivation were based on a later time point (i.e., the present).

Lastly, this study has shown the applicability of vision thinking and the vision thinking collective action model within an organisation. Notwithstanding the lack of evidence for causal influence in the relationships between vision thinking and the collective action predictors, the study does reveal that vision thinking is integral to how people think about and respond to change within organisations, including their motivation to act for change.

STUDY 2.3

Study 2.1 (due to the manipulation not working) and Study 2.2 were correlational. So, a third study, with an experimental manipulation was run. Study 2.3 is an online study where participants engaged in individual vision thinking on the theme of environmentally clean and sustainable cities. The study a) sought to confirm the components of self-perceived vision thinking: unrestraint, mental representations, creativity, positiveness; and b) explore if vision thinking leads to motivation for collective action via the collective action predictors (identity, efficacy, and emotions).

Method

The study was conducted online, with an experimental manipulation where participants were randomly allocated to engage individually in either a vision thinking task, or a solution generating task (control) related to the theme of environmentally clean and sustainable cities. Participants then completed survey questions that measured the nature of their thinking (vision thinking components), collective action predictor tendencies (social identity, efficacy, emotions), and their motivation for collective action based on the theme of the task.

Participants

Participants were US citizens or permanent residents recruited via M-Turk (N = 209). The sample comprised 124 females, 84 males, and 1 identifying as other (M_{age} = 32.31, SD = 10.55).

An a priori power analysis using G*Power version 3.1.9.2 indicated a required sample size of N = 100 per condition for 80% power detecting an effect size d = 0.4 at a significance level of α = .05, for a two-tailed t-test (the basis for comparing effects in the free versus prescribed vision thinking conditions).

Materials

Manipulations

It was important to measure the effect of vision thinking (on collective action predictors and motivation) beyond other types of similar thinking, to ascertain the unique contribution of vision thinking. To ensure the study was not just detecting the effects of general positive engagement, I included a control condition that also required positive engagement (i.e., generating solutions) but presumably less creativity and unrestrained than

vision thinking. This control condition differed from the control condition in Study 2.1 as it had less of a creative aspect.

Vision Thinking Task. In the vision thinking condition participants were asked to engage in a vision thinking task for a minimum of 3 minutes about environmentally clean and sustainable cities. Participants were given the following instructions:

> Imagine a perfect place or state of things where our cities are completely environmentally clean and sustainable. Try to not let your thinking be constrained by how things are now or what it feels like now. Imagine the positive aspects of this perfect place or state of things. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated with what you are imagining. Stay focused on the features of this imagined world. Take as long as you need to. Remember the key features of the place or state of things you are creating: 1) It's imagined; 2) Things are perfect; 3) Our cities are completely environmentally clean and sustainable.

On completion of the task, participants were asked to describe, in writing, their imagined world in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Solution Generating Task (Control). For the control condition, participants were asked to think for a minimum of 3 minutes about solutions to make cities environmentally clean and sustainable. Participants were given the following instructions:

> Consider and suggest realistic solutions that would make our cities completely environmentally clean and sustainable. Stay focused on the task and take as long as you need to. Remember, you need to: 1) Provide solutions that are realistic; 2) Specifically address how to make our cities environmentally clean and sustainable.

On completion of the task, participants were asked to describe, in writing, the solutions they thought of, in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Measures

Unless otherwise stated, all items were scored on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Vision Thinking Components. Unrestraint comprised one item: *During the thinking task, I felt freed to think in a completely unrestrained way.* Mental representations comprised one item: *During the thinking task, I found myself forming images of what the future could look like*. Creativity comprised one item: *I put a high level of creative input into the thinking task.* Positiveness comprised two items (r = .65): *What I thought about during the thinking task was extremely positive; The cities I was thinking about were perfect.*

Identity. In-group identification was measured using 10 items (α = .92) that were based on recommendations in Leach et al. (2008), e.g., *I have a lot in common with the average person who supports sustainable cities.* There were two items from each of the five in-group identification categories (solidarity, satisfaction, centrality, individual self-stereotyping, in-group homogeneity). Refer to Appendix H for the full list of items.

Efficacy. Two items measured efficacy (r = .63): *There is nothing I can do to make cities sustainable* (reverse scored); *I can have a positive impact on making cities sustainable.*

Emotions. Two items measured hope (r = .73): *I am hopeful that cities will become entirely sustainable; I am hopeful that humans will make cities completely sustainable.* One item measured anger: *I feel angry about the current level of sustainability in cities.*

Motivation. Motivation was measured with eight items (α = .88). There were two items relating to belief in the importance of social change: *I believe that the issue of sustainable cities is currently being adequately addressed so that further social change is not necessary; I believe that to create sustainable cities, we need significant social change at the level of society as a whole:* There was one item measuring general motivation for social change: *I would like to become actively involved in improving the issue of sustainability in cities*. There were five items to measure intention to take action: *Regarding taking action to help improve the sustainability of cities, I intend to* 1) *Sign a petition,* 2) *Become a member of a community group advocating for change,* 3) *Discuss the issue with friends,* 4) *Post on social media,* 5) *Make a donation.*

Procedure

Individuals who disagreed or strongly disagreed with the statement: *It is important to me that the cities we live in are environmentally clean and sustainable,* were excluded from undertaking the survey from within M-Turk. Individuals who agreed or strongly agreed with the statement: *In general, the cities we live in are environmentally clean and sustainable,* were also excluded. These potential participants were excluded as the vision thinking manipulation would have been unlikely to have influenced them if either they believed there was no issue regarding the cleanliness and sustainability of cities, or if the issue did not matter to them. The number of potential participants who did not meet these prerequisite criteria is unknown. The sample size reported above includes all participants who completed the survey.

Using the Qualtrics survey platform, participants initially completed demographic questions, then either the vision thinking or solution generating (control) task which they were randomly assigned to, and finally the questions relating to the collective action

predictors (emotions, identity, efficacy) and motivation, followed by the vision thinking component measures.

Results

The dataset was analysed using the package *Lavaan* in *R* version 3.6.3, employing bootstrapping from 1,000 bootstrap samples. The sample size was 209 and there were no missing data.

Vision Thinking Latent Variable

The entire sample was used to test the fit for the latent variable vision thinking. Table 2.9 shows the means, standard deviations and Pearson's correlations for the proposed vision thinking components.

Table 2.9

Means, Standard Deviations and Pearson's Correlations for the Vision Thinking Components

Variable	*M*	*SD*	Mental rep	Creativity	Positiveness
Mental rep	6.12	0.92	-	-	-
Creativity	5.77	1.06	.30***	-	-
Positiveness	5.57	1.18	.41***	.35***	-
Unrestraint	5.61	1.15	.47***	.43***	.45***

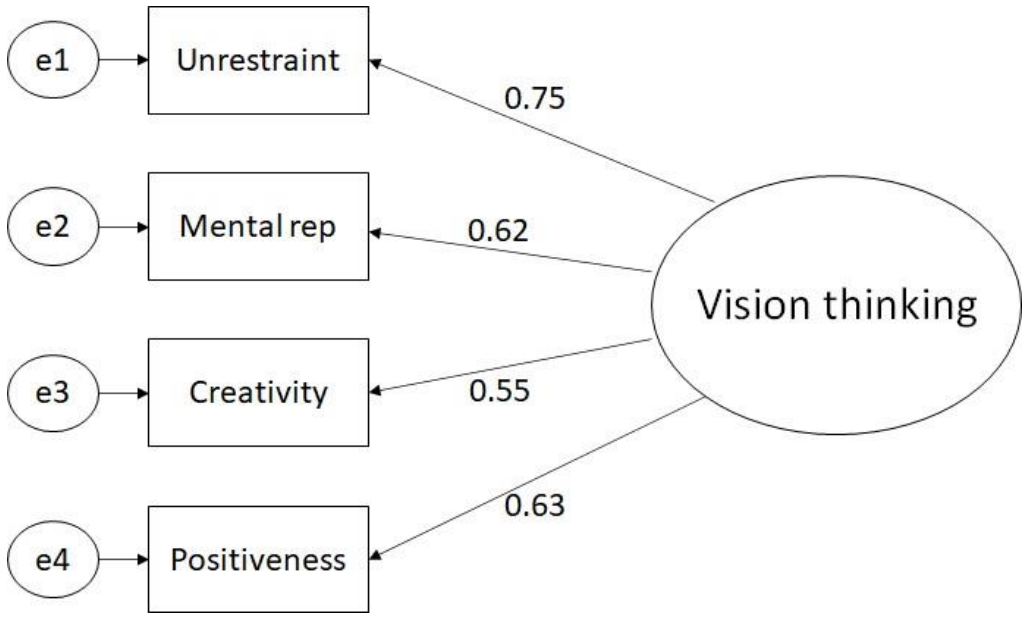
Note. $N = 209$.

*** $p < .001$.

A confirmatory factor analysis showed the four proposed vision thinking components loaded on to the factor vision thinking. The standardised loadings are shown in Figure 2.9; the unstandardised loadings and additional parameter estimates are included in Appendix I. The appropriate fit indices indicate a close fit between the model and the data: $\chi^2(2) = 1.88$, $p = .390$, comparative fit index (CFI) = 1.00, SRMR = .02.

Figure 2.9

Vision Thinking Components Confirmatory Factor Analysis



Note. Showing standardised loadings.

Vision Thinking Collective Action Model

Table 2.10 shows the means, standard deviations and bivariate correlations for the collective action predictors and motivation.

Table 2.10

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	*M*	*SD*	Identity	Efficacy	Anger	Hope
Identity	5.06	0.98	-	-	-	
Efficacy	5.76	0.96	.52***	-	-	
Anger	5.15	1.28	.39***	.27***	-	
Hope	6.32	0.87	.30***	.25**	.20**	
Motivation	5.31	1.08	.65***	.58***	.50***	.38***

Note. $N = 209$.

*** $p < .001$, ** $p < .01$

The difference in the collective action predictor and motivation variables between the vision task and control condition was tested using an independent samples *t*-test. There was no significant difference between conditions for any of these outcome variables (refer to Table 2.11).

Table 2.11

Descriptive Statistics and Difference between Means for the Dependent Variables

	Control[a]		Vision[b]					
Variable	*M*	*SD*	*M*	*SD*	*df*	*t*	*p*	Cohen's *d*
Identity	5.08	1.00	5.04	0.96	205.38	0.29	.773	0.04
Efficacy	5.77	0.92	5.74	1.01	206.60	0.27	.786	0.03
Hope	6.33	0.81	6.31	0.93	205.38	0.17	.868	0.02
Anger	5.15	1.17	5.15	1.38	204.36	-0.01	.989	0.00
Motivation	5.37	1.07	5.25	1.09	206.87	0.80	.427	0.11

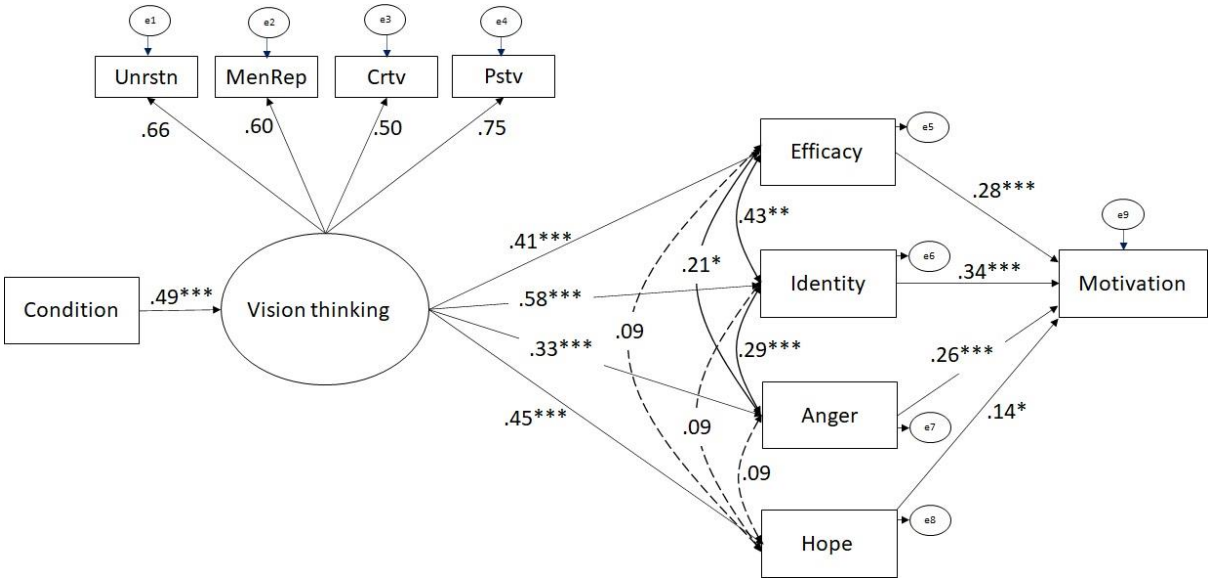
Note. [a]*n* = 102 (control condition). [b]*n* = 107 (vision thinking condition).

Structural equation modelling revealed the following fit between the vision thinking collective action model and the data: $\chi^2(21) = 80.54$, $p = .000$, comparative fit index (CFI) = .90, SRMR = .06. The CFI is less than the .95 recommendation in Kenny (2000) so there is doubt about the fit of the model. Hu and Bentler (1999) make recommendations for assessing fit with either single indices or combination rules. They recommend CFI >= .95 and SRMR < .09 as a combination rule. For using a single fit index, the recommendation is CFI >= .95 or SRMR < .08. Hu and Bentler (1999) state that when sample sizes are small (*N* <= 250) most combination rules tend to over reject true-population models. So, assessing the fit of this model based on the SRMR as a single index of fit (SRMR = .06) would support a good fit, conversely focussing on the CFI only would not. The most sensible conclusion is that there is an uncertain or potential fit in this case, and the fit of the vision thinking collective action model should be viewed within the wider context of multiple studies.

The standardised loadings are shown in Figure 2.10; the unstandardised loadings and additional parameter estimates are presented in Appendix J. Participants in the vision thinking task condition engaged in greater vision thinking, as indicated by the latent vision thinking construct. Vision thinking engagement was positively related to efficacy, identity, anger, and hope; and all four collective action predictors were positively related to collective action motivation.

Figure 2.10

Vision Thinking Collective Action Model Structural Equation Modelling



Note. Showing standardised loadings.

There was a significant indirect effect from condition to vision thinking to motivation via identity: B = 0.21 (unstandardised), SE = 0.06, 95% CI [0.11, 0.35]. There was a significant indirect effect from condition to vision thinking to motivation via efficacy: B = 0.13 (unstandardised), SE = 0.05, 95% CI [0.06, 0.23]. There was a significant effect from condition to vision thinking to motivation via anger: B = 0.09 (unstandardised), SE = 0.04, 95% CI [0.03, 0.19]. There was a significant indirect effect from condition to vision thinking to motivation via hope: B = 0.07 (unstandardised), SE = 0.03, 95% CI [0.01, 0.14].

Discussion

This study involved individual vision thinking, conducted online. It confirmed the composition (i.e., mental representations, positiveness, creativity, and unrestraint) of the latent construct self-perceived vision thinking. The successful manipulation of vision thinking showed that vision thinking can be induced. There was some uncertainty about the overall fit of the vision thinking collective action model (under some standards it is an acceptable fit, and under others it is not). If the model fit is accepted, it supports the relationship between vision thinking and the collective action predictors and demonstrates the connection between the collective action predictors and motivation for collective action as per the vision thinking collective action model. In this study, unlike in Study 2.1 and 2.2, hope was related to motivation for collective action; likely because the theme of the vision thinking was inherently more impossible to achieve (Bury et al., 2020).

General Discussion

Collectively, the studies in this chapter provide a good indication of both the composition of self-perceived vision thinking and the validity of the vision thinking collective action model, that is, that vision thinking motivates collective action via the collective action predictors.

First, vision thinking can be conceptualised as a latent construct. Studies 2.2 and 2.3 confirmed, via confirmatory factor analysis, that vision thinking can be seen to comprise four components: mental representations, positiveness, creativity, and unrestraint. In Study 2.1, unrestraint did not load onto the vision thinking latent construct, possibly due to its particular measurement in that study. The measure focussed here more on participants' concerns about possibility and practicality, rather than freedom and unrestraint in their thinking. Yet, the

other three components again formed a latent construct that, like vision thinking with all four components in Studies 2.2 and 2.3, informed the vision thinking collective action model.

The role of unrestraint might depend on the context. Whilst unrestraint is always an essential component of vision thinking, some circumstances of vision thinking do not call for deliberate unrestraint. When the target or theme of the vision thinking is inherently possible, unrestrained, positive mental representations that involve creative thought (i.e., vision thinking) can be formed without the thinker having to dispel perceptions of impossibility. So, when the theme of the thinking has low inherent impossibility, vision thinking can be adequately measured by only the three other components because the thinking is already unrestrained. But when impossibility is high—and this is where vision thinking provides its full value—the measure of unrestraint is needed to distinguish vision thinking (that has cast aside perceptions of impossibility and is not restrained) from the thinking that conforms to the other three components (mental representations, positiveness, and creativity) but is restrained by perceptions of impossibility.

Second, the studies in this chapter have, with some caveats, provided support for the vision thinking collective action model. Studies 2.1 and 2.2 were analysed as correlational studies: the manipulation to create a vision thinking condition versus a control condition did not elicit different degrees of vision thinking in Study 2.1 and so the conditions were combined for analysis; Study 2.2 was correlational as it surveyed employees' responses to the implementation of a human resources strategy that everyone experienced. In Study 2.3 participants assigned to the vision thinking condition engaged more in vision thinking than those in the control condition, and greater engagement in vision thinking was associated with social identity, efficacy, hope and anger. These studies provide some evidence for the relationships between vision thinking and the collective action predictors, and between the

collective action predictors and motivation for collective action, but the mediating role of hope was more tenuous and only supported in Study 2.3.

These studies were conducted over a wide variety of settings. Study 2.1 involved participants interacting in person in small groups to engage in vision thinking, that is, face-to-face vision thinking in interaction with others. Study 2.3 involved participants engaging in individual vision thinking in an online exercise. Study 2.2 concerned a real-life experience of vision thinking by employees responding to change in their workplace, where their vision thinking may have involved a varying balance between individual vision thinking and vision thinking in interaction with others. Moreover, these studies offer support for the latent construct vision thinking and for the vision thinking collective action model, despite the varied contexts.

One further consideration arising from these studies is how self-perceived vision thinking is intermixed with other types of thinking. Vision thinking is not necessarily a standalone thinking exercise. Some other types of thinking may at times include elements of vision thinking. Vision thinking is always distinguishable from other thinking, though, by its unique combination of characteristics (i.e., mental representations, positiveness, creativity, unrestraint). For example, a thinker engaged in a planning exercise may have moments of vision thinking. Although planning involves identifying and organising achievable steps toward a goal, part of the process—especially because thinking can be such an iterative process—may involve simulation and exploratory unrestrained thinking, which is then reality checked (K. K. Szpunar et al., 2014). But to be able to experimentally study the effects of vision thinking it needs to be separated from other thinking. The challenge is to set up a suitable control condition that minimises tendencies for vision thinking and at the same time includes all other features that could independently (of vision thinking) give rise to the

collective action predictors. A suitable manipulation and control condition will be explored further in the following chapter.

So, the studies in this chapter support the definition of self-perceived vision thinking as thinking comprised of mental representations, positiveness, creativity, and unrestraint. The studies also provide support for the vision thinking collective action model, whereby vision thinking leads to motivation for collective action via the collective action predictors (social identity, efficacy, and emotions). Vision thinking can be standalone or subsumed in some other types of thinking. Studying vision thinking experimentally requires a manipulation to stimulate vision thinking along with a suitable control condition. These findings are helpful because they provide a base for further exploration of the concept of vision thinking, how it can be enhanced, and what mechanisms might operate to increase the collective action predictors via engagement in vision thinking.

CHAPTER 3: Personal Factors that Affect Engagement in Vision Thinking

The studies in Chapter 2 offer support for the theory that thinking characterised by the self-perceived vision thinking components motivates support for collective action via established collective action predictors: social identity, efficacy, and anger/hope. The present chapter will continue to test this theory with the objective of providing further evidence; however, the *focus* of this chapter is to explore factors, personal to the vision thinker, that affect their capacity to engage in vision thinking.

We have seen from the studies thus far that the level of self-perceived vision thinking is positively associated with the level of the collective action predictors and motivation to take collective action. Therefore, the more that the thinker engages in vision thinking, the stronger these outcomes are. So, what factors affect the thinker's capacity to engage in vision thinking, and why is it important to understand this?

Knowing what affects self-perceived engagement in vision thinking should provide a means of enhancing engagement. If vision thinking, for example, was to be used as a tool by leaders to promote motivation to take collective action (e.g., activist leaders within a community or society, or business leaders wanting to implement change within their organisation), understanding factors that influence engagement in vision thinking—that facilitate or hinder—would be important for achieving or amplifying the desired outcomes.

Factors that affect engagement in vision thinking fall broadly into two categories: personal context items that are related directly to the thinker (i.e., traits as well as the thinker's stance on the theme of the vision thinking, the cause of the collective action); and setting or context factors that involve matters external to the thinker (e.g., how prescribed the vision thinking is, the environmental setting under which the thinking is conducted).

Personal Context

The focus of this chapter is on the personal context items (setting context is considered in the next chapter). There would be an array of personal context items that could influence the thinker's capacity to engage in vision thinking. The items examined here do not comprise an extensive list, but represent items that are pertinent to the nature of vision thinking (e.g., creativity, optimism), have been examined before in the context of how people respond to leaders' visions (e.g., self-regulatory focus), affect people's view of societal issues (e.g., system justification, political orientation), or potentially create barriers to engaging in vision thinking (e.g., lack of interest in the theme, lack of belief in the importance of the theme, threat, and perceptions that achieving the theme of the vision thinking is insurmountable). Two types of personal context items are examined here: personal propensities, and personal circumstances.

Personal Propensities

Regardless of the topic or theme of the vision thinking and an individual's thoughts and feelings about it, each person has propensities that would conceivably affect their capacity to generate positive representations of the future.

Creativity. One of the characteristics of vision thinking is that it is creative. It requires active, creative input from the thinker. Creativity is commonly regarded as the capacity to generate new ideas and combine concepts in original ways (Mumford, 2003). Research on creativity operationalises creativity as a stable and enduring trait (Hennessey & Amabile, 2010). It follows that some people will be able to more readily and successfully engage in vision thinking than others, depending on their inherent creativity.

Optimism. Dispositional optimism is the general tendency to believe that one will have positive versus negative life outcomes (Scheier & Carver, 1992). Optimists have

positive expectations for their future. Optimists and pessimists have different ways of coping with challenges and stressors. While pessimists are inclined to cope by denial and disengagement from goals, optimists tend to apply problem-focused strategies, or if not possible, adaptive emotion-focus strategies, including positively reframing the situation (Scheier, Carver, & Bridges, 1994). It is conceivable that optimists would more successfully engage in vision thinking than pessimists. Vision thinking requires the generation of positive future alternatives. An optimist is more likely to be able to confront the task of generating positive alternatives, even if the theme of the vision thinking relates to a stressor or a threat. An optimist is more likely to be able to conceive positive alternatives and engage with those alternatives to enable further development of the vision.

Self-regulatory Focus. In one of the few studies that touches on vision thinking from the perspective of those who engage in it (followers) rather than inspire it (leaders), Stam, van Knippenberg, and Wisse (2010) considered the role of possible selves in motivating people to act on their vision. A possible self is the representation of an individual's idea of what they might become. This representation is anchored in what is significant to the individual – their hopes and fears (Markus & Nurius, 1986). Stam et al. (2010) found that encouraging people to engage in thinking about a vision prompted them to form an ideal possible self. That is, a vision communicated by a leader, that focused on the follower and involved the follower in the vision, made the follower more likely to form an ideal possible self in relation to the vision, than when the same vision was presented in a way that was removed from the follower. However, this effect only occurred for those with an induced promotion self-regulatory focus. A promotion self-regulatory focus is a tendency to approach ideal end-states and a tendency to be motivated by goals directed towards these end states (Lockwood, Jordan, & Kunda, 2002). Furthermore, for these participants, formation of an ideal possible self, translated to higher motivation to pursue the vision, as measured by a

performance task. So, when participants, with a promotion self-regulatory focus, were encouraged to engage in thinking about the vision, they did engage, and they were more motivated to pursue the vision.

Stam et al. (2010) also found that people with a prevention self-regulatory focus—people who tend to avoid losses and failure, and be directed by responsibilities and duties (Higgins, 1997)—performed better when they received the vision that emphasised the outcomes for the collective, rather than the vision that focused on them and involved them. Stam et al. (2010) suggested that because a prevention focus is related to interdependent self-construal (Lee, Aaker, & Gardner, 2000), people with a prevention focus are more likely to focus on themselves as a member of a group rather than as an individual, and hence are more motivated by a vision that emphasises the collective, group norms, and a sense of duty and responsibility. Stam et al. (2010) proposed that in this case, people may form an 'ought' self, that mediates vision and motivation.

For individuals with a promotion focus, visioning increases their engagement in thinking and motivation for outcomes via the formation of an ideal possible self. Whereas for individuals with a prevention focus, the emphasis on collective outcomes drives engagement in the thinking and motivation for outcomes through their sense of duty and responsibility, via the formation of an 'ought' self. Therefore, in the context of vision thinking, I propose that overall, self-regulatory focus does not affect engagement in vision thinking. Even though no overall effect is proposed, it is useful to test for the effect given Stam's findings that connect self-regulatory focus to how people respond to visions, and to help place the role of self-regulatory focus within the context of vision thinking (with its focus on the collective).

Personal circumstances

In addition to dispositional traits that influence the propensity to engage in vision thinking, personal circumstances are also likely to have an effect. Three important areas where this plays out are the thinker's level of interest in the vision thinking theme, their perceived insurmountably of achieving the vision thinking theme, and the level of resistance they have to the vision thinking theme.

Interest. Conceivably, someone with a strong interest that aligns with the vision thinking theme would find it easier to generate positive future alternatives than someone with no interest. If the thinker already has an interest, they will necessarily have thought about the theme. Their existing interest means they have a desire to see positive outcomes (e.g., women's rights, the curbing of climate change) and so they will already be motivated to generate positive futures regarding the theme. Additionally, a pre-existing interest and investment in thought about the theme is likely to provide the thinker with a clearer view of what they find positive, as well as a broader knowledge base from which to generate positive ideas and future scenarios. K. K. Szpunar (2010) discusses how memory (i.e., past experiences) plays an important part in creating future thoughts.

Insurmountable. If a thinker is asked to imagine something that they perceived as insurmountable (i.e., that could not eventuate), what effect does their perception have on their engagement in vision thinking? A feature of vision thinking is that it is unrestrained; the thinker is permitted and encouraged to imagine things that they perceive as impossible. In vision thinking this clearance to imagine the inconceivable should dispel barriers that otherwise exist in, and hence constrain, everyday thinking such as planning, or considering logical next steps. If someone is asked to engage in vision thinking, their perception of how possible or not what they are directed to think about is, should not directly affect their

engagement in vision thinking. However, if the thinker perceives the issue as insurmountable, they may view it as pointless to even try and engage in thinking about alternatives.

Resistance. The capacity to engage in positive prospection about a specific theme, is likely to depend on the level of opposition or resistance the thinker has to the theme. Some ways that opposition or resistance to engaging in vision thinking could arise are from a clash with beliefs, a sense of threat, system justification, or political opposition.

Clash with Beliefs. A clash with beliefs could hamper engagement in vision thinking. Similar, but reverse, to the mechanisms discussed above for interest, a clash between the beliefs of the thinker and the theme of the vision thinking could mean the thinker is less motivated and has a lower knowledge base from which to form positive mental representations of the future. Furthermore, if the clash with beliefs represents an opposition to the theme, rather than just a lack of value for the theme, the thinker would need additional will and dedicated effort to engage in vision thinking.

Threat. Psychological threat causes people to feel anxious or unsafe (Chaplin, 1975), and can arise through various avenues such as threats to: self-esteem, social inclusion, one's sense of order and control, or survival or sense of continuity (Crocker & Knight, 2005; Sheldon & Kasser, 2008; D. K. Sherman & Cohen, 2006; Snyder, Kofta, & Weary, 1998; Twenge & Baumeister, 2004). Imagining a positive future about a theme that invokes any of these threats would be considerably more challenging for the thinker than for a theme that holds no threat. For example, a thinker may have difficulty if asked to imagine a workplace where women have equal opportunities and status to men, but the thinker feels threatened by such a scenario. In this circumstance, to engage in vision thinking, the thinker would need enough will to set aside the sense of threat and dedicate effort to the task of generating positive futures. Even with this achieved, the feeling of threat may provide an ongoing

distraction to each attempt to generate a positive future. Furthermore, a thinker who is threatened by a theme, is less likely to possess a framework of prior positive thoughts and ideas from which to generate positive future scenarios.

System justification. System justification theory holds that there is a system justification motive that causes people to rationalise and justify the societal status quo as fair and legitimate (Jost, Banaji, & Nosek, 2004). This rationalising behaviour is driven from fundamental human needs: epistemic needs (for certainty, consistency and meaning), existential needs (to reduce distress and threat), and relational needs (for shared reality with others and managing relationships) (Hennes, Nam, Stern, & Jost, 2012; Jost, Ledgerwood, & Hardin, 2008). System justification would be relevant in vision thinking where the theme of the vision thinking is about a societal issue that is reinforced by the status quo (e.g., economic equality, women's rights). Those who are higher in system justification tendencies are likely to be less able to engage in vision thinking when the theme is one that threatens the status quo, because their system justifying tendencies appease their epistemic, existential, and relational needs, whereas vision thinking implies an alternative to the status quo that would conflict with these needs.

Political orientation. The effect of political orientation on vision thinking is likely to depend on the theme of the vision thinking. Political conservatism is associated with support for policies that favour high-status groups (Rabinowitz, 1999). If the theme of the vision thinking involves generating alternative futures to the status quo, where the status quo favours high-status groups, then right leaning thinkers will find it more difficult to engage in vision thinking, effectively because it will clash with their beliefs and/or they will experience a sense of threat from the theme.

The Present Research

The present research investigates the effect of personal context items on the ability or willingness to engage in self-perceived vison thinking. It is plausible that these personal context items affect vision thinking engagement either as a main effect, independently of the instructions given (i.e., independently of instructions to engage in vision thinking or a control task), or as an interaction, depending on the instructions given. On the one hand, personal context items may make individuals more or less inclined to engage in vision thinking, irrespective of what the instructions are. On the other hand, the personal context items may affect whether individual are able or willing to follow the specific vision thinking instructions. The predictions (with the interaction prediction in brackets) are:

Personal Propensities

H1. Individual creativity will be positively related to engagement in vision thinking (and more so when vision thinking is induced).

H2. Dispositional optimism will be positively related to engagement in vision thinking (and more so when vision thinking is induced).

H3. Self-regulatory focus will have no relationship with engagement in vision thinking (and more so when vision thinking is induced).

Personal Circumstances

H4. Positive interest in the theme of the vision thinking will be positively related to engagement in vision thinking (and more so when vision thinking is induced).

H5. Perceptions that achieving the theme of the vision thinking is insurmountable will be negatively related to engagement in vision thinking (and more so when vision thinking is induced).

H6. Clash with beliefs regarding the theme of the vision thinking will be negatively related to engagement in vision thinking (and more so when vision thinking is induced).

H7. Threat relating to the theme of the vision thinking will be negatively related to engagement in vision thinking (and more so when vision thinking is induced).

H8. System justification will be negatively related to engagement in vision thinking, if the theme of the vision thinking is based on a societal issue that is reinforced by the status quo (and more so when vision thinking is induced).

H9. Right leaning political orientation will be negatively related to engagement in vision thinking if the theme of the vision thinking is contrary to that political ideology (and more so when vision thinking is induced).

STUDY 3.1

Study 3.1 is an online study where participants engaged in individual vision thinking on the theme of gender equity in politics. The study sought to identify the effects of personal context variables on the ability to engage in vision thinking. A secondary purpose of the study was to confirm the components of vision thinking and the vision thinking collective action model (as per studies in Chapter 2).

Method

The study was conducted entirely online. Initially a survey measured participants' personal context items (e.g., creativity, perceived threat relating to the study theme). Next participants were randomly allocated to engage individually in either a vision thinking task, or a control task related to the theme of gender equity in politics. Participants then completed survey questions that measured their engagement in vision thinking, collective action

predictor tendencies (social identity, efficacy, emotions), and motivation for collective action based on the theme of the study.

Participants

Participants were US citizens or permanent residents recruited via M-Turk (N = 182). The sample comprised 92 females, 90 males (M_{age} = 37.36, SD = 28.22).

An a priori power analysis using G*Power version 3.1.9.2 indicated a required sample size of N = 100 per condition for 80% power detecting an effect size d = 0.4 at a significance level of α = .05, for a two-tailed t-test (the basis for comparing effects in the free versus prescribed vision thinking conditions).

Materials

Manipulations

The vision thinking manipulation needed to demonstrate that vision thinking can be induced and at the same time ensure that the control condition adequately accounts for confounds. Factors, separate to vision thinking, that give rise to the collective action predictors and motivation—for example, thinking positively about a collective issue could induce social identity—needed to be accounted for in the control condition. At the same time because vision thinking can be a subset of other thinking, the control condition needed to minimise vision thinking tendencies. The control condition was constructed to ask participants to consider what is currently being done in relation to the vision thinking theme (gender equity in politics). This control condition incorporates thinking positively about a collective issue, but minimises thinkers own creative input and unrestrained thinking (but of course will not eliminate it).

Before participants embarked on either the vision thinking or control task, they were required to read the following information derived from the United Nations Women website

(www.unwomen.org) and the Center for American Women and Politics website (https://cawp.rutgers.edu):

> In what follows, you will be asked to think about gender equity in US politics. Please read the following for some background information:
>
> From the local to the global level, women's political participation as leaders is restricted. This occurs despite their proven abilities as leaders and agents of change (United Nations: www.unwomen.org). There is established and growing evidence of the benefits of women's leadership in political decision–making processes. Yet, at all levels of US government, women are underrepresented. Only 23.7% of seats in congress, and 27.6% of seats at a state-wide executive level are held by women. Only 20.9% of mayors of major cities are women.

The purpose of this information was to ensure all participants had a minimum level of knowledge about the issue, sufficient to complete either the vision thinking or control task.

Vision Thinking Task. In the vision thinking condition participants were asked to engage in a vision thinking task for a minimum of 3 minutes about gender equity in politics. Participants were given the following instructions:

> **Imagine a perfect or utopian state of things where there is equal representation of women at all levels of US politics. Imagine the positive outcomes for society.** Try to not let your thinking be constrained by how things are now or what it feels like now. Imagine the positive aspects of this perfect place or state of things. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated with what you are imagining. Stay focused on the features of this imagined world. Take as long as you need to.

On completion of the task, participants were asked to describe, in writing, their imagined world in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Control Task. For the control condition, participants were asked to think for a minimum of 3 minutes about what is currently being done to achieve equal representation of women in US politics. Participants were given the following instructions:

> Think about what is currently being done to achieve equal representation of women in US politics. Focus on what is being done, not on what should be done, or on what is not being done.

On completion of the task, participants were asked to describe, in writing, the things they thought of, in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Measures

Unless otherwise stated, all items were scored on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Vision Thinking Components. Engagement in vision thinking was measured by the level of the vision thinking latent variable, constructed from the four components of vision thinking. The measures for the four components were based on those in Chapter 1, with some slight modifications to improve them.

Mental representations were measured with four items ($\alpha = .95$): 1) *During the thinking task I formed an impression of how a different future could be*; 2) *During the thinking task I visualised aspects of an alternative future;* 3) *During the thinking task I felt what a different future would be like;* 4) *During the thinking task I imagined a future that is*

different to the current reality. Unrestraint comprised one items: *During the thinking task I thought in a completely unrestrained way.* Creativity had one item: *I put a high level of creative input into the thinking task.* Positiveness had one item: *What I thought about during the thinking task represented an utterly perfect world (or state of things*).

Personal Context Items. Personal context items, including personal propensities (i.e., creativity, optimism, regulatory focus) and personal circumstances (i.e., interest, insurmountable, beliefs, threat) were measured using various scales and measures.

Creativity. Participants' creativity was measured using the modified 12 item self-rated creativity scale (SRCS) based on a scale initially developed by Zhou and George (2001) and later modified and tested by Tan and Ong (2017) for psychometric soundness ($\alpha = .95$). Refer to Appendix K for the list of measurement items.

Optimism. Dispositional optimism was measured using the revised version of the Life Orientation Test (Scheier et al., 1994) ($\alpha = .66$). There were five items (refer to Appendix L for the list of items).

Self-regulatory Focus. Self-regulatory focus was measured using a reduced form of the regulatory focus questionnaire developed by Lockwood et al. (2002). The original questionnaire measures both prevention and promotion focus in pairs of questions, with 18 questions in total. To reduce the length of the overall survey in the current study, eight paired items were selected from the scale (refer to Appendix M for the question set) ($\alpha = .87$). Higher scores represent promotion focus, and lower scores represent prevention focus.

Interest. Interest was measured using the item: *I have a positive interest in gender equity in politics.*

***Insurmountable*.** Perceptions of how insurmountable participants found the vision thinking theme were measured with one item: *It is absolutely possible to achieve equal numbers of women (to men) in positions of political power in the US* (reverse).

***Clash with Beliefs*.** Belief-based attitude was used to measure participants' beliefs about the topic. An attitude is a lasting structure of beliefs relating to a situation or an object that means a person is inclined to respond in a particular way (Rokeach, 1968). Belief-based attitude was measured with two items (r = .74) with a similar wording structure to items confirmed by van der Plight and de Vries (1998) as solid measures for belief-based attitude : *I am supportive of gender equity in politics; I think gender equity in politics is a good idea.* The items were reverse scored to represent clash with beliefs.

Threat. Threat was measured with five items (α = .86): *I feel threatened by the idea of equal numbers of women (to men) in positions of political power; I am fearful of the concept of equal number of women (to men) in positions of political power; I am comfortable with the idea of equal numbers of women (to men) in positions of political power* (reverse)*; I am resistant to dictates that we need equal numbers of women (to men) in positions of political power; I am concerned about policies that would be put in place to achieve equal numbers of women (to men) in positions of political power.*

System Justification. System justification was measured using the eight item scale for gender-specific system justification in Jost and Kay (2005). Refer to Appendix N for the list of items (α = .84).

Political Orientation. Political orientation was measured with the item: *Please indicate your political orientation,* on a 7-point scale (1 = *right-wing/conservative*, 7 = *left-wing/liberal*).

Identity. In-group identification was measured using the 14 item scale (α = .93) (adapted to the study theme) for multicomponent in-group identification in Leach et al. (2008), e.g., *Being a supporter of gender equity in politics gives me a good feeling.* Refer to Appendix O for the full list of items.

Efficacy. Two items measured individual efficacy (*r* = .63): *I can have a positive impact on achieving gender equity in politics; I can help achieve equal representation of women (to men) in politics.*

Emotions. One item measured hope: *I feel hope that gender equity in US politics will be achieved.* One item measured anger: *I feel angry about the current low level of representation of women in US politics.*

Motivation. Motivation was measured with six items (α = .92). There were two items that measured general motivation for collective action: *I want to become actively involved in promoting equal representation of women in US politics; I am motivated to act to improve gender equity in US politics.* There were four items to measure intention to take collective action: *There are a variety of things that people can do to improve gender equity in politics; please indicate below how much you intend to take each of the following actions:* 1) *Become a member of an action group advocating for change,* 2) *Discuss the issue with friends and associates,* 3) *Post on social media,* 4) *Sign a petition.*

Procedure

Using the Qualtrics survey platform, participants initially completed demographic questions, followed by the personal context questions, then either the vision thinking or control task which they were randomly assigned to, and finally the questions relating to the collective action predictors (emotions, identity, efficacy) and motivation (the question block

was randomised), followed by the vision thinking component measures (the question block was randomised).

Results

First, the vision thinking collective action model needs to test that the manipulation for vision thinking was successful at inducing increased engagement in vision thinking compared with the control condition, so both conditions are needed for this analysis (note, the analysis required is structural equation modelling due to the inclusion of a latent variable). Second, although the prediction is for stronger vision thinking in the vision thinking condition, there is also likely to be vision thinking (to a lesser extent) in the control condition. Combining both conditions allows vision thinking within the control condition to be analysed too; interaction analysis allows the differential effects across conditions to be examined.

Vision Thinking and the Vision Thinking Collective Action Model

Vision Thinking Latent Variable

Both the vision thinking task and the control conditions were used to test the fit for the latent variable vision thinking. Table 3.1 shows the means, standard deviations and Pearson's correlations for the vision thinking components.

Table 3.1

Means, Standard Deviations and Pearson's Correlations for the Vision Thinking Components

Variable	*M*	*SD*	Mental rep	Creativity	Positiveness
Mental rep	5.21	1.57	-	-	-
Creativity	5.63	1.10	0.23**	-	-
Positiveness	5.08	1.64	0.50***	0.29***	-
Unrestraint	5.11	1.16	0.45***	0.33***	0.51***

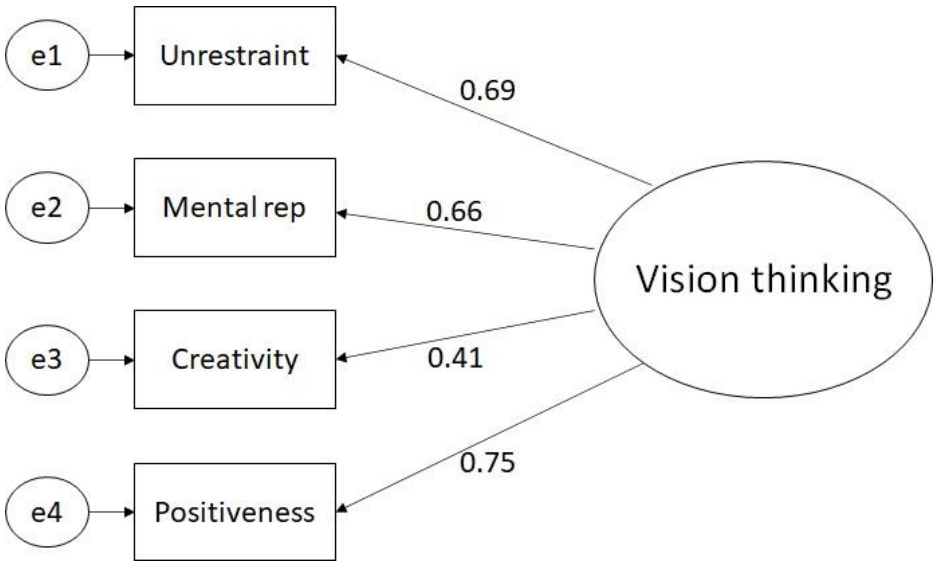
Note. $N = 182$.

*** $p < .001$, ** $p < .01$.

A confirmatory factor analysis using the package *Lavaan* in *R* version 3.6.3 (maximum likelihood estimation; bootstrapping from 1,000 bootstrap samples) showed the four vision thinking components loaded on to the factor vision thinking. The sample size was 182 and there were no missing data. The standardised loadings are shown in Figure 3.1; the unstandardised loadings and additional parameter estimates are included in Appendix P. The appropriate fit indices indicate a close fit between the model and the data: $\chi^2(2) = 1.49$, $p = .475$, comparative fit index (CFI) = 1.00, SRMR = .02.

Figure 3.1

Vision Thinking Components Confirmatory Factor Analysis



Note. Showing standardised loadings.

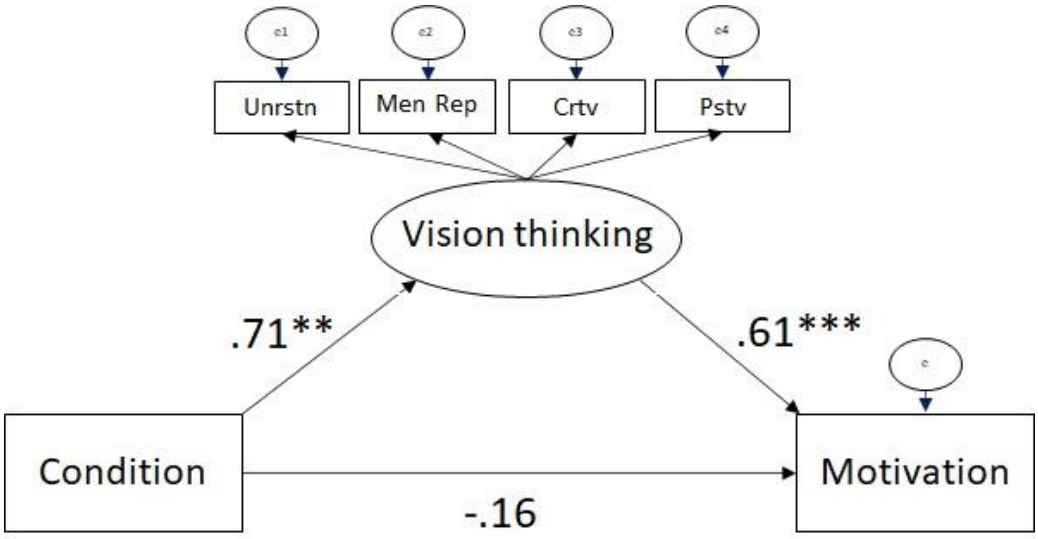
Overall Effect of Vision Thinking on Motivation

The package *Lavaan* in R version 3.6.3 was used to conduct structural equation modelling mediation analysis using bootstrapping procedures (based on 1,000 bootstrapped samples), to determine if being assigned the vision thinking task led to increased motivation to take collective action via engagement in vision thinking. Results are presented in Figure 3.2. There was a significant indirect effect of condition on motivation to take collective action via vision thinking ($B = 0.43$, $SE = 0.14$, 95% CI[0.17, 0.74]) with participants in the vision

thinking condition engaging more in vision thinking than those in the control condition, and vision thinking engagement being in turn positively related to motivation for collective action. The total effect was not significant (B = 0.27, SE = 0.21, 95% CI[-0.13, 0.68]).

Figure 3.2

Relationship between Condition and Motivation Mediated by Engagement in Vision Thinking



Note. Showing unstandardised regression coefficients.

*** $p < .001$, ** $p < .01$.

Vision Thinking Collective Action Model

Table 3.2 shows the means, standard deviations, and bivariate correlations for the dependent variables.

Table 3.2

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	*M*	*SD*	Identity	Efficacy	Anger	Hope
Identity	5.15	1.21	-	-	-	
Efficacy	5.18	1.33	.88***	-	-	
Anger	4.87	1.72	.68***	.61***	-	
Hope	5.45	1.41	.72***	.65***	.43***	
Motivation	5.05	1.44	.83***	.80***	.62***	.59***

Note. N = 182.

*** $p < .001$.

The difference in the collective action predictor and motivation variables between the vision task and control condition was tested using an independent samples *t*-test. There was no significant difference between conditions for any of these outcome variables (refer to Table 3.3).

Table 3.3

Descriptive Statistics and Difference between Means for the Outcome Variables

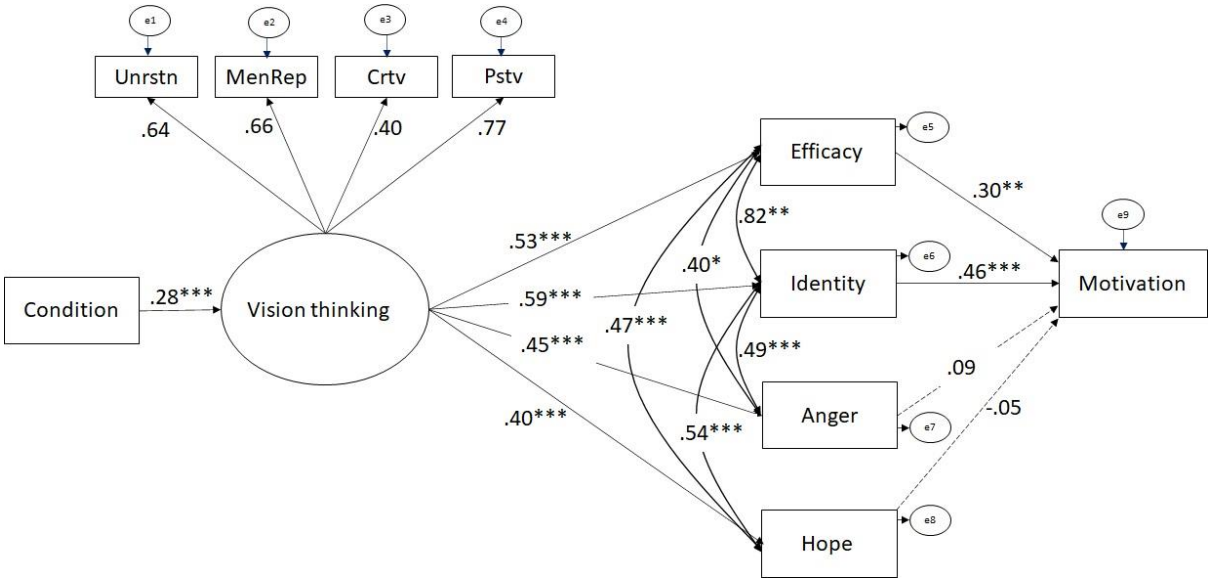
	Vision thinking[a]		Control[b]					
Variable	*M*	*SD*	*M*	*SD*	*df*	*t*	*p*	Cohen's *d*
Identity	5.11	1.21	5.18	1.21	178.63	0.38	.701	0.06
Efficacy	5.17	1.29	5.19	1.37	179.87	0.11	.910	0.02
Hope	5.49	1.28	5.41	1.52	178.87	0.40	.687	0.06
Anger	4.82	1.86	4.92	1.58	169.41	0.39	.699	0.06
Motivation	5.19	1.43	4.91	1.44	178.84	1.28	.201	0.19

Note. [a]*n* = 89 (vision thinking condition). [b]*n* = 93 (control condition).

Structural equation modelling using *Lavaan* (using bootstrapping from 1,000 bootstrap samples) revealed an acceptable fit between the vision thinking collective action model and the data: $\chi^2(21) = 64.97$, $p = .003$, comparative fit index (CFI) = .95, SRMR = .08. The model fit is less sure for this study with CFI right on the cut-off criteria for a good fit (i.e., CFI <= .95). Also, in this model hope and anger are not correlated as the fit was poorer when they were. The standardised loadings are shown in Figure 3.3; the unstandardised loadings and additional parameter estimates are presented in Appendix Q.

Figure 3.3

Vision Thinking Collective Action Model



Note. Showing standardised loadings.

The vision thinking task condition (compared to the control) significantly increased vision thinking: *B* = 0.71 (unstandardised), *SE* = 0.20, 95% CI [0.34, 1.14]. Vision thinking was positively associated with efficacy, identity, hope, and anger; efficacy and identity (but not hope) were in turn positively associated with motivation. The association between anger and motivation was marginal (p = .057). As implied by these relationships, there was a significant path from vision thinking inducement (i.e., condition) to motivation via vision thinking engagement (i.e., the vision thinking latent variable) and identity: *B* = 0.21 (unstandardised), *SE* = 0.07, 95% CI [0.09, 0.37]. Similarly, there was a significant path from vision thinking inducement to motivation via vision thinking engagement and efficacy: *B* = 0.12 (unstandardised), *SE* = 0.07, 95% CI [0.03, 0.25]. The indirect effect via hope was insignificant: *B* = -0.02 (unstandardised), *SE* = 0.02, 95% CI [-0.08, 0.02]). The indirect effect via anger was marginal: *B* = 0.03 (unstandardised), *SE* = 0.02, 95% CI [0.00, 0.08]).

These results support that vision thinking can be seen to comprise the four components: mental representations, positiveness, creativity, and unrestraint. They also

provide broad support for the vision thinking collective action model. Participants assigned to the vision thinking condition engaged more in vision thinking than those in the control condition, and greater engagement in vision thinking was associated with social identity, efficacy, hope and anger. However, only social identity and efficacy were associated with greater motivation for collective action.

Personal Context

Table 3.4 shows the means, standard deviations**,** and bivariate correlations for the personal context variables. Table 3.5 shows the Pearson's correlations for the vision thinking components with each of the personal context variables.

Multi-variate Analysis

To determine if the personal context variables had the predicted main effects on vision thinking (as per the hypotheses presented on page 7), and accounting for collinearity between the variables, a structural equation modelling multivariate analysis was conducted, using *Lavaan* (maximum likelihood estimation and bootstrapping from 1,000 bootstrap samples). Condition and all the personal context variables were modelled to simultaneously predict the latent variable vision thinking and directly predict motivation to take collective action, as well as vision thinking mediating the relationship between condition and motivation to take collective action. Results are presented in Appendix R.

Any personal context variables that were not significantly distinctly related to vision thinking were removed from the model and the regression re-run. The variable *threat* was retained however, as it was marginally significant (B = 0.15, SE = 0.10, 95% CI[-0.03, 0.36]). Figure 3.4 shows the model with the unstandardised regression coefficients (that represent unique relationships). All parameter estimates are presented in Appendix R.

Table 3.4

Means, Standard Deviations, and Pearson's Correlations for the Personal Context Variables

Variable	*M*	*SD*	Regulatory focus	Creativity	Optimism	Threat	SJ (gender)	Political orientation	Interest	Belief clash
Personal propensities										
Reg focus	4.24	0.80	-							
Creativity	5.39	0.92	.15*	-						
Optimism	4.37	1.26	.52***	.22**	-					
Personal circumstances										
Threat	3.73	1.58	-.22**	.13	-.28***	-				
SJ (gender)	4.27	1.13	.18*	.21**	.07	.49***	-			
Political ortn	3.96	2.92	-.01	-.05	.04	-.38***	-.36***	-		
Interest	5.53	1.53	-.07	.25***	-.06	-.21**	-.34***	.22**	-	
Belief clash	2.33	1.41	.08	-.22**	.11	.32***	.36***	- .14	-.77***	-
Insurmountable	2.59	1.42	-.04	-.14	.13	.24**	.19*	-.10	-.52***	.62***

Note. $N = 182$. High self-regulatory focus represents promotion focus; low represents prevention focus. Higher political orientation represents more left-wing/liberal.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3.5

Pearson's Correlations for the Vision Thinking Components with Personal Context Items

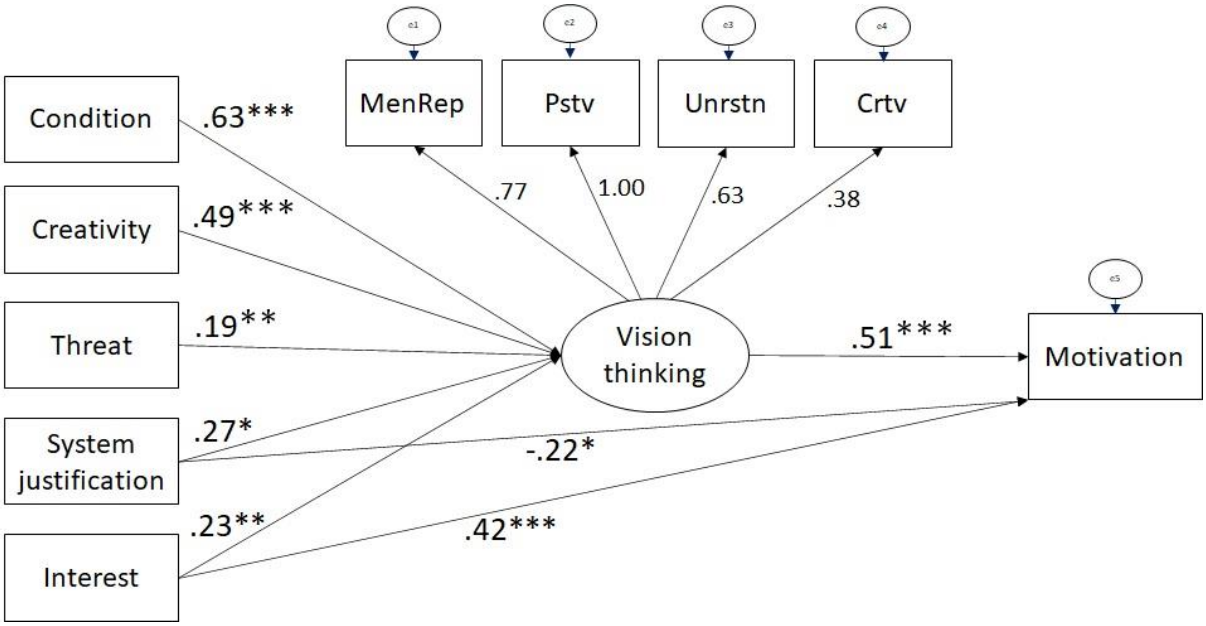
Personal context	Mental representations	Creativity	Positiveness	Unrestraint
Creativity (trait)	.22**	.49***	.36***	.35***
Optimism	.02	.25***	-.05	-.08
Reg focus	-.09	.12	-.04	-.13
Interest	.10	.16*	.20**	.12
Insurmountable	-.01	-.05	-.08	-.08
Belief clash	-.07	- .04	-.11	- .08
Threat	.12	.06	.28***	.34***
SJ (gender)	.15*	.15*	.28***	.27***
Political orientation	.07	.01	.12	.17*

Note. N = 182. High self-regulatory focus represents promotion focus; low represents prevention focus. Higher political orientation represents more left-wing/liberal.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 3.4

Effect of Personal Context Items on Engagement in Vision Thinking and Motivation



Note. Showing unstandardised regression coefficients.

*p < .05, **p < .01, *** p < .001.

As predicted, creativity and interest were positively associated with engagement in vision thinking. As predicted, self-regulatory focus was not associated with the level of engagement in vision thinking. Contrary to predictions, *insurmountable,* optimism and belief-based attitude were not associated with engagement in vision thinking. Political orientation was not associated with engagement in vision thinking. Contrary to predictions, threat and system justification were positively associated with vision thinking, whereas a negative association was predicted.

The indirect effect of condition on motivation to take collective action via vision thinking was: $B = 0.32$, $SE = 0.11$, 95% CI[0.14, 0.58]). With the personal context variables included as covariates, the total effect has become significant: $B = 0.32$, $SE = 0.16$, 95% CI[0.01, 0.62]).

Personal Context Items Individual Effects

In addition to main effects, it was also possible that the personal context factors would impact vision thinking depending on the instructions given; for example, participants might be more or less able or willing to comply with the instruction of vision thinking. Interaction analyses using bootstrapping (from 1,000 bootstrap samples) in *Lavaan* was conducted to test the hypothesis for each of these items. For each personal context item, the variable was mean centred, and for the condition variable the vision thinking condition was assigned a value of 0.5 and the control condition a value of -0.5. Results are presented in the subsections below.

Creativity. The results for the interaction analysis between condition and creativity in their effect on engagement in vision thinking are presented in Table 3.6.

Table 3.6

Moderating Effect of Creativity on the Relationship between Condition and Engagement in Vision Thinking

				95% CI	
Predictor	*B*	*SE*	*p*	*LL*	*UL*
Constant	0.00	0.01	0.956	-0.01	0.01
Condition	0.64	0.17	0.000	0.32	1.00
Creativity	0.68	0.09	0.000	0.51	0.87
Creativity x condition	0.09	0.17	0.552	-0.22	0.44

Note. $N = 182$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was a main effect of creativity on engagement in vision thinking with higher creativity associated with greater engagement. There was no interaction between condition and creativity.

Optimism. The results for the interaction analysis between condition and optimism in their effect on engagement in vision thinking are presented in Table 3.7.

Table 3.7

Moderating Effect of Optimism on the Relationship between Condition and Engagement in Vision Thinking

				95% CI	
Predictor	*B*	*SE*	*p*	*LL*	*UL*
Constant	0.00	0.01	0.820	-0.02	0.02
Condition	0.70	0.19	0.000	0.33	1.11
Optimism	0.00	0.10	0.965	-0.20	0.18
Optimism x condition	0.24	0.20	0.232	-0.15	0.63

Note. $N = 182$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in

the control condition. There was no main effect of optimism on engagement in vision thinking, and no interaction between condition and optimism.

Self-regulatory focus. The results for the interaction analysis between condition and self-regulatory focus in their effect on engagement in vision thinking are presented in Table 3.8.

Table 3.8

Moderating Effect of Self-regulatory Focus on the Relationship between Condition and Engagement in Vision Thinking

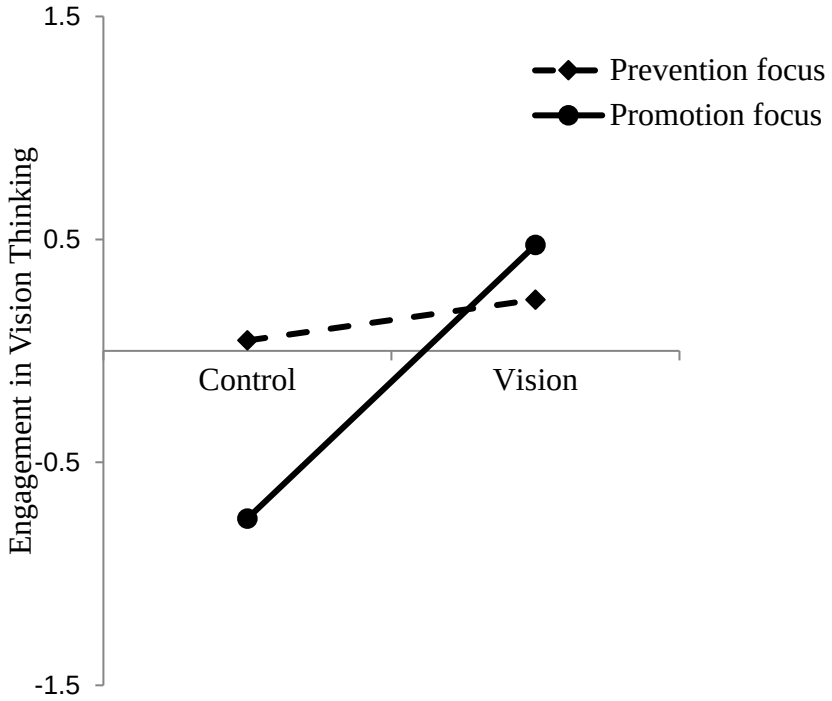
Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Constant	0.01	0.01	0.438	-0.01	0.01
Condition	0.71	0.20	0.000	0.33	1.11
Self-reg focus	-0.17	0.14	0.219	-0.45	0.10
Self-reg focus x condition	0.65	0.27	0.017	0.15	1.12

Note. $N = 182$. High self-regulatory focus represents promotion focus; low represents prevention focus.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was no main effect of self-regulatory focus on engagement in vision thinking. There was an interaction between self-regulatory focus and condition which is plotted in Figure 3.5 to depict its simple effects.

Figure 3.5

Interaction between Condition and Self-regulatory Focus on Engagement in Vision Thinking



Simple slopes analysis revealed that inducing vision thinking did not increase engagement in vision thinking for participants with a prevention focus (-1 *SD*) (*B* = 0.18, *SE* = 0.29, 95% CI[-0.37, 0.81]), but it did for participants with a promotion focus (+1 *SD*) (*B* = 1.23, *SE* = 0.29, 95% CI[0.67, 1.85]).

Insurmountable. The results for the interaction analysis between condition and insurmountable in their effect on engagement in vision thinking are presented in Table 3.9.

Table 3.9

Moderating Effect of Insurmountable on the Relationship between Condition and Engagement in Vision Thinking

Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Constant	0.00	0.01	0.707	-0.01	0.02
Condition	0.70	0.19	0.000	0.34	1.11
Insurmountable	-0.07	0.09	0.403	-0.26	0.09
Insurmountable x condition	-0.11	0.17	0.524	-0.46	0.24

Note. $N = 182$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was no main effect of *insurmountable* on engagement in vision, nor was there an interaction.

Interest. The results for the interaction analysis between condition and interest in their effect on engagement in vision thinking are presented in Table 3.10.

Table 3.10

Moderating Effect of Interest on the Relationship between Condition and Engagement in Vision Thinking

Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Constant	0.00	0.01	0.914	-0.02	0.01
Condition	0.72	0.19	0.000	0.36	1.13
Interest	0.18	0.09	0.031	0.01	0.35
Interest x condition	0.14	0.16	0.392	-0.18	0.45

Note. $N = 182$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was a main effect of interest on engagement in vision thinking,

with higher interest associated with greater engagement. There was no interaction between condition and interest.

Clash with Beliefs. The results for the interaction analysis between condition and clash with beliefs in their effect on engagement in vision thinking are presented in Table 3.11

Table 3.11

Moderating Effect of Clash with Beliefs on the Relationship between Condition and Engagement in Vision Thinking

				95% CI	
Predictor	*B*	*SE*	*p*	*LL*	*UL*
Constant	0.00	0.01	0.637	-0.01	0.02
Condition	0.70	0.21	0.001	0.29	1.10
Belief clash	-0.11	0.09	0.230	-0.29	0.07
Belief clash x condition	-0.17	0.18	0.345	-0.50	0.20

Note. $N = 182$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was no main effect of clash with beliefs on engagement in vision thinking, and no interaction between condition and clash with beliefs.

Threat. The results for the interaction analysis between condition and threat in their effect on engagement in vision thinking are presented in Table 3.12.

Table 3.12

Moderating Effect of Threat on the Relationship between Condition and Engagement in Vision Thinking

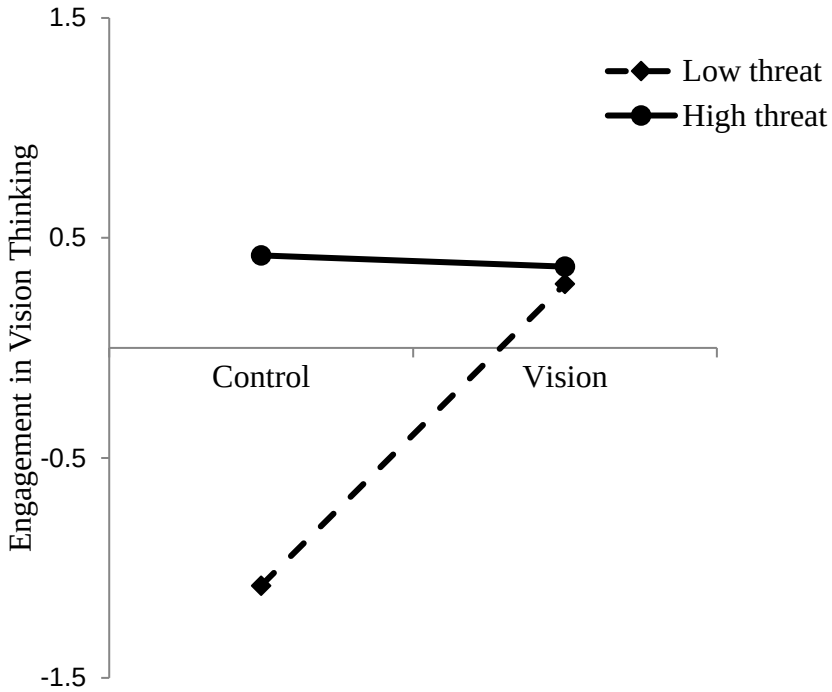
Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Constant	0.00	0.01	0.784	-0.01	0.02
Condition	0.66	0.20	0.001	0.24	1.06
Threat	0.25	0.07	0.000	0.11	0.37
Threat x condition	-0.45	0.12	0.000	-0.68	-0.21

Note. $N = 182$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was a main effect of threat with higher threat related to increased engagement in vision thinking. There was an interaction between threat and condition which is plotted in Figure 3.6 to depict its simple effects.

Figure 3.6

Interaction between Condition and Threat of Engagement in Vision Thinking



Simple slopes analysis revealed that inducing vision thinking increased engagement in vision thinking when participants had low threat (-1 *SD*) regarding the vision thinking theme (*B* = 1.37, *SE* = 0.30, 95% CI[0.76, 1.99]), but not when their threat was high (+1 *SD*) (*B* = -0.05, *SE* = 0.23, 95% CI[-0.51, 0.39]).

System Justification. The results for the interaction analysis between condition and system justification in their effect on engagement in vision thinking are presented in Table 3.13.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was a main effect of system justification with higher system justification related to increased engagement in vision thinking. There was no interaction between condition and system justification.

Table 3.13

Moderating Effect of System Justification on the Relationship between Condition and Engagement in Vision Thinking

				95% CI	
Predictor	*B*	*SE*	*p*	*LL*	*UL*
Constant	0.00	0.01	0.771	-0.02	0.02
Condition	0.65	0.20	0.001	0.26	1.05
SJ	0.35	0.11	0.002	0.13	0.58
SJ x condition	-0.27	0.22	0.223	-0.68	0.18

Note. $N = 182$.

Political Orientation. The results for the interaction analysis between condition and political orientation in their effect on engagement in vision thinking are presented in Table 3.14.

Table 3.14

Moderating Effect of Political Orientation on the Relationship between Condition and Engagement in Vision Thinking

Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Constant	0.00	0.01	0.866	-0.02	0.02
Condition	0.70	0.19	0.000	0.35	1.10
Political orientation	-0.06	0.04	0.147	-0.16	0.00
Political ortn x condition	0.09	0.08	0.243	-0.09	0.26

Note. N = 182. Higher political orientation represents more left-wing/liberal.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition There was a trend towards a more right-wing/conservative political orientation being associated with higher engagement in vision thinking, and no interaction between condition and political orientation.

Discussion

This study supports conceptualising self-perceived vision thinking as a latent variable comprised of mental representations, positiveness, creativity, and unrestraint. The study also supports that self-perceived vision thinking can be induced, under instruction to consider a specific theme, and that self-perceived engagement in vision thinking is associated with the collective action predictors and motivation for collective action.

Factors that are personal to the vision thinker relate to the thinker's engagement in vision thinking. As expected, individuals with higher creativity had higher engagement in vision thinking. Creativity seems to act as an attribute that enhances all the aspects of vision thinking (it was positively correlated with all four components of vision thinking). Intuitively

this makes sense, the more creative the thinker is, the more able they are to generate alternatives that are positive, and to release themselves from restrained thinking.

Optimism, however, contrary to predictions, was not related to engagement in vision thinking. The prediction was that optimism would better equip the thinker to generate alternatives that were positive. Findings from the study show that optimism had no bearing on the level of positivity in the thinking (there was no correlation between optimism and the vision thinking component *positiveness*). It may be that the unrestrained component of vision thinking releases any tendencies towards pessimism (or away from optimism) in the thinking. Or, perhaps, optimism-pessimism has no influence on thinking that is about a collective, because it is more anchored in beliefs about one's own life outcomes.

There was no overall relationship between self-regulatory focus and vision thinking. This fits the prediction of no relationship based on the premise that because vision thinking is about creating an ideal end state, it engages thinkers with promotion focussed tendencies (i.e., tendencies to approach ideal end states); and because vision thinking focusses on positive outcomes for the *collective*, it also engages thinkers with prevention focussed tendencies (i.e., tendencies to be directed by responsibilities and duties). However, examination of interacting effects between vision thinking inducement and self-regulatory focus showed that participants with a prevention focus engaged more in vision thinking in the control condition than those with a promotion focus, but their engagement did not significantly change when vision thinking was induced. Participants with a promotion focus increased their engagement in vision thinking when it was induced. While a greater receptiveness of vision thinking instruction for participants with a promotion focus is theoretically consistent, it is not clear why participants with a prevention focus would engage more in vision thinking than those with promotion focus when not specifically instructed to do so.

A positive interest in the theme of the vision thinking, as expected, was related to higher engagement in vision thinking. The prediction was that interest in the theme would underpin motivation to generate positive alternative outcomes plus provide a broader knowledge base from which to do this. Interest in the theme was positively correlated with the vision thinking component *positiveness* as well as *creativity*, which supports these predictions.

Perceptions that the theme of the vision thinking was insurmountable did not influence vision thinking. In fact, *insurmountable* was not related to any of the vision thinking components, including, importantly, unrestraint. This means that perceptions that the theme of the vision thinking was not achievable, did not curb the thinker's ability to be unrestrained. This finding foreshadows findings in Chapter 5 where I consider how perceptions of possibility (or impossibility) of achieving the vision thinking theme, impacts the thinker's capacity to engage in vision thinking.

The prediction that when there is a high clash with beliefs (measured by belief-based attitudes) regarding the vision thinking theme, participants would be less inclined to engage in vision thinking as instructed (than for a low belief clash), was not supported by the study. There was no relationship between clash with beliefs and vision thinking engagement, and no interaction (although interacting effects between clash with beliefs and other personal context items are possible but they were not tested here – refer to the discussion further below). I surmised that if the theme of the vision thinking clashed with the beliefs of the thinker (high belief clash), the thinker would be less motivated and have a lower knowledge base from which to form positive mental representations of the future, hence their engagement in vision thinking would be lower (than for low belief clash). One explanation for the non-effect is that the measure used for belief (i.e., belief-based attitude with wording such as: *I am supportive of gender equity in politics; I think gender equity in politics is a good idea*) did not

differentiate strongly held beliefs from weaker beliefs, and that only strongly held beliefs, or moral convictions—beliefs held with a moral impetus (Skitka, Bauman, & Sargis, 2005)—hamper engagement in vision thinking. Another explanation is that the requirements of vision thinking—that the thinking must be positive and creative, but especially the requirement for the thinking to be unrestrained—are enough to surmount any resistance that could exist due to a misalignment of belief with the vision thinking theme.

Interestingly, for the personal context item threat (i.e., threat in relation to the vision thinking theme) there was a main effect of threat on engagement in vision thinking with higher threat associated with greater engagement in vision thinking. It was predicted that higher threat would be associated with lower engagement in vision thinking across both conditions, and that when instructed to engage in vision thinking (i.e., in the vision thinking task condition) participants with high threat would engage less than participants with low threat. This prediction assumed that being asked to engage in vision thinking on a threatening topic would evoke an uncomfortable feeling that the thinker would be inclined to avoid, plus that the thinker would be less likely to possess a framework of prior positive thoughts and ideas from which to generate positive future scenarios. The study showed that threat moderated the relationship between vision thinking inducement (i.e., condition) and engagement in vision thinking. For thinkers with low threat, when vision thinking was induced their engagement in vision thinking increased relative to the control condition—this is theoretically consistent as we would expect that inducement of vision thinking would promote greater engagement in vision thinking if there is no reason to resist. (In this study, low threat participants were close to *disagree* regarding the threat they felt about the theme.) However, unexpectedly, thinkers with high threat had the same level of vision thinking engagement across both conditions—there was no increase in vision thinking for those instructed to engage in vision thinking—and that level of engagement was already high, as

high as the engagement of low threat participants in the vision thinking task condition. (In this study, high threat participants—one standard deviation above the mean—were between *somewhat agree* and *agree* regarding the threat they felt in relation to the vision thinking theme.)

The behaviour of high threat participants is contrary to predictions. One explanation is that when participants experience high threat, they still attempt to comply with instructions (in both conditions: either considering positive current actions, or imagining positive alternatives), but as predicted, their engagement may be minimal in comparison to low threat participants. However, their own view of their engagement in vision thinking could be that it is high. Their self-report levels on the vision thinking components—especially positiveness and unrestraint, which were positively correlated with threat—are likely to represent their view of their thinking task thinking as a relative measure to their "regular" threat-constrained thinking regarding the theme. This could explain the unexpected main effect of high threat being associated with greater vision thinking engagement. Also, the lack of difference in vision thinking engagement between the conditions for participants with high threat, could be because, as was predicted, they struggle to engage in thinking that involves creating positive alternatives to achieve something they find threatening. Nonetheless, they try, as they do in the control condition, to positively engage with the topic, and they do so enough to lead them to self-report "high" on vision thinking components measures. It is possible that participants who feel currently threatened by the idea or policies of gender equality in politics imagine a positive future where equality is realised in a world that does not concern them, implicitly postponing the project of equality to the future. But this remains speculation.

It was expected that gender-specific system justification would be negatively related to engagement in vision thinking, because vision thinking about a theme that threatens the status quo would conflict with system justifiers' needs to appease their epistemic, existential,

and relational needs. However, findings show that the more participants support the system the way it is, the more they engage in vision thinking. Perhaps high system justifiers, who are happy with the status quo, and find challenges to the current state of things threatening, comply with vision thinking, but in doing so have the additional imperative to appease their epistemic, existential, and relational needs. This result mirrors the threat main effect. Again, shifting the issue to the future does not threaten the current status quo.

For political orientation, there was a trend for those with a right-wing political orientation to engage more in vision thinking. This was contrary to predictions that political conservatism would make engagement more difficult if the vision thinking theme challenged a status quo that favours high status groups. However, the finding is in line with the findings for system justification, suggesting a similar mechanism (i.e., higher engagement driven by the imperative to appease system justifying needs).

It is also possible that the personal context items interact with each other regarding their effects on engagement in vision thinking. Such analyses and predictions were not included here in order to keep the current chapter focused. In further investigations it would be worth testing for interacting effects between the personal context items.

This study has shown that self-perceived vision thinking can be induced when people are asked to imagine, without constraints, a perfect world or state of things. This is important because it means, a leader for example, can inspire followers to engage with a vision, a positive step towards being able to motivate them. How well thinkers engage, depends on their personal context.

STUDY 3.2

Study 3.1 was an online study where participants engaged in individual vision thinking on the theme of universal access to education.

Study 3.2 is used both here and in the next chapter. Its dual purposes were to test the hypotheses presented in Chapter 4 and provide an additional dataset with which to further test hypotheses already specified in the present chapter. The personal context items that Study 3.1 found had significant independent effects on self-perceived vision thinking (i.e., trait creativity, system justification, threat, interest) plus clash with beliefs (with a modified measurement item) are examined in the present study using the same respective hypotheses from Study 3.1. To recap, the hypotheses are:

H1 Individual creativity will be positively related to engagement in vision thinking (and more so when vision thinking is induced).

H2. Positive interest in the theme of the vision thinking will be positively related to engagement in vision thinking (and more so when vision thinking is induced).

H3. Clash with beliefs regarding the theme of the vision thinking will be negatively related to engagement in vision thinking (and more so when vision thinking is induced).

H4. Threat relating to the theme of the vision thinking will be negatively related to engagement in vision thinking (and more so when vision thinking is induced).

H5. System justification will be negatively related to engagement in vision thinking, if the theme of the vision thinking is based on a societal issue that is reinforced by the status quo (and more so when vision thinking is induced).

Additionally, the dataset was used to confirm the components of vision thinking and the vision thinking collective action model.

Method

The study was conducted online based on the theme of universal access to education. Initially a survey measured participants' personal context items and demographics.

Participants were then randomly allocated to either a vision thinking task or a control thinking task, before completing additional survey questions to measure collective action predictors and motivation for collective action.

Participants

Participants were US citizens or permanent residents recruited via M-Turk (N = 354). The sample comprised 158 females, 196 males (M_{age} = 36.80, SD = 10.95). This sample refers to the vision thinking task condition and the control condition only (not the prescribe condition which is only used in Chapter 4).

An a priori power analysis using G*Power version 3.1.9.2 indicated a required sample size of N = 176 per condition for 80% power detecting an effect size d = 0.3 at a significance level of α = .05, for a two-tailed t-test (the basis for comparing effects in the free versus prescribed vision thinking conditions).

Materials

Manipulations

Before participants were assigned to an experimental condition, they were instructed to read the following:

> In what follows, you will be asked to think about universal access to education. Please read the following for some background information.
>
> In less developed countries many children do not have the opportunity to attend school due to poverty, discrimination, disability, conflict, and geographic location. The majority of children out of school are girls. According to UNICEF, universal education is essential to reducing poverty, and improving health, peace, environmental sustainability, gender equity and democracy. In developed countries,

school attendance is compulsory and public schools provide a free education, although not everyone has access to the same quality of education.

The purpose of this information was to ensure all participants had a minimum level of knowledge about the issue, sufficient to complete the thinking task.

Vision thinking task. In the vision thinking task condition participants were required to engage in a vision thinking task (for a minimum of 3 minutes) that asked them to imagine a perfect or utopian state of things in relation to the theme of universal access to education. Participants were given the following instructions:

> Imagine a perfect or utopian state of things where all children and adults have universal access to education. Imagine the positive outcomes for society.
>
> Try to not let your thinking be constrained by how things are now or what it feels like now. Imagine the positive aspects of this perfect place or state of things. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated with what you are imagining. Stay focused on the features of this imagined world. Take as long as you need to.

On completion of the task, participants were asked to describe, in writing, their imagined world in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Control task. For the control condition, participants were asked to think for a minimum of 3 minutes about what is currently being done to achieve universal access to education. Participants were given the following instructions:

> Think about what is currently being done to achieve universal access to education and the positive outcomes that have emerged from improved access to education. Focus on what is being done, not on what should be done, or on what is not being done**.**

On completion of the task, participants were asked to describe, in writing, the things they thought of, in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Measures

Unless otherwise stated, all items were scored on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Vision Thinking Components. Self-perceived engagement in vision thinking was measured by the level of the vision thinking latent variable, constructed from the four components of vision thinking.

Mental representations were measured with four items (α = .89): 1) *During the thinking task I formed an impression of how a different future could be*; 2) *During the thinking task I visualised aspects of an alternative future;* 3) *During the thinking task I felt what a different future would be like;* 4) *During the thinking task I imagined a future that is different to the current reality.*

Unrestraint comprised four items (α = .71): 1) *During the thinking task I thought in a completely unrestrained way;* 2) *During the thinking task my thinking was limited/restricted* (reverse scored); 3) *During the thinking task I was concerned about the feasibility of what I thought about* (reverse scored); 4) *During the thinking task I thought about things that are impossible in the current reality.*

Creativity had four items (α = .80): 1) *I put a high level of creative input into the thinking task;* 2) *I came up with some creative thoughts during the thinking task;* 3) *I did not think creatively during the thinking task* (reverse scored)*;* 4) *I was not engaged in the thinking task in a creative way* (reverse scored).

Positiveness had four items (α = .79): 1) *What I thought about during the thinking task represented an utterly perfect world (or state of things*); 2) *What I thought about during the thinking task represented an extremely positive state of things;* 3) *The things I thought of in the thinking task were not at all positive* (reverse scored); 4) *The things I thought of in the thinking task did not represent a perfect world* (reverse scored).

Personal context items. Personal context items were measured using various scales and measures.

Creativity. Participants' creativity was measured using the modified 12 item self-rated creativity scale (SRCS), the same as for Study 3.1 (α = .95). Refer to Appendix K for the list of measurement items.

Interest. Initial interest in the theme of the vision thinking was measured using the items: *I have a positive interest in universal access to education.*

Clash with Beliefs. Belief (a stronger measure than belief-based attitude) was measured with two items (*r* = .77): *I hold a strong ideological belief that there should be universal access to education; I am a strong believer in universal access to education.*

Threat. Initial threat regarding the theme of the vision thinking was measured with five items (α = .86): *I feel threatened by the idea of universal access to education; I am fearful of the concept of universal access to education; I am comfortable with the idea of universal access to education* (reverse)*; I am resistant to dictates that we need universal*

access to education; I am concerned about policies that would be put in place to achieve universal access to education.

System justification. System justification was measured using the eight-item scale (α = .82) for general system justification (Kay & Jost, 2003). Refer to Appendix S for the list of items.

Collective Action Predictors and Motivation. The collective action predictors included identity, efficacy, emotions (hope and anger), and motivation for collective action.

Identity. In-group identification was measured using a reduced version (to minimise the overall length of the study) of the 14 item scale for multicomponent in-group identification in Leach et al. (2008), adapted to the study theme. There were eight items (α = .91), two representing each of the multi-components, for example, *The fact that I am a supporter of universal access to education is an important part of my identity*. Refer to Appendix T for the full list of items.

Efficacy. Three items measured individual efficacy (α = .81): *I can have a positive impact on achieving universal access to education; I can help achieve universal access to education; There are actions I can take to promote universal access to education.*

Emotions. Two items measured hope (*r* = 74): *I feel hope that universal access to education will be achieved; I feel hope that the world will be able to achieve universal access to education.* One item measured anger: *I feel angry that there is not universal access to education.*

Motivation. Motivation was measured with seven items (α = .91). There were two items that measured general motivation for collective action: *I want to become actively involved in promoting universal access to education; I am motivated to improve universal*

access to education. There were five items to measure intention to take collective action: *There are a variety of things that people can do to improve universal access to education; please indicate below how much you intend to take each of the following actions:* 1) *Become a member of an action group advocating for change,* 2) *Discuss the issue with friends and associates,* 3) *Post on social media*, 4) *Sign a petition*, 5) *Participate in a (Covid-19 safe) protest demonstration.*

Procedure

The study was conducted online using the Qualtrics survey platform. Initially a survey measured participants' personal context items (e.g., creativity, interest, threat, system justification, clash with beliefs) and demographics. Participants were then randomly allocated to engage individually in either a free vision thinking task (similar to the vision thinking task in Study 3.1, and from here in the present chapter called the *vision thinking task*), a prescribed vision thinking task, or a control task, all related to the theme of universal access to education. (The prescribed vision thinking task is not relevant to this chapter.) Participants then completed survey questions that measured their engagement in vision thinking, collective action predictor tendencies (social identity, efficacy, hope, anger), and motivation for collective action based on the theme of the study. Additional measures were taken (i.e., *nature of engagement* items), after the measures just mentioned, however these measures are relevant only to Chapter 4.

Results

The dataset was analysed using the package *Lavaan* in *R* version 3.6.3, employing bootstrapping from 1,000 bootstrap samples.

Vision Thinking and the Vision Thinking Collective Action Model

Vision Thinking Latent Variable

In line with previous studies, the vision thinking task condition and the control condition were used to test the fit for the latent variable vision thinking. Table 3.15 shows the means, standard deviations and Pearson's correlations for the vision thinking components.

Table 3.15

Means, Standard Deviations and Pearson's Correlations for the Vision Thinking Components

Variable	M	SD	Mental rep	Creativity	Positiveness
Mental rep	5.59	1.53	-	-	-
Creativity	5.24	1.27	0.53***	-	-
Positiveness	5.12	1.39	0.52***	0.53***	-
Unrestraint	4.54	1.03	0.50***	0.51***	0.54***

Note. $N = 354$.

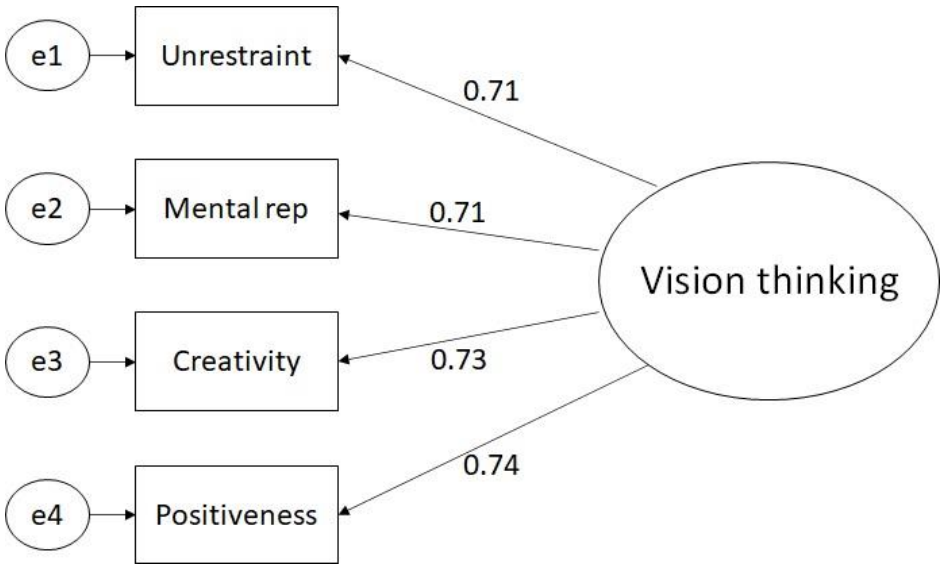
*** $p < .001$

The confirmatory factor analysis showed the vision thinking components of formation of mental representations of the future, positiveness, creativity, and unrestraint in thinking loaded onto the latent variable vision thinking. The standardised loadings are shown in Figure 3.7.

The appropriate fit indices indicate an exact fit between the model and the data: $\chi^2(2) = 1.12$, $p = .571$, comparative fit index (CFI) = 1.00, SRMR = .01.

Figure 3.7

Vision Thinking Components Confirmatory Factor Analysis



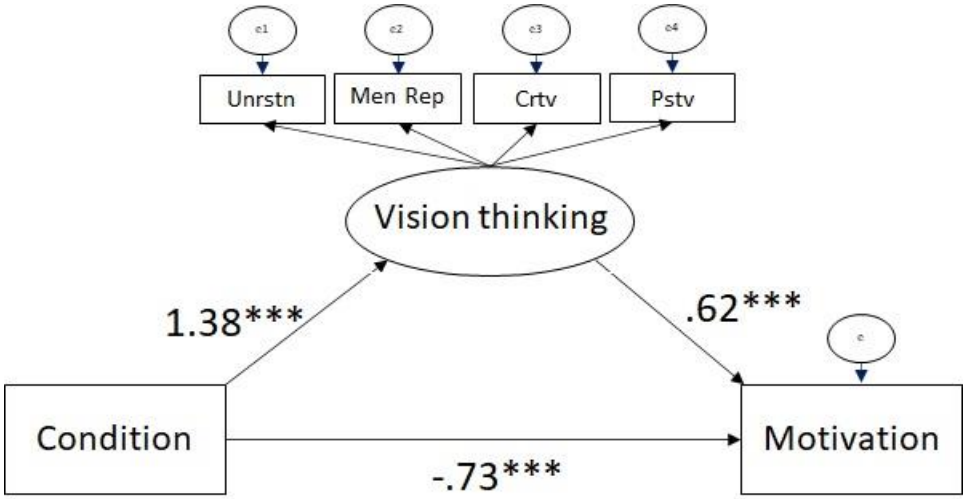
Note. Showing standardised loadings.

Overall Effect of Vision Thinking on Motivation

Lavaan was used to conduct mediation analysis using bootstrapping procedures (bootstrapping from 1,000 bootstrap samples), to determine if being assigned the vision thinking task led to increased motivation to take collective action via engagement in vision thinking. There was a significant indirect effect of condition on motivation to take collective action via vision thinking (*B* = 0.85, *SE* = 0.15, 95% CI[0.54, 1.17], with participants in the vision thinking task condition engaging more in vision thinking than those in the control condition. There was a significant negative direct effect of condition on motivation (*B* = -.73, *SE* = 0.19, 95% CI[-1.12, -0.36]). The total effect was not significant (*B* = 0.12, *SE* = 0.14, 95% CI[-0.18, 0.41]).

Figure 3.8

Effect of Condition on Motivation Mediated by Engagement in Vision Thinking



Note. Showing unstandardised regression coefficients.

*** p < .001.

Vision Thinking Collective Action Model

Table 3.16 shows the means, standard deviations and bivariate correlations for the collective action predictors and motivation.

Table 3.16

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	*M*	*SD*	Identity	Efficacy	Anger	Hope
Identity	5.17	1.17	-	-	-	
Efficacy	5.20	1.31	0.77***	-	-	
Anger	4.84	1.73	0.57***	0.42***	-	
Hope	5.42	1.35	0.67***	0.61***	0.40***	
Motivation	4.80	1.34	0.79***	0.72***	0.54***	0.56***

Note. N = 354.

*** *p* < .001.

The differences in the collective action predictor and motivation variables between the vision task and control condition was tested using an independent samples *t*-test. Hope was marginally higher in the control condition than the vision thinking task condition. There

was no significant difference between conditions for the outcome variables (refer to Table 3.17).

Table 3.17

Descriptive Statistics and Difference between Means for the Vision Thinking Task and Control Conditions for the Collective Action Predictors and Motivation Variables

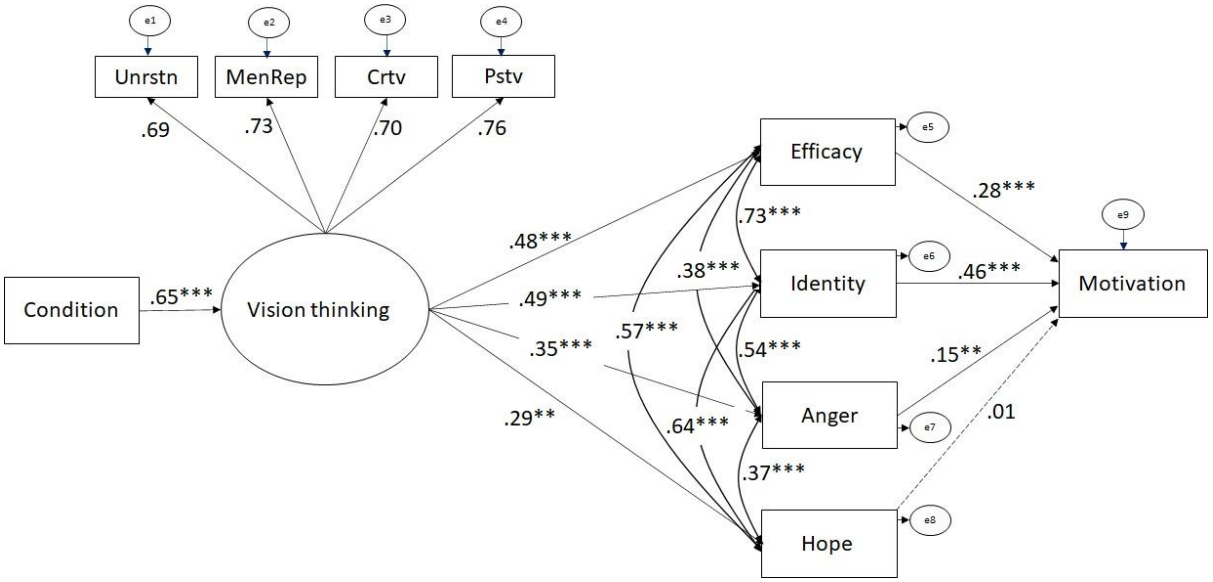
	Vision thinking[a]		Control[b]					
Variable	*M*	*SD*	*M*	*SD*	*df*	*t*	*p*	Cohen's *d*
Identity	5.17	1.20	5.17	1.15	351.77	-0.04	.967	0.00
Efficacy	5.22	1.28	5.19	1.34	350.97	-0.22	.830	0.02
Hope	5.28	1.44	5.56	1.25	346.48	1.95	.052	0.21
Anger	4.94	1.75	4.74	1.71	351.93	-1.05	.292	0.16
Motivation	4.86	1.38	4.74	1.30	351.38	-0.85	.394	0.09

Note. [a]*n* = 173 (vision thinking task condition). [b]*n* = 171 (control condition).

Structural equation modelling revealed a good (but not exact) fit between the vision thinking collective action model and the data: $\chi^2(20) = 63.22$, $p = .000$, comparative fit index (CFI) = .98, SRMR = .04. The standardised loadings are shown in Figure 3.9.

Figure 3.9

Vision Thinking Collective Action Model



Note. Showing standardised loadings. ***$p < .001$, ** $p < .01$

The vision thinking task condition (compared to the control) significantly increased vision thinking: *B* = 1.59 (unstandardised), *SE* = 0.14, 95% CI [1.31, 1.86]. Vision thinking was positively associated with efficacy, identity, hope, and anger; efficacy, identity, and anger (but not hope) were in turn positively associated with motivation. As implied by these relationships, there was a significant path from vision thinking inducement (i.e., condition) to motivation, via vision thinking engagement (i.e., the vision thinking latent variable) and identity: *B* = 0.39 (unstandardised), *SE* = 0.10, 95% CI [0.23, 0.61]. Similarly, there was a significant path from vision thinking inducement to motivation via vision thinking engagement and efficacy: *B* = 0.23 (unstandardised), *SE* = 0.07, 95% CI [0.11, 0.37]; and a significant path from vision thinking inducement to motivation via vision thinking engagement and anger: *B* = 0.07 (unstandardised), *SE* = 0.03, 95% CI [0.02, 0.14]. The indirect effect via hope was insignificant: *B* = 0.01 (unstandardised), *SE* = 0.04, 95% CI [-0.06, 0.08]).

Personal Context

Table 3.18 shows the means, standard deviations**,** and bivariate correlations for the personal context variables. Table 3.19 shows the Pearson's correlations for the vision thinking components with each of the personal context items.

Table 3.18

Means, Standard Deviations, and Pearson's Correlations for the Personal Context Variables

	M	SD	Creativity	Threat	SJ	Regard
Creativity	5.25	1.05	-	-	-	-
Threat	2.55	1.26	-.08	-	-	-
SJ	3.70	1.29	.07	.35***	-	-
Interest	5.27	1.22	.35***	-.33***	-.20***	-
Belief clash	5.85	1.23	-.33***	.61***	.26***	-.72***

Note. N = 354.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3.19

Pearson's Correlations for the Vision Thinking Components with each of the Personal Context Variables

Personal context	Mental representations	Creativity	Positiveness	Unrestraint
Creativity (trait)	.13*	.31***	.07	.06
Threat	-.07	-.20***	-.11*	-.11*
SJ	.06	-.01	.11*	.04
Interest	.16**	.21***	.12*	.05
Belief clash	-.19***	-.29***	-.18***	-.14*

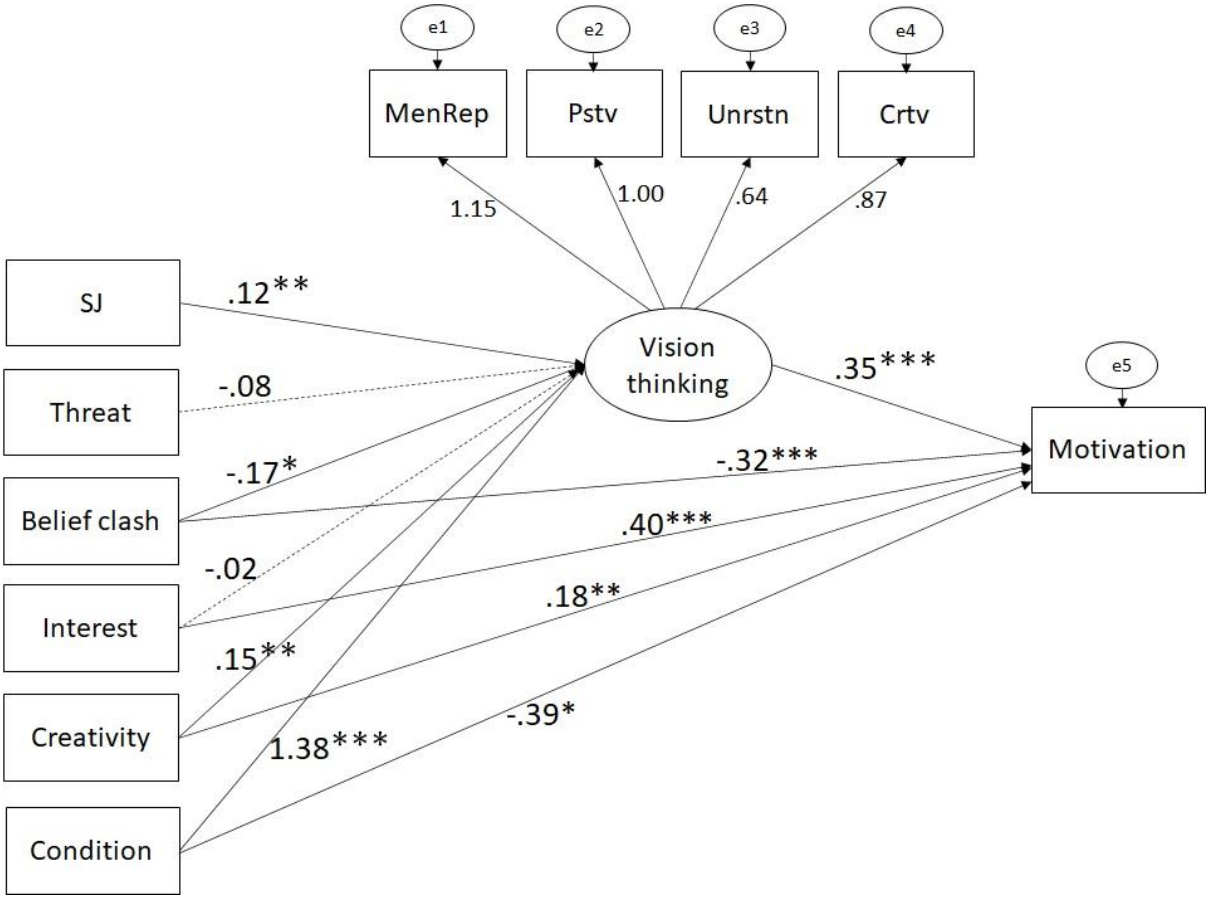
N*ote. N* = 354. * $p < .05$. ** $p < .01$. *** $p < .001$.

Multi-variate Analysis

A multivariate analysis using *Lavaan* (and bootstrapping from 1,000 bootstrap samples) was conducted to assess the main effects of the personal context items on vision thinking, accounting for collinearity between the variables. Condition and all the personal context variables were modelled to simultaneously predict the latent variable vision thinking and directly predict motivation to take collective action, as well as vision thinking mediating the relationship between condition and motivation to take collective action. Results are presented in Figure 3.10. The indirect effect of condition on motivation to take collective action via vision thinking was (*B* = 0.48, *SE* = 0.13, 95% CI[0.23, 0.75]). The total effect was not significant (*B* = 0.09, *SE* = 0.11, 95% CI[-0.13, 0.30]).

Figure 3.10

Effect of Personal Context Items on Engagement in Vision Thinking and Motivation



Note. Showing unstandardised regression coefficients. *$p < .05$, **$p < .01$, *** $p < .001$.

Interactions for Personal Context Resistance

Interaction analyses using bootstrapping (from 1,000 bootstrap samples) in *Lavaan* was conducted to test the predicted interaction effects between condition and each of the personal context items (creativity, interest, threat, clash with beliefs, system justification) in their effect on engagement in vision thinking. For each personal context item, the variable was mean centred, and for the condition variable the vision thinking condition was assigned a value of 0.5 and the control condition a value of -0.5. Results are presented in the subsections below.

Creativity. The results for the interaction analysis between condition and creativity in their effect on engagement in vision thinking are presented in Table 3.20.

Table 3.20

Moderating Effect of Creativity on the Relationship between Condition and Engagement in Vision Thinking

				95% CI	
Predictor	*B*	*SE*	*p*	*LL*	*UL*
Constant	0.00	0.01	0.981	-0.01	0.01
Condition	1.37	0.11	0.000	1.15	1.59
Creativity	0.23	0.05	0.000	0.14	0.34
Creativity x condition	-0.28	0.10	0.004	-0.47	-0.08

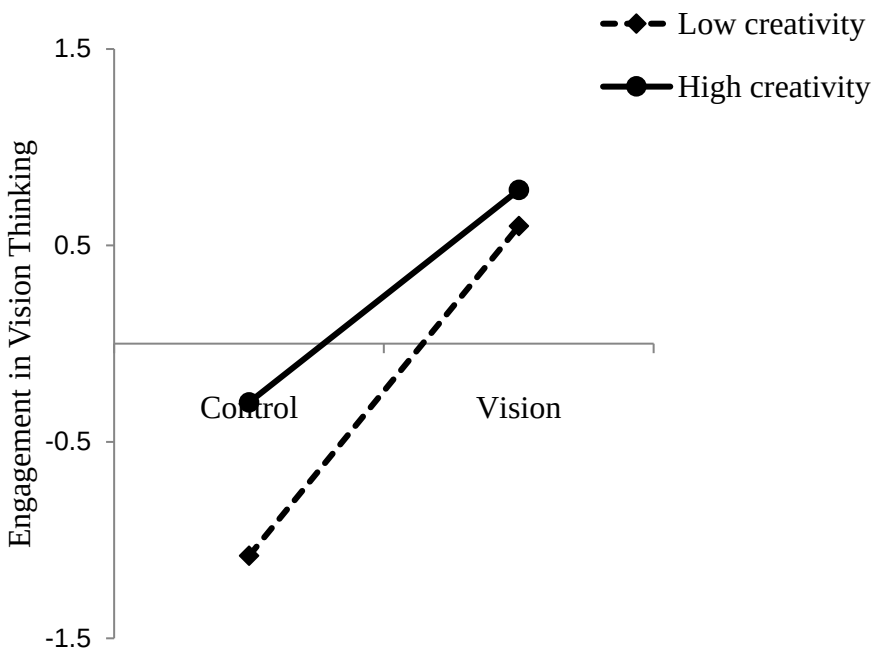
Note. $N = 354$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was a main effect of creativity with higher creativity related to greater engagement in vision thinking. There was an interaction between creativity and condition which is plotted in Figure 3.11 to depict its simple effects.

Simple slopes analysis revealed that inducing vision thinking increased engagement in vision thinking when participants had high creativity (+1 *SD*) (*B* = 1.08, *SE* = 0.15, 95% CI[1.38, 1.96]), and also when they had low creativity (-1 *SD*) (*B* = 1.08, *SE* = 0.15, 95% CI[0.78, 1.38]), the increase in vision thinking engagement was greater for those with low creativity. However, inspection of the graph shows that this was due to those with high creativity already showing greater engagement in vision thinking in the control condition.

Figure 3.11

The Interaction between Condition and Creativity on Engagement in Vision Thinking



Interest. The results for the interaction analysis between condition and interest in their effect on engagement in vision thinking are presented in Table 3.21.

Table 3.21

Moderating Effect of Interest on the Relationship between Condition and Engagement in Vision Thinking

				95% CI	
Predictor	*B*	*SE*	*p*	*LL*	*UL*
Constant	0.00	0.01	0.922	-0.01	0.01
Condition	1.36	0.11	0.000	0.07	0.23
Interest	0.14	0.04	0.000	0.07	0.23
Interest x condition	-0.11	0.08	0.181	-0.27	0.06

Note. $N = 182$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was a main effect of interest on engagement in vision thinking, with higher interest associated with greater engagement. There was no interaction between condition and interest.

Clash with Beliefs. The results for the interaction analysis between condition and clash with beliefs in their effect on engagement in vision thinking are presented in Table 3.22.

Table 3.22

Moderating Effect of Clash with Beliefs on the Relationship between Condition and Engagement in Vision Thinking

				95% CI	
Predictor	*B*	*SE*	*p*	*LL*	*UL*
Constant	0.00	0.01	0.637	-0.01	0.01
Condition	1.37	0.12	0.000	1.14	1.59
Belief clash	-0.22	0.04	0.000	-0.30	-0.14
Belief clash x condition	-0.18	0.09	0.039	-0.35	-0.02

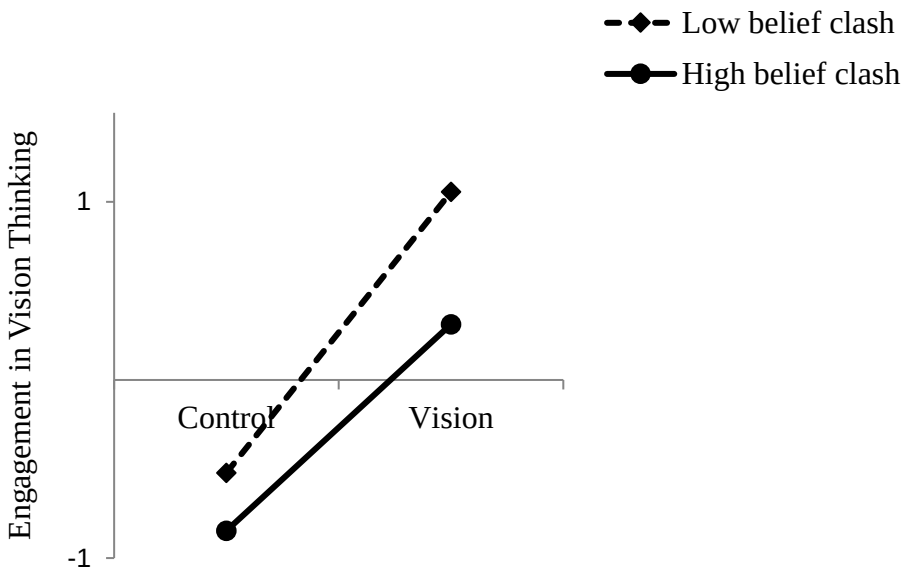
Note. $N = 354$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was a main effect of clash with beliefs with higher belief clash related to less engagement in vision thinking. There was an interaction between threat and condition which is plotted in Figure 3.12 to depict its simple effects.

Simple slopes analysis revealed that inducing vision thinking increased engagement in vision thinking when participants had high belief clash (+1 *SD*) (*B* = 1.15, *SE* = 0.14, 95% CI[0.86, 1.40]), and also when they had low belief clash (-1 *SD*) (*B* = 1.59, *SE* = 0.16, 95% CI[1.27, 1.89]); the increase in vision thinking engagement was less for those with high belief clash.

Figure 3.12

The Interaction between Belief Clash and Creativity on Engagement in Vision Thinking



Threat. The results for the interaction analysis between condition and threat in their effect on engagement in vision thinking are presented in Table 3.23.

Table 3.23

Moderating Effect of Threat on the Relationship between Condition and Engagement in Vision Thinking

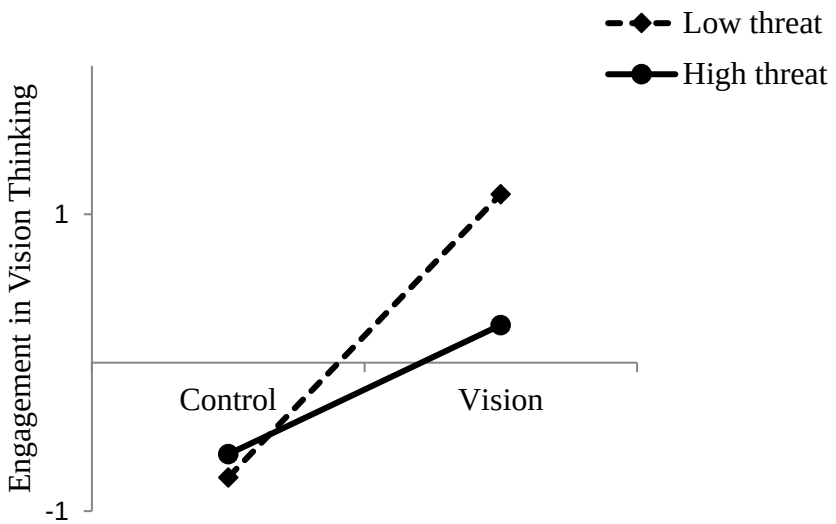
Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Constant	0.00	0.01	0.670	-0.02	0.01
Condition	1.39	0.11	0.000	1.15	1.61
Threat	-0.14	0.04	0.000	-0.21	-0.07
Threat x condition	-0.38	0.08	0.000	-0.54	-0.24

Note. $N = 354$.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was a main effect of threat with higher threat related to less engagement in vision thinking. There was an interaction between threat and condition which is plotted in Figure 3.13 to depict its simple effects.

Figure 3.13

The Interaction between Condition and Threat on Engagement in Vision Thinking



Simple slopes analysis revealed that inducing vision thinking increased engagement in vision thinking when participants had high threat (+1 *SD*) (*B* = 0.87, *SE* = 0.12, 95% CI[0.63,

1.10]), and also when they had low threat (-1 *SD*) (*B* = 1.91, *SE* = 0.17, 95% CI[1.58, 2.22]); the increase in vision thinking engagement was less for those with high threat.

System Justification. The results for the interaction analysis between condition and system justification in their effect on engagement in vision thinking are presented in Table 3.24.

Table 3.24

Moderating Effect of System Justification on the Relationship between Condition and Engagement in Vision Thinking

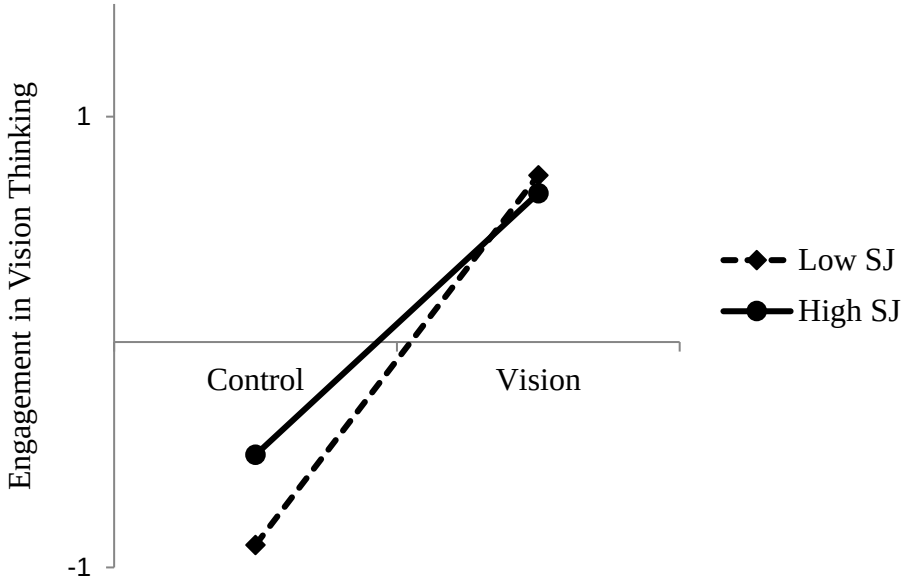
				95% CI	
Predictor	*B*	*SE*	*p*	*LL*	*UL*
Constant	0.00	0.01	0.769	-0.01	0.01
Condition	1.40	0.12	0.000	1.15	1.64
SJ	0.06	0.05	0.166	-0.02	0.15
SJ x condition	-0.19	0.09	0.032	-0.36	-0.01

Note. N = 354.

There was a main effect of condition on engagement in vision thinking, with participants in the vision thinking condition engaging more in vision thinking than those in the control condition. There was no main effect of system justification on engagement in vision thinking. There was an interaction between system justification and condition which is plotted in Figure 3.14 to depict its simple effects.

Figure 13.14

The Interaction between Condition and System Justification on Engagement in Vision Thinking



Simple slopes analysis revealed that inducing vision thinking increased engagement in vision thinking when participants had high system justification (+1 *SD*) (*B* = 1.16, *SE* = 0.15, 95% CI[0.86, 1.46]), and also when they had low system justification (-1 *SD*) (*B* = 1.64, *SE* = 0.17, 95% CI[1.31, 1.97]); the increase in vision thinking engagement was greater for those with low system justifying tendencies. Inspection of the plotted data show that this was due to individuals being higher in system justification showing greater vision thinking engagement in the control condition already.

Discussion

Again, this study supports both the conceptualisation of self-perceived vision thinking as a latent variable comprised of mental representations, positiveness, creativity, and unrestraint; and the vision thinking collective action model.

The study tested personal context items that had a significant independent effect on vision thinking in Study 3.1, plus clash with beliefs based on a more moral/ideological measure than in Study 3.1.

As an overview, there were some similarities and differences in this study compared with Study 3.1 regarding the relative independent effects of the personal context items on engagement in vision thinking. Trait creativity and system justification were the same across both studies, both positively associated with, and independently (alongside other personal context items as covariates) contributing to, engagement in vision thinking. Interest was positively associated with engagement in vision thinking in both studies, but its independent effect was negligible in the present study. Threat had an independent effect and was positively associated with engagement in vision thinking in Study 3.1; in the present study threat was negatively associated with engagement in vision thinking but had no independent effect. Clash with beliefs was independently and negatively associated with engagement in vision thinking. Any differences in behaviour of the personal context items between the studies can mostly be explained by considering the interaction effects (i.e., personal context items in interaction with condition).

Looking at these findings in detail for each of the personal context items, beginning with creativity: in the present study, as with Study 3.1 higher creativity was associated with greater engagement in vision thinking. In the present study, inducing vision thinking led to a greater increase of vision thinking for those with low creativity than for those with high creativity, but only because those with low creativity had lower vision thinking engagement in the control condition that did those with high creativity. It is possible that participants with high creativity spontaneously exercised their creativity in the control condition, but participants with low creativity did not engage in creative thought unless they were instructed

to in the vision thinking condition. Put differently, vision thinking instructions seem to be able to overcome differences in trait creativity when eliciting engagement in vision thinking.

Interest in the vision thinking theme, as already mentioned, was positively associated with engagement in vision thinking in both studies, and there were no interacting effects with condition in either study. In the present study, though, interest as an independent contributor to engagement in vision thinking, alongside the other personal context items, was insignificant. There was the same trend for other personal context items; system justification, and creativity had a smaller effect on vision thinking engagement in the present study compared with Study 3.1.

In the present study system justification was associated with higher engagement in vision thinking, the same as in Study 3.1. However, in the present study, for low system justifiers the difference in vision thinking engagement in the vision thinking condition compared to the control condition was greater than for high system justifiers. Effectively, low system justifiers engaged less in vision thinking in the control condition than high system justifiers. The reason for this is unclear, but it is not likely to be due to system justifiers not considering the vision thinking theme a threat to the status quo (threat and system justifying tendencies regarding the theme were positively related). First, it can be pointed out that while the interaction was not significant in Study 3.1, it showed the same trend. Second, as with the interpretation suggested in Study 3.1 for the main effect of system justification, it is possible that threat alleviation (threat to status quo) is another reason for engaging in vision thinking (i.e., transporting the threat into the future), but being instructed to engage in VT and having the threat alleviation motivation for doing so are redundant (one motivation is sufficient), hence the interaction.

The findings in the present study for threat were different to Study 3.1. There was a negative main effect of threat on engagement in vision thinking in this study and a positive main effect in Study 3.1. The responses for participants with high threat was also different: in Study 3.1 high threat participants had high engagement in vision thinking across both conditions; in the present study, high threat participants had higher vision thinking engagement in the vision thinking condition compared with the control (so did low threat participants, but the difference between conditions was not as great). The findings of the present study fit the predictions in the hypothesis. An explanation for the deviation from the hypothesis in Study 3.1 was that high threat participants did try to comply with instructions in both conditions, but their high threat caused them to rate potentially minimal vision thinking engagement as high because for them it was relatively high compared to their baseline thinking regarding the theme. The present study does not counter this explanation, and it possibly did not occur in this study because the high threat participants (i.e., one standard deviation above the mean) scored only *neutral* (i.e., lower than in Study 3.1) on the Likert scale for threat regarding the theme of the vision thinking.

Finally, clash with beliefs, as predicted was associated with lower engagement in vision thinking, and for high clash with beliefs inducement of vision thinking lead to a lower increase in vision thinking than it did for low clash with beliefs. As for threat, these effects are consistent with the theoretical predictions. When seeing the vision thinking theme as clashing with their own beliefs, participants are less like to comply with the instructions and less likely to engage in vision thinking.

General Discussion

Importantly, these studies show that self-perceived vision thinking can be induced. An important theme to emerge from examining the effects of personal context items on

engagement in vision thinking, is that the unrestrained component of vision thinking may aid engagement in vision thinking. When vision thinking is induced, the unrestrained component of vision thinking (i.e., with the requirement to make the thinking unrestrained), may effectively release the thinker not only from considerations of possibility regarding achieving the vision thinking theme, but from barriers to exploring the vision thinking theme that personal circumstances might ordinarily create. The fact that a clash with beliefs, threat, and system justification did not completely hamper engagement in vision thinking (though, at times diminishing it) offers support for this idea.

If vision thinking, with its association with motivation, can be induced even when people have cause to resist the theme of the vision thinking, it suggests that vision thinking may be a useful tool for overcoming resistance and moving people towards motivation for change related to the theme.

Knowing that personal circumstances affect engagement in vision thinking, and their relative contributions, means that these items can be accounted for to enhance engagement. For example, the thinker could be engaged in specific activities prior to vision thinking to prime their state of readiness for vision thinking, based on their personal circumstance. Or, the way that the vision thinking is induced could be modified to promote greater engagement in vision thinking based on personal circumstances.

CHAPTER 4: Prescribed and Free Vision Thinking

Just as factors internal to the thinker (i.e., the personal context of the thinker) affect engagement in vision thinking, factors external to the thinker are also likely to influence the thinker's capacity to engage in vision thinking. Many external factors could have this influence, for example: the duration and intensity of the vision thinking; the conduciveness of the environment; pre-activities that shape the state of mind of the thinker. The external factors most valuable to study are those that can be adapted to enhance engagement in vision thinking, and that enable a leader to shape the vision thinking for a purpose, such as motivation to act for a specific cause that benefits the collective.

This chapter investigates one external factor, the level of prescription provided to the thinker to promote and guide their vision thinking. Understanding the effect of prescription on engagement will provide useful insights because prescription is potentially a valuable tool for leaders to direct the motivation of their followers via vision thinking.

Prescribed Vision Thinking

Prescribed vision thinking is where the thinker follows instructions that direct their vision thinking so that they imagine specified outcomes relating to the vision thinking theme. In (induced) free vision thinking, the thinker is introduced to the theme and directed to engage in vision thinking but there is no prescription about what to imagine; for example, they might by instructed to "imagine a perfect world where there is no racism." In contrast, in prescribed vision thinking the thinker might be directed to "imagine a perfect world where there is no racism, where no-one is precluded from opportunities for education and employment based on race, and violence fuelled by racism does not exist." Prescribed vision thinking directs and focusses the thinker's thinking and vision. This direction and focus, in

interaction with the personal context of the thinker, is likely to affect how well the thinker can engage in vision thinking.

Potential Effects of Prescribed Vision Thinking

Broadly, there are three ways prescription could shape engagement in vision thinking: it could aid engagement by making the thinker more focused or more willing to engage; it could detract from engagement by eliciting reactance and making the thinker more resistant to engaging; or it could facilitate engagement with vision thinking by ameliorating its threating or contentious features.

Improving Focus. Prescription could provide focus to the practice of vision thinking. Open-ended vision thinking instructions may present the thinker with too many options of what to think about, making it difficult to get started. Individuals tend to minimise their cognitive effort, and in creative tasks will respond to the first solution that comes to mind, based on a category exemplar or a prior solution (Barsalou, 1991; Page Moreau & Dahl, 2005; Selart & Johansen, 2011). This effort minimising response suggests that having more guidance on what to think about, such as specified outcomes to focus on, may assist engagement in vision thinking. For example, compare being instructed to "imagine a perfect world in 2050 where there is no poverty" (open-ended), with "imagine a perfect world in 2050 where there is no poverty, no child is hungry, everyone has a home, parents can provide for their children" (more prescribed). The latter would help the thinker target their vision. In general, I suggest that not only would prescription assist the thinker to get started, but also to keep the thinking focussed, with less scattering of ideas and a clearer vision. However, sometimes the specifics of the prescription could trigger an additional response in the thinker. One way this could happen is through psychological reactance (J. W. Brehm, 1966).

Reactance. Social influence processes are likely to be a factor in how thinkers respond to prescriptive instructions and how this impacts their engagement in vision thinking, for better or worse. According to self-categorisation theory, people identify (self-categorise) with a group and internalise the values, norms and beliefs of the group, which in turn influences their attitudes and behaviour (Turner et al., 1987). A shared social identity brings opportunities for social influence, with a group member's prototypicality of the shared values, norms and beliefs of the group enabling that group member greater social influence (Turner, Reynolds, & Subasic, 2008). Therefore, based on self-categorisation theory, if the prescriptive vision thinking instructions are perceived as coming from a source with a shared social identity (i.e., the ingroup), the thinker is more likely to be influenced, to align their thinking to the instructions, and engage in the vision thinking. On the other hand, when a thinker perceives the prescriptive instructions as coming from a source with a differing social identity (i.e., the outgroup) they are more likely to reject the instruction.

How the thinker responds to prescriptiveness in the vision thinking instructions, would depend on their own context and self-definition relative to the prescription. Findings by Graupmann, Jonas, Meier, Hawelka, and Aichhorn (2012) show that a threat to freedom coming from an outgroup leads to *reactance.* Reactance is a response to restriction or elimination of a freedom, due to an external force, and it makes the individual direct their behaviour towards having the freedom back (J. W. Brehm, 1966; S. S. Brehm & Brehm, 1981). A reactance response from the thinker to their freedom being restricted by the prescription, is likely to drive them to regain the freedom to think what they want; consequently, they will resist the task and this will diminish their engagement in vision thinking (compared to free vision thinking where they do not receive such prescriptive instructions).

In particular, the thinker's interest, threat and clash with beliefs concerning the theme of the vision thinking might inform whether they perceive the prescriptive instructions as coming from an ingroup or an outgroup. For participants with higher interest, prescription (compared to free instructions) would increase vision thinking engagement; for participants with greater feelings of threat, and greater perceptions of a clash with their beliefs, prescription (compared to free instructions) would reduce vision thinking engagement.

Social Influence. A further possibility is that prescriptive instructions help to ease the task and highlight the socially desirable features of the envisioned future, which may reduce feelings of threat and clash of belief when engaging with the task. Correspondingly, if the prescriptive instructions reduce the thinker's threat or belief clash, then the instruction source would be perceived by the thinker as aligning with their identity; this is consistent with propositions of self-categorisation theory that identities are not fixed but rather fluid, context-dependent and shiftable (see Haslam et al., 2011). The instructions would then be seen as coming from an ingroup, therefore making the thinker more willing to engage in the thinking. Therefore, prescription (compared to free instructions) would reduce threat and belief clash and, thereby, increase engagement in vision thinking.

So, overall prescription may provide benefits to engagement in vision thinking by focussing the thinker. However, reactance and social influence factors can come into play depending on the personal context of the thinker and the nature of the prescription.

The Present Research

The present research investigates the effect of prescribed (versus free) vision thinking on self-perceived engagement in vision thinking. The research examines the thinker's compliance with instructions (prescribed versus free) from a social influence perspective, depending on the thinker's interest in the vision thinking theme, threat regarding the theme,

and clash with beliefs concerning the theme. The potential for increased prescription to provide better focus for the thinker, and hence better engagement in vision thinking, is also examined.

The prescription that will be used in this study will simply detail more specific outcomes for the thinker to imagine rather than deliberately manipulating increased threat or belief clash. The purpose of the present investigation is to understand the effectiveness of a realistic prescription of vision thinking, as might be used by a leader to direct the motivation of their followers towards a specific goal, not to test the effects of manipulating increased or decreased threat or belief clash.

Overall, and notwithstanding social influence factors, prescribed vision thinking may offer the benefit of more focus to thinkers.

H1. Prescribed vision thinking (compared to free vision thinking) increases engagement in vision thinking.

Prescribing vision thinking will facilitate vision thinking engagement for thinkers with high interest in the vision thinking but will lead to reactance and reduced vision thinking engagement for those with high prior feelings of threat or belief clash.

H2. Prescribed vision thinking (compared to free vision thinking) (a) increases engagement in vision thinking when interest in the vision thinking theme is high, and (b) reduces engagement in vision thinking when participants initially feel greater threat or clash with their beliefs.

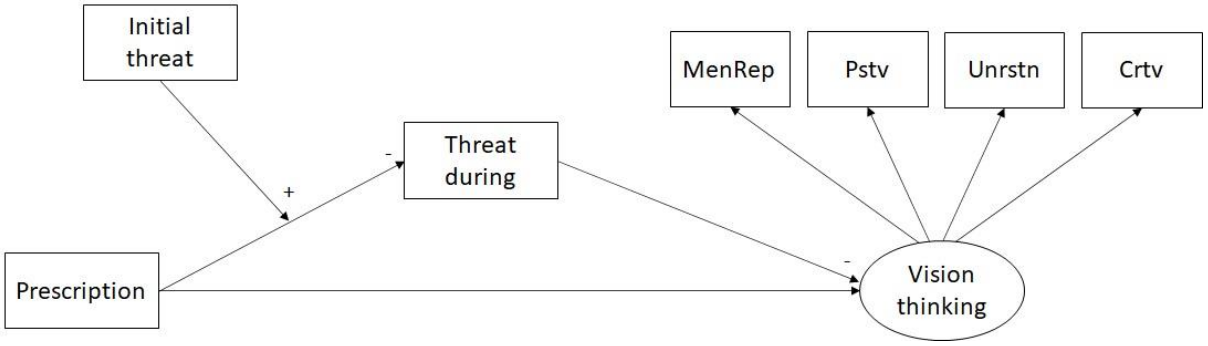
Prescribing vision thinking can also affect a reduction in threat and belief clash during the task and thereby facilitate vision thinking:

H3. Prescribed vision thinking (compared to free vision thinking) (a) reduces threat when initial threat is high, and (b) reduces clash of beliefs when initial clash of beliefs is high, and mediated through these, increases engagement in vision thinking.

Figure 4.1 shows the proposed moderated mediation for H3 with threat during vision thinking as the mediator.

Figure 4.1

Proposed Moderated Mediation of Prescription by Initial Threat on Vision Thinking Engagement Mediated by Threat During Vision Thinking



STUDY 4

Study 3.2, presented in Chapter 3, is used to investigate the effects of prescription in this chapter. For efficient use of resources, the study was run with the dual purpose of further investigating the effects of personal context (Chapter 3) and prescription (Chapter 4). A summary of the method, plus details of the measures and conditions pertinent to the present analyses is presented in this section.

Method

The study is an online study where participants engaged in individual vision thinking on the theme of universal access to education. There was random assignment to one of three conditions: free vision thinking, prescribed vision thinking, control (the control condition is only relevant to Chapter 3).

Participants

Participants in the free and prescribed vision thinking conditions are US citizens or permanent residents recruited via M-Turk (N = 351). The sample comprises 159 females, 192 males (M_{age} = 37.50, SD = 11.31).

An a priori power analysis using G*Power version 3.1.9.2 indicated a required sample size of N = 176 per condition for 80% power detecting an effect size d = 0.3 at a significance level of α = .05, for a two-tailed t-test (the basis for comparing effects in the free versus prescribed vision thinking conditions).

Materials

Manipulations

Free Vision Thinking Task. In the free vision thinking condition participants were required to engage in a vision thinking task (for a minimum of 3 minutes) that asked them to imagine a perfect or utopian state of things in relation to the theme of universal access to education, without providing further prescription. Participants were given the following instructions:

> Imagine a perfect or utopian state of things where all children and adults have universal access to education. Imagine the positive outcomes for society.
>
> Try to not let your thinking be constrained by how things are now or what it feels like now. Imagine the positive aspects of this perfect place or state of things. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated with what you are imagining. Stay focused on the features of this imagined world. Take as long as you need to.

On completion of the task, participants were asked to describe, in writing, their imagined world in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Prescribed Vision Thinking Task. In the prescribed vision thinking condition participants were required to engage in a vision thinking task (for a minimum of 3 minutes) that asked them to imagine a perfect or utopian state of things in relation to the theme of universal access to education, that prescribed what to think about in relation to this perfect or utopian state of things. Participants were given the following instructions:

> Imagine that every child across the globe safely attends school and is getting a free high-quality education. There are no negative impacts for the child's family or community. Females receive the same education as males and complete their schooling with the same level of empowerment and opportunity. Society has benefited from universal access to education as educated people from disadvantaged regions or backgrounds have advocated for positive changes. Everyone is reaching adulthood with a full education and options for a job, career, and further study. Every adult who wants further education has full access to this. People can reach their full potential in life. Everywhere, but especially in developing countries, people are earning more money to support their families and are contributing to the growth, prosperity, environmental protection and stability of their communities and regions, and to the better health and wellbeing of all citizens.
>
> Try to not let your thinking be constrained by how things are now or what it feels like now. Imagine the positive aspects of this perfect place or state of things. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated

with what you are imagining. Stay focused on the features of this imagined world. Take as long as you need to.

On completion of the task, participants were asked to describe, in writing, their imagined world in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Measures

Unless otherwise stated, all items were scored on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Vision Thinking Components. Self-perceived engagement in vision thinking was measured by the level of the self-perceived vision thinking latent variable, constructed from the four components of vision thinking.

Mental representations were measured with four items (α = .89): 1) *During the thinking task I formed an impression of how a different future could be*; 2) *During the thinking task I visualised aspects of an alternative future;* 3) *During the thinking task I felt what a different future would be like;* 4) *During the thinking task I imagined a future that is different to the current reality.*

Unrestraint comprised four items (α = .71): 1) *During the thinking task I thought in a completely unrestrained way;* 2) *During the thinking task my thinking was limited/restricted* (reverse scored); 3) *During the thinking task I was concerned about the feasibility of what I thought about* (reverse scored); 4) *During the thinking task I thought about things that are impossible in the current reality.*

Creativity had four items (α = .80): 1) *I put a high level of creative input into the thinking task;* 2) *I came up with some creative thoughts during the thinking task;* 3) *I did not*

think creatively during the thinking task (reverse scored)*;* 4) *I was not engaged in the thinking task in a creative way* (reverse scored).

Positiveness had four items (α = .79): 1) *What I thought about during the thinking task represented an utterly perfect world (or state of things*); 2) *What I thought about during the thinking task represented an extremely positive state of things;* 3) *The things I thought of in the thinking task were not at all positive* (reverse scored); 4) *The things I thought of in the thinking task did not represent a perfect world* (reverse scored).

Personal Context Items. Personal context items were measured using various scales and measures.

Interest. Initial interest in the theme of the vision thinking was measured using the items: *I have a positive interest in universal access to education.*

Clash with Beliefs. Initial clash with beliefs regarding the theme of the vision thinking was measured with two items (reverse scored) (*r* = .76): *I hold a strong ideological belief that there should be universal access to education; I am a strong believer in universal access to education.*

Threat. Initial threat regarding the theme of the vision thinking was measured with five items (α = .86): *I feel threatened by the idea of universal access to education; I am fearful of the concept of universal access to education; I am comfortable with the idea of universal access to education* (reverse)*; I am resistant to dictates that we need universal access to education; I am concerned about policies that would be put in place to achieve universal access to education.*

Threat and Clash with Beliefs During Vision Thinking. The measure: *I felt that I had to think about things that I usually find threatening,* was used to measure the level of

threat experienced during the thinking task. The measure: *I felt I had to think about things that conflict with my beliefs/values,* was used to measure the level of clash with beliefs experienced during the thinking task.

Nature of Engagement. These nature of engagement measures are included to detect more subtle and varied effects relating to engagement in vision thinking than revealed by the vision thinking latent variable. The vision thinking latent variable is the most accurate measure of actual engagement in vision thinking, but the following items will also be used to help test the hypotheses: 1) *I found it difficult to engage my thinking with the given topic;* 2) *I had trouble because I felt I had to think about something too specific;* 3) *I had trouble because I felt I had to think about something too broad;* 4) *I felt that I had to think about things that don't really matter;* 5) *I was resistant to engaging in the task.*

Procedure

Using the Qualtrics survey platform, participants initially completed demographic questions, followed by the personal context questions, then either the free vision thinking task, the prescribed vision thinking task, or the control task (not relevant to this analysis) based on random assignment. Then participants answered the questions relating to the collective action predictors (emotions, identity, efficacy) (not analysed in this chapter), motivation (not analysed in this chapter), the vision thinking component measures, and the nature of engagement questions.

Results

Overall Effect of Prescription

Lavaan was used to test the overall effect of prescribed versus free vision thinking on engagement in vision thinking (bootstrapping from 1,000 bootstrap samples was used). The free vision thinking condition was assigned a value of 0, and the prescribed vision thinking

condition a value of 1. Engagement in vision thinking (measured by the latent variable vision thinking) was not significantly different in the prescribe vision thinking condition compared with the free vision thinking condition (*B* = 0.12, *SE* = 0.11, 95% CI[-0.09, 0.34]). There was a slight tendency towards greater engagement in vision thinking in the prescribe condition.

Prescription in Interaction with Interest, Threat, and Clash with Beliefs

The means, standard deviations, and correlations for interest, initial threat, and initial clash with beliefs are presented in Table 4.1.

Table 4.1

Means, Standard Deviations, and Pearson's Correlations for Interest, Initial Threat, and Initial Clash with Beliefs

	M	*SD*	Interest	Threat
Interest	5.16	1.26		
Threat	2.52	1.29	-.27***	
Belief clash	2.17	1.23	-.68***	.60***

Note. $N = 351$.

***$p < .001$.

Interest

The moderating effect of interest on the relationship between prescription and engagement in vision thinking was tested using *Lavaan* (using bootstrapping from 1,000 bootstrap samples). Interest was mean centred; the prescribed vision thinking condition was assigned a value of 0.5 and the free vision thinking condition a value of -0.5. Results are presented in Table 4.2.

Table 4.2

Moderating Effect of Interest on the Relationship between Prescription (Prescribed versus Free) and Vision Thinking

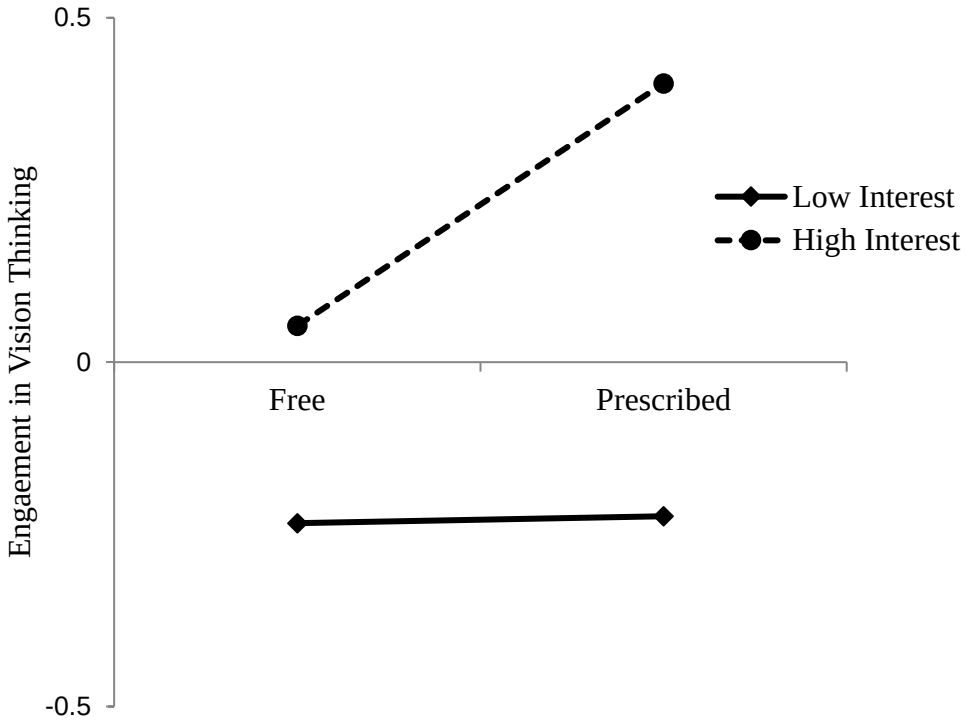
Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Constant	0.00	0.00	.572	-0.01	0.01
Prescription	0.18	0.10	.080	-0.01	0.38
Interest	0.19	0.05	.000	0.10	0.29
Interest x prescription	0.14	0.09	.106	-0.03	0.32

Note. $N = 351$.

There was a significant effect of level of interest, a marginal main effect of prescription and a tendency to an interaction. Participants with higher interest indicated greater engagement in vision thinking. Prescribed (versus free) vision thinking instructions tended to lead to greater engagement in vision thinking. While the interaction did not reach conventional levels of significance, the pattern is explored here. The results are plotted in Figure 4.2. Simple slopes analysis shows that prescription led to increased engagement in vision thinking when participants had high interest (+1 *SD*) (*B* = 0.35, *SE* = .014, 95% CI[0.09, 0.61]), but not when they had low interest (-1 *SD*) (*B* = 0.01, *SE* = .016, 95% CI[-0.30, 0.33]).

Figure 4.2

Interest by Prescription Interaction on Engagement in Vision Thinking



Threat

The moderating effect of threat on the relationship between prescription and engagement in vision thinking was tested using *Lavaan* (using bootstrapping from 1,000 bootstrap samples). Threat was mean centred; the prescribed vision thinking condition was assigned a value of 0.5 and the free vision thinking condition a value of -0.5. Results are presented in Table 4.3.

There was a significant effect of threat, no effect of prescription and no interaction. Participants with higher threat indicated less engagement in vision thinking.

Table 4.3

Moderating Effect of Threat on the Relationship between Prescription (Prescribed versus Free) and Vision Thinking

Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Constant	0.00	0.00	.687	-0.01	0.01
Prescription	0.10	0.09	.270	-0.07	0.28
Threat	-0.38	0.04	.000	-0.46	-0.31
Threat x prescription	0.03	0.07	.641	-0.11	0.16

Note. N = 351.

Clash with Beliefs

The moderating effect of clash with beliefs on the relationship between prescription and engagement in vision thinking was tested using *Lavaan* (using bootstrapping from 1,000 bootstrap samples). Clash with beliefs was mean centred; the prescribed vision thinking condition was assigned a value of 0.5 and the free vision thinking condition a value of -0.5. Results are presented in Table 4.4.

Table 4.4

Moderating Effect of Clash with Beliefs on the Relationship between Prescription (Prescribed versus Free) and Vision Thinking

Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Constant	0.00	0.00	.722	-0.01	0.01
Prescription	0.16	0.09	.088	-0.02	0.35
Belief clash	-0.34	0.05	.000	-0.43	-0.26
Belief clash x prescription	0.03	0.09	.721	-0.13	0.21

Note. N = 351.

There was a significant effect of clash with beliefs, a marginal main effect of prescription and no interaction. Participants with a higher clash with beliefs indicated less engagement in vision thinking. Prescription tended to increase engagement in vision thinking.

Moderated Mediations

Threat

Lavaan (using bootstrapping from 1,000 bootstrap samples) was used to test the proposed moderated mediation that for high initial threat, prescription would lead to greater engagement in vision thinking (compared with free vision thinking) via a lowering of threat during vision thinking. Initial threat was mean centred; the prescribed vision thinking condition was assigned a value of 0.5 and the free vision thinking condition a value of -0.5. Results are presented in Table 4.5.

Table 4.5

Moderating Effects of Initial Threat on the relationship between Prescription (Free versus Prescribed) and Threat During Vision Thinking Leading to Engagement in Vision Thinking

Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
	Mediator variable model (Outcome: Threat during vision thinking)				
Constant	2.19	0.07	.000	2.06	2.32
Prescription	-0.10	0.13	.454	-0.36	0.15
Initial threat	0.68	0.06	.000	0.57	0.79
Initial threat x prescription	-0.11	0.11	.323	-0.34	0.09
	Dependent variable model (Outcome: Engagement in vision thinking)				
Constant	0.06	0.01	.000	0.05	0.07
Threat during VT	-0.32	0.04	.000	-0.40	-0.25
Prescription	0.08	0.09	.840	-0.10	0.28

Note. $N = 351$.

There was a main effect of initial threat during vision thinking; higher initial threat was related to higher threat during vision thinking. There was no main effect of prescription on threat during vision thinking. There was no interaction between prescription and initial

threat on threat during vision thinking. Threat during vision thinking was negatively related to engagement in vision thinking. So, for high initial threat, prescription did not lead to greater engagement in vision thinking by lowering threat during vision thinking.

Clash with Beliefs

Lavaan (using bootstrapping from 1,000 bootstrap samples) was used to test the proposed moderated mediation that for high initial clash with beliefs, prescription would lead to greater engagement in vision thinking (compared with free vision thinking) via a lowering of clash with beliefs during vision thinking. Initial clash with beliefs was mean centred; the prescribed vision thinking condition was assigned a value of 0.5 and the free vision thinking condition a value of -0.5. Results are presented in Table 4.6.

Table 4.6

Moderating Effects of Initial Clash with Beliefs on the relationship between Prescription (Free versus Prescribed) and Clash with Beliefs During Vision Thinking Leading to Engagement in Vision Thinking

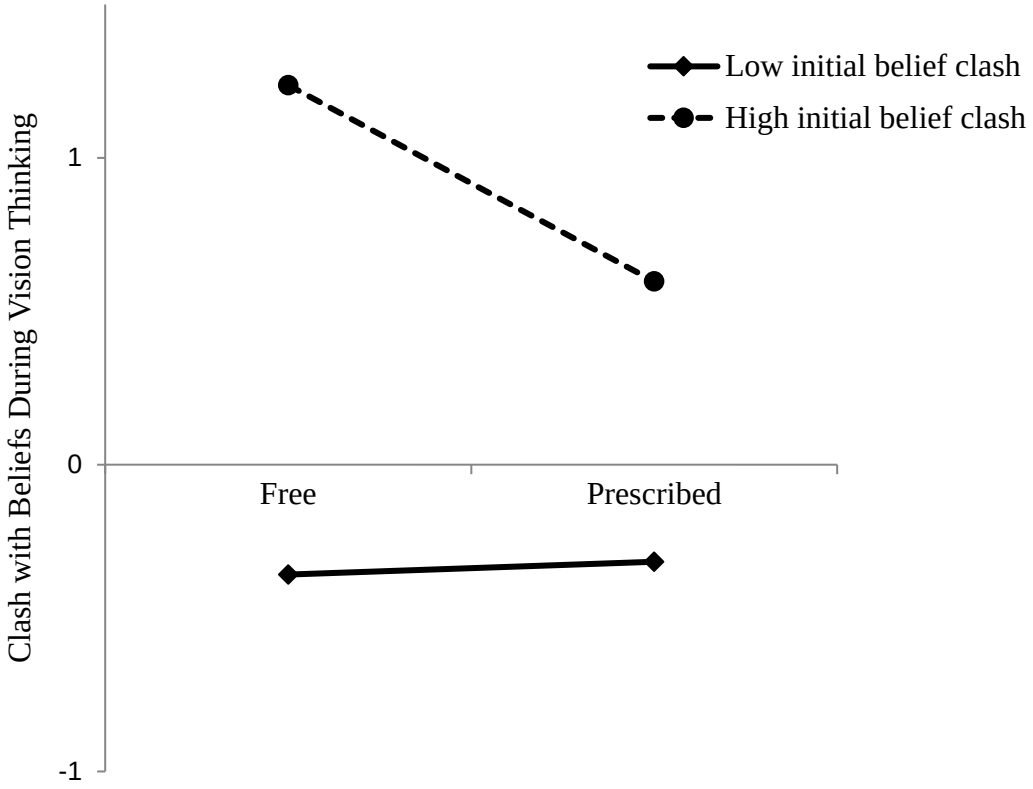
Predictor	*B*	*SE*	*p*	95% CI	
				LL	*UL*
	Mediator variable model (Outcome: Belief clash during vision thinking)				
Constant	2.48	0.08	.000	2.31	2.63
Prescription	-0.30	0.17	.074	-0.63	0.03
Initial belief clash	0.51	0.07	.000	0.37	0.63
Initial belief clash x prescription	-0.26	0.14	.059	-0.53	0.01
	Dependent variable model (Outcome: Engagement in vision thinking)				
Constant	0.06	0.01	.000	0.05	0.07
Belief clash during VT	-0.29	0.03	.000	-0.35	-0.23
Prescription	0.06	0.09	.557	-0.13	0.25

Note. $N = 351$.

There was a main effect of initial clash with beliefs on clash with beliefs during vision thinking; a higher initial clash with beliefs indicated a higher clash with beliefs during vision thinking. There was a marginal main effect of prescription on clash with beliefs during vision thinking with prescription tending to decrease clash with beliefs during vision thinking. There was a marginal interaction between prescription and initial clash with beliefs on clash with beliefs during vision thinking; it is plotted in Figure 4.3 to depict its simple effects.

Figure 4.3

Clash with Beliefs During Vision Thinking as a Function of Prescription X Initial Clash with Beliefs



Simple slopes analysis revealed that prescription lowered clash with beliefs during vision thinking when participants had a high initial clash with beliefs (+1 *SD*) regarding the vision thinking theme (*B* = -0.61, *SE* = 0.23, 95% CI[-1.06, -0.15]), but not when their initial clash with beliefs was low (-1 *SD*) (*B* = 0.00, *SE* = 0.07, 95% CI[-0.14, 0.14]).

Clash with beliefs during vision thinking was negatively related to engagement in vision thinking.

There was a significant conditional indirect effect of initial clash with beliefs on the relationship between prescription and engagement in vision thinking via clash with beliefs during vision thinking, when initial clash with beliefs was high (+1 *SD*): $B = 0.18$, $SE = 0.07$, 95% CI[0.04, 0.31]. There was no significant conditional indirect effect when initial clash with beliefs was low (-1 *SD*): $B = 0.00$, $SE = 0.07$, 95% CI[-0.14, 0.14].

So, the prescription of vision thinking helped engagement in vision thinking when initial clash with beliefs was high by lowering clash with beliefs during vision thinking.

Nature of Engagement

Additional items (nature of engagement) were included in the study to detect more subtle effects relating to self-perceived engagement in vision thinking. These nature of engagement items are used in the following analyses to detect differences between prescribed and free vision thinking. The analyses explore related hypotheses to those stated in the introduction, but instead of measuring the effect of prescription (and personal context moderators, i.e., interest, initial threat, initial belief clash) on engagement in vision thinking they measure the effect of prescription (and personal context moderators) on nature of engagement.

For reference the nature of engagement items and their abbreviations are included in Table 4.7. Means, standard deviations and correlations for the nature of engagement items are presented in Table 4.8.

Table 4.7

Abbreviations for Nature of Engagement Items

Abbreviation	Nature of engagement item
Engage difficult	I found it difficult to engage my thinking with the given topic
Too specific	I had trouble because I felt I had to think about something too specific
Too broad	I had trouble because I felt I had to think about something too broad
Thinking not important	I felt that I had to think about things that don't really matter
Resistant	I was resistant to engaging in the task

Table 4.8

Means, Standard Deviations, and Pearson's Correlations for the Nature of Engagement Items

	M	*SD*	Engage difficult	Too specific	Too broad	Not important
Engage difficult	2.51	1.60	-			
Too specific	2.60	1.63	.67***	-		
Too broad	2.79	1.72	.66***	.66***	-	
Thinking not important	2.41	1.55	.57***	.56***	.50***	
Resistant	2.29	1.51	.61***	.61***	.50***	.59***

Note. $N = 351$.

***$p < .001$

Regressions were run using *Lavaan* (incorporating bootstrapping from 1,000 bootstrap samples) to test the strength of the relationship between each of the nature of engagement items and engagement in vision thinking. Each nature of engagement item (which represents a difficulty with engaging) was negatively related to engagement in vision thinking. The results are presented in Table 4.9.

Table 4.9

Results for Regressions (Run Separately): Relationship between Vision Thinking Latent Variable and Nature of Engagement Items

Nature of Vision Thinking Item	*B*	*SE*	*p*	95% CI	
				LL	*UL*
Engage difficult	-0.34	0.03	.000	-0.40	-0.29
Too specific	-0.28	0.03	.000	-0.34	-0.22
Too broad	-0.27	0.03	.000	-0.33	-0.21
Thinking not important	-0.35	0.03	.000	-0.42	-0.30
Resistant	-0.33	0.04	.000	-0.41	-0.26

Note. $N = 351$.

Table 4.10 shows the means, standard deviations, and difference between conditions for the nature of engagement items.

There were some tendencies for the nature of engagement items (representing difficulties engaging in vision thinking) to be lower in the prescribed condition. There was a marginally significant difference between conditions for *engage difficult* and *resistant,* with both lower in the prescribed condition than the free vision thinking condition.

Table 4.10

Descriptive Statistics and Difference between Means for the Nature of Engagement Measures (Free Vision Thinking versus Prescribed Vision Thinking)

	Free		Prescribed					
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*	Cohen's *d*
Engage difficult	2.66	1.68	2.36	1.50	1.755	346.56	.080	0.19
Too specific	2.71	1.66	2.49	1.60	1.311	348.98	.191	0.13
Too broad	2.86	1.73	2.72	1.72	0.776	348.78	.438	0.08
Thinking not important	2.48	1.63	2.34	1.47	0.858	347.23	.391	0.09
Resistant	2.43	1.60	2.15	1.40	1.758	345.08	.080	0.19

Note. $N = 351$.

Table 4.11 shows the bivariate correlations for the nature of engagement items and the personal context items.

Table 4.11

Pearson's Correlations for the Nature of Engagement Items with Personal Context Items

Nature of engagement	Threat	Belief clash	Interest
Engage difficult	.51***	.36***	-.18*
Too specific	.49***	.27***	-.13*
Too broad	.41***	.29***	-.18***
Thinking not important	.60***	.49***	-.33***
Resistant	.61***	.30***	-.06

Note. $N = 351$.

*$p<.05$, ***$p < .001$.

Effect of Prescription and Personal Context Items on Nature of Engagement Items (Leading to Engagement in Vision Thinking)

Moderation analyses were undertaken using *Lavaan* (bootstrapping from 1,000 bootstrap samples) to test if the personal context items (interest, threat, clash with beliefs) moderated the relationship between prescription (prescribed versus free vision thinking) and each of three of the nature of engagement items: *engage difficult*, *thinking not important*,

resistant. (To minimise the analysis presented three items were chosen; the ones with the largest effect on vision thinking engagement.) Where any such effects also mediated the relationship between prescription and engagement in vision thinking (i.e., where there were indirect effects via nature of engagement items) these were reported. Personal context variables were mean centred, and for the condition variable the prescribed vision thinking condition was assigned a value of 0.5 and the free vision thinking condition a value of -0.5. Each interaction effect was tested independently. The results are presented in Tables 4.12, 4.13 and 4.14 under section headings for each personal context item. An overall summary of the results it given after the last section of results.

Interest. The results for the moderation analyses of interest on the relationship between prescription and nature of engagement items leading to engagement in vision thinking are presented in Table 4.12.

Table 4.12

Moderating Effects of Interest on the Relationship between Prescription and Nature of Engagement Items (Leading to Engagement in Vision Thinking)

Nature of engagement	Interest and prescription - main effects and interactions
Thinking not important	Main effect of interest: (*B* = -0.42, *SE* = 0.06, 95% CI[-0.54, -0.29]); plus an indirect effect of interest on vision thinking: (*B* = 0.14, *SE* = 0.03, 95% CI[0.10, 0.20]). No main effect of prescription: (*B* = -0.27, *SE* = 0.16, 95% CI[-0.59, 0.06]). No interaction: (*B* = 0.09, *SE* = 0.13, 95% CI[0.49, -0.17]).
Resistant to engaging	No main effect of interest: (*B* = -0.10, *SE* = 0.06, 95% CI[-0.22, 0.03]). Marginal main effect of prescription: (*B* = -0.31, *SE* = 0.17, 95% CI[-0.65, 0.01]). No interaction: (*B* = 0.17, *SE* = 0.12, 95% CI[-0.07, 0.41]).
Difficult to engage	Main effect of interest: (*B* = -0.24, *SE* = 0.07, 95% CI[-0.38, -0.11]); plus an indirect effect of interest on vision thinking: (*B* = 0.08, *SE* = 0.02, 95% CI[0.04, 0.13]). Main effect of prescription: (*B* = -0.37, *SE* = 0.17, 95% CI[-0.70, -0.01]); plus an indirect effect of prescription on vision thinking: (*B* = 0.12, *SE* = 0.05, 95% CI[0.00, 0.24]). No interaction: (*B* = -0.02, *SE* = 0.13, 95% CI[-0.30, 0.25]).

Threat. The results for the moderation analyses of threat on the relationship between prescription and nature of engagement items leading to engagement in vision thinking are presented in Table 4.13.

Table 4.13

Moderating Effects of Initial Threat on the Relationship between Prescription and Nature of Engagement Items (Leading to Engagement in Vision Thinking)

Nature of engagement	Threat and prescription - main effects and interactions
Thinking not important	Main effect of threat: (*B* = 0.73, *SE* = 0.06, 95% CI[0.62, 0.84]); plus an indirect effect of threat on vision thinking: (*B* = -0.19, *SE* = 0.03, 95% CI[-0.26, -0.13]). No main effect of prescription: (*B* = -0.09, *SE* = 0.13, 95% CI[-0.35, 0.16]). Interaction: (*B* = -0.30, *SE* = 0.12, 95% CI[-0.55, -0.07]); plus a conditional indirect effect on vision thinking, reported below in the text.
Resistant to engaging	Main effect of threat: (*B* = 0.71, *SE* = 0.06, 95% CI[0.58, 0.83]); plus an indirect effect of threat on vision thinking: (*B* = -0.15, *SE* = 0.03, 95% CI[-0.22, -0.08]). Marginal main effect of prescription: (*B* = -0.24, *SE* = 0.13, 95% CI[-0.49, 0.01]). No interaction: (*B* = -0.09, *SE* = 0.12, 95% CI[-0.34, 0.14]).
Difficult to engage	Main effect of threat: (*B* = 0.63, *SE* = 0.06, 95% CI[0.51, 0.75]); plus an indirect effect of threat on vision thinking: (*B* = -0.16, *SE* = 0.03, 95% CI[-0.23, -0.12]). No main effect of prescription: (*B* = -0.26, *SE* = 0.15, 95% CI[-0.54, 0.05]). No interaction: (*B* = -0.19, *SE* = 0.13, 95% CI[-0.45, 0.07]).

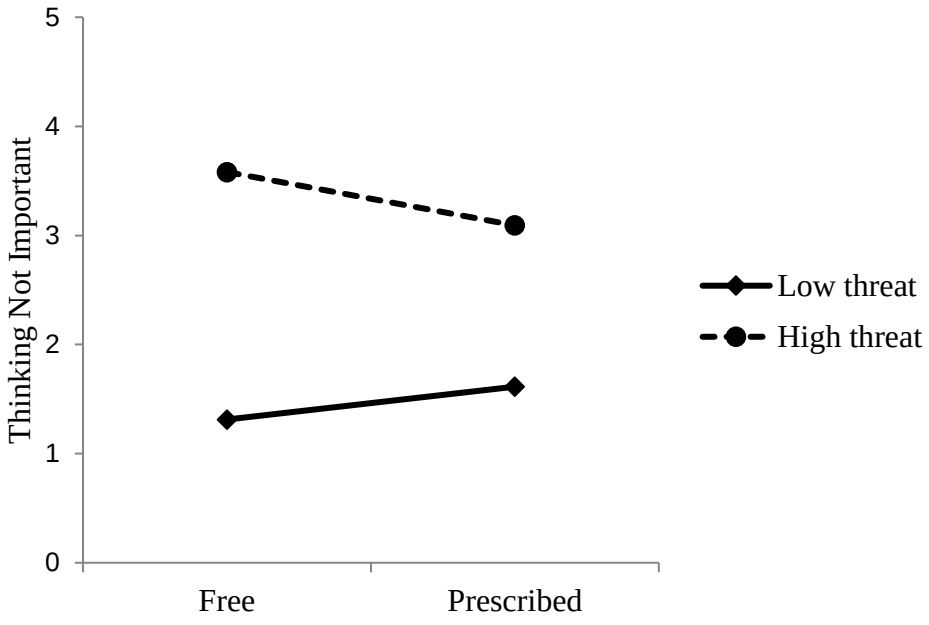
There was a significant interaction between prescription and threat on *thinking not important*; it is plotted in Figure 4.4 to depict its simple effects. Simple slopes analysis

revealed that prescription lowered perceptions of the thinking during the task not being important when participants had high initial threat (+1 *SD*) regarding the vision thinking theme (*B* = -0.48, *SE* = 0.22, 95% CI[-0.91, -0.05]), but when their initial threat was low there was a marginal effect of prescription raising perceptions of non-importance (-1 *SD*) (*B* = 0.30, *SE* = 0.16, 95% CI[-0.01, 0.64]).

There was a significant conditional indirect effect of threat on the relationship between prescription and engagement in vision thinking when threat was high (+1 *SD*): *B* = 0.16, *SE* = 0.08, 95% CI[0.01, 0.32], raising engagement in vision thinking by lowering *thinking not important* There was a marginal conditional indirect effect for low threat (-1 *SD*): *B* = -0.10, *SE* = 0.05, 95% CI[-0.21, 0.01], lowering engagement in vision thinking by increasing *thinking not important.*

Figure 4.4

Perceived Importance as a Function of Prescription by Threat



Clash with Beliefs. The results for the moderation analyses of clash with beliefs on the relationship between prescription and nature of engagement items leading to engagement in vision thinking are presented in Table 4.14.

Table 4.14

Moderating Effects of Initial Clash with Beliefs on the Relationship between Prescription and Nature of Engagement Items (Leading to Engagement in Vision Thinking)

Nature of engagement	Clash with beliefs and prescription - main effects and interactions
Thinking not important	Main effect of belief clash: (*B* = 0.63, *SE* = 0.06, 95% CI[0.51, 0.67]); plus an indirect effect of belief clash on vision thinking: (*B* = -0.19, *SE* = 0.03, 95% CI[-0.25, -0.13]). No main effect of prescription: (*B* = -0.21, *SE* = 0.15, 95% CI[-0.52, 0.07]). Interaction: (*B* = -0.41, *SE* = 0.13, 95% CI[-0.66, -0.15]); plus a conditional indirect effect on vision thinking, reported below in the text.
Resistant to engaging	Main effect of belief clash: (*B* = 0.38, *SE* = 0.07, 95% CI[0.26, 0.53]); plus an indirect effect of belief clash on vision thinking: (*B* = -0.10, *SE* = 0.02, 95% CI[-0.16, -0.06]). Main effect of prescription: (*B* = -0.32, *SE* = 0.16, 95% CI[-0.64, -0.02]); plus an indirect effect of prescription on vision thinking: (*B* = 0.09, *SE* = 0.05, 95% CI[0.01, 0.19]). Marginal interaction: (*B* = -0.27, *SE* = 0.14, 95% CI[-0.54, 0.00]); plus a marginal conditional indirect effect on vision thinking, reported below in the text.
Difficult to engage	Main effect of prescription: (*B* = -0.35, *SE* = 0.16, 95% CI[-0.67, 0.0]); plus an indirect effect of prescription on vision thinking: (*B* = 0.10, *SE* = 0.05, 95% CI[0.00, 0.21]) No interaction: (*B* = -0.07, *SE* = 0.14, 95% CI[-0.36, 0.20]).

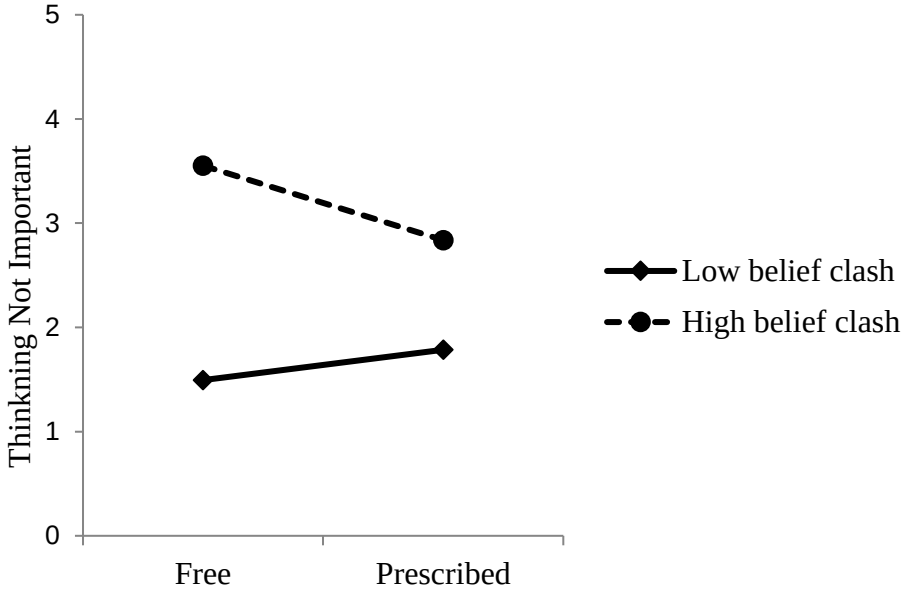
There was a significant interaction between prescription and clash with beliefs on *thinking not important*; it is plotted in Figure 4.5 to depict its directional effects.

Simple slopes analysis revealed that prescription lowered perceptions of the thinking during the task not being important when participants had high initial clash with beliefs (+1 *SD*) regarding the vision thinking theme (*B* = -0.74, *SE* = 0.23, 95% CI[-1.18, -0.25]), but when their initial clash with beliefs was low there was no significant effect of prescription on perceived non-importance (-1 *SD*) (*B* = 0.32, *SE* = 0.19, 95% CI[-0.04, 0.71]).

There was a significant conditional indirect effect of clash with beliefs on the relationship between prescription and engagement in vision thinking via *thinking not important* when clash with beliefs was high (+1 *SD*): *B* = 0.25, *SE* = 0.08, 95% CI[0.08, 0.42], increasing engagement in vision thinking by lowering the perceived non-importance of the thinking. There was no significant conditional indirect effect for low clash with beliefs (-1 *SD*): *B* = -0.10, *SE* = 0.07, 95% CI[-0.24, 0.02].

Figure 4.5

Perceived Importance as a Function of Prescription by Clash with Beliefs

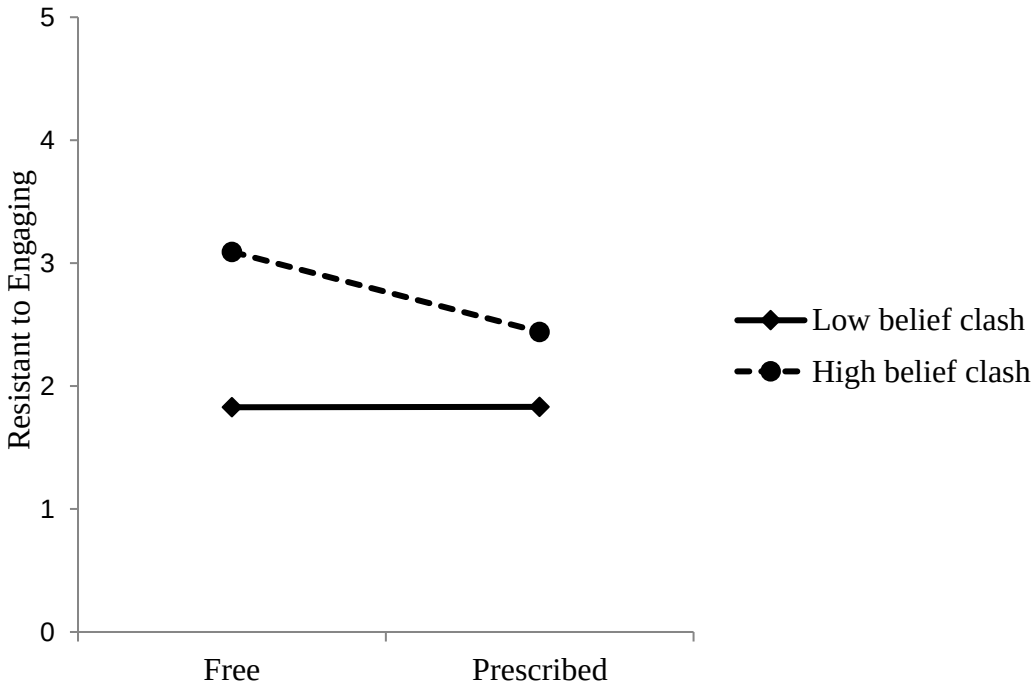


There was a significant interaction between prescription and clash with beliefs on *resistant to engage*; it is plotted in Figure 4.6. Simple slopes analysis showed that prescription lowered resistance to engagement when participants had high initial clash with beliefs (+1 *SD*) regarding the vision thinking theme (*B* = -0.67, *SE* = 0.24, 95% CI[-1.18, -0.23]), but not when their initial clash with beliefs was low (-1 *SD*) (*B* = 0.22, *SE* = 0.07, 95% CI[-0.39, 0.48]).

There was a significant conditional indirect effect of clash with beliefs on the relationship between prescription and engagement in vision thinking via *resistant* when clash with beliefs was high (+1 *SD*): *B* = 0.21, *SE* = 0.09, 95% CI[0.07, 0.40]. There was no significant conditional indirect effect for low clash with beliefs (-1 *SD*): *B* = 0.00, *SE* = 0.07, 95% CI[-0.15, 0.13].

Figure 4.6

Resistance to Engaging as a Function of Prescription by Clash with Beliefs



Summary of Results for Nature of Engagement Items. We know from Chapter 3, Study 3.2 (the same study as here) that the personal context items interest, threat, and clash with beliefs are related to engagement in vision thinking. Here all three nature of engagement items (*thinking not important, engage difficult, resistant*) mediated the relationship between each of the personal context items and engagement in vision thinking.

Prescription had an effect (sometimes a main effect and sometimes a conditional effect) on the nature of engagement items, which sometimes translated through to an indirect effect on engagement in vision thinking. The significant effects (reported in the sections above) are summarised below for each of the nature of engagement items.

Thinking Not Important. There was a conditional indirect effect—conditional on threat—of prescription on vision thinking engagement via *thinking not important.* Prescription increased vision thinking engagement when threat was high, via reducing the perceived unimportance of the thinking task (Figure 4.4); to a lesser extent there was a tendency for prescription to lower engagement in vision thinking via increasing perceived unimportance when threat was low. There was also a conditional indirect effect —conditional on clash with beliefs—of prescription on vision thinking engagement via *thinking not important.* Prescription increased vision thinking engagement when clash with beliefs was high, via reducing the perceived unimportance of the thinking task (Figure 4.5).

Resistant. There was a main effect of prescription on *resistant to engage* that was marginal when interest and threat were the moderators, but when belief was the moderator, the effect was significant and mediated an effect of prescription increasing vision thinking engagement. There was also a conditional indirect effect (conditional on clash with beliefs) of prescription on vision thinking engagement via *resistant to engage.* Prescription increased

vision thinking engagement when threat was high, via reducing resistance to engage in the thinking task (Figure 4.6).

Difficult to engage. There was a main effect of prescription on *difficulty to engage* when interest and clash with beliefs were (independently) the moderators, which mediated an effect of prescription increasing engagement in vision thinking.

The nature of engagement items were able to detect some effects from prescription that affected engagement in vision thinking.

Discussion

The present study investigated the effects of prescriptive (compared to free or open) instructions for vision thinking on participants' self-reported engagement in vision thinking. Overall, the results highlight some beneficial effects of prescription on vision thinking engagement, especially for participants with high interest in the vision thinking theme, and for participants with an initial clash with beliefs regarding the theme.

Specifically, prescription increased engagement in vision thinking when participants' interest in the vision thinking theme was high (but not when it was low). This is in line with the prediction that participants with a high interest in the theme would be more willing to accept and adopt the prescription and allow it to guide their thinking. Presumably, an interest in the vision thinking theme means participants see themselves psychologically aligned with the task and the prescriptive communications; they experience a sense of shared social identity with the source of the instructions that enables social influence, leading them to comply with the instructions (see Turner, 1991). Conversely, there was no empirical support for psychological reactance, and consequently reduced engagement in vision thinking, when participants perceived a greater initial threat or clash with their own beliefs.

An alternate prediction for the interplay between prescriptive instructions and threat or clash with beliefs regarding the vision thinking theme was that when threat or clash with beliefs is high, prescription (the type used here) would lower the threat or clash with beliefs experienced during the task, leading to increased engagement in vision thinking. For threat, this prediction was not supported. There was no interacting effect of prescription and initial threat, on threat during vision thinking, and no main effect of prescription.

For clash with beliefs, however, the results support the prediction. For high initial clash with beliefs, prescription lowered the clash with beliefs experienced during vision thinking which in turn lead to increased engagement in vision thinking. There was no effect for low initial clash with beliefs. The findings support that social influence, through prescriptive instructions, could be a factor in improving engagement for participants with high initial clash with beliefs. Prescriptive instructions may have helped participants with an initial unwillingness to engage, to see the vision thinking task as more closely aligned with their goals for the collective and their beliefs (i.e., aligned with their ingroup).

As mentioned, for threat the findings did not support the prediction. Prescription did not lower high threat relative to the control condition (whereas it did for clash with beliefs). A possible explanation is that because the instructions in the prescribed condition gave participants more information about the theme, they used this information to gauge their threat or clash with beliefs during the vision thinking task. They would have used the overall theme and any existing knowledge they had to gauge their *initial* threat and clash with beliefs. Perhaps for participants with high initial clash with beliefs, the details in the prescribed condition made them realise the theme did not clash with their beliefs as much as initially thought. Possibly for participants with high initial threat, the details in the prescribed condition did nothing to allay their threat—the prescribed instructions did focus on what the benefits to others would be, they did not suggest an alleviation of threat to self.

Further probing of how prescription affects engagement in vision thinking, especially when resistance is present (i.e., threat, clash with beliefs), using nature of engagement mediators, revealed overall tendencies towards benefits of prescription. Prescription aided engagement in vision thinking via reducing the perceived unimportance of universal access to education (the vision thinking theme) when each of initial threat and initial clash with beliefs was high (although there was also a slight tendency at low threat for prescription to lower engagement in vision thinking via increasing the perceived unimportance of the thinking). There was a general tendency for prescription to decrease resistance to engaging; when clash with beliefs was high, prescription lowered this resistance which led to greater engagement in vision thinking. Prescription lowered difficulty in engaging in the task which led to increased vision thinking engagement.

This study tested one type of prescription. The prescription used here simply detailed more specific outcomes for the thinker to imagine without trying to manipulate, for example, threat or a clash with beliefs. A prescription of a different nature could impact engagement in vision thinking differently. Importantly, the prescription used here represents the type of prescription that could be used to channel the thinker's vision thinking and associated responses towards specific end points (i.e., to direct the thinker's motivation for collective action).

As an initial investigation of the effects of prescribed versus free vision thinking on engagement in vision thinking, this study has provided useful insights. A prescription of vision thinking that simply details outcomes for the thinker to focus on, benefits self-perceived vision thinking engagement (compared to free vision thinking). There are additional factors, over and above helping the thinker to focus by making the task less open ended, responsible for the beneficial effects of prescription on engagement in vision thinking. These additional effects are evidenced by the finding that prescription acts differently

depending on the personal context of the thinker (i.e., interest, threat, clash with beliefs regarding the theme of vision thinking). This study shows that these other factors could be explained by social influence effects. Overall, findings from the study suggest that leaders can use prescription to shape vision thinking for specific goals, and that if the prescription is moulded to align with the social identity of the thinker it will be more effective at engaging them in vision thinking.

CHAPTER 5: Vision Thinking and Perceptions of Possibility

Perceptions of possibility are a fundamental part of both the process of vision thinking and the outcomes of vision thinking. Perceptions of possibility arise at different stages and in various forms in relation to vision thinking and act in contrary ways in their ultimate effect on motivation arising from vision thinking. The aim of this chapter is to understand the various influences of perceived possibility relating to the vision thinking process, which in turn provides information on how to maximise engagement in vision thinking and increase motivation.

Vision Thinking within the Stages of Prospection

The definition of vision thinking from chapter one is: prospection that is heavily weighted towards simulation, which involves simulation of a positive (often ideal) future of a collective, by an individual or jointly by a collective. Prospection is a staged process of thinking where possibility assessment becomes more prominent with progression to planning (Baumeister et al., 2016; K. K. Szpunar et al., 2014). Vision thinking is focused at the simulation end of prospection where assessment of possibility is minimised.

Pure vision thinking would include no assessment of the possibility of what is being imagined, because a characteristic of vision thinking is that it is unrestrained. In practice, in deliberately trying to engage in vision thinking, or in engaging in vision thinking as an inherent part of other thinking, assessment of the possibility of what is being imagined would likely be present. It would be difficult to completely free oneself from the idea that what is imagined does not need to be possible. An aspect of the experimental study in this chapter will determine the extent to which assessments of possibility are made during the vision thinking process. Understanding how assessments of possibility inadvertently play into vison thinking is important for guiding better engagement in vision thinking.

Perceived Possibility Leading to Motivation

Although some assessment of possibility is likely present in vision thinking, more engaged vision thinking minimises possibility assessment. A key proposal throughout this thesis is that it is the unrestrained nature of vision thinking that gives it its power to raise motivation. What is unique about vision thinking is that the thinker is much less limited by reality or considerations of feasibility, than in other types of thinking. This unrestrained nature enables greater creativity and positivity in what is being imagined and allows mental barriers to attaining the vision to be put aside.

I propose that the over-riding of barriers in vision thinking increases the perceived possibility that the vision, or progress towards achieving the vision, is attainable. When a thinker is imagining an ideally resolved state for a multi-faceted complex societal issue (that relates to the collective), inherent with complicated barriers to resolution, the thinker is forced to override these barriers. Barriers that the thinker ordinarily perceives when considering the issue can comprise both barriers that others would universally identify and barriers that are a function of the thinker's own context which could include their projection of what is difficult to resolve and their level of ability to think through a solution. The more engaged the thinker is in vision thinking—in creating an ideal state of things—the more they have cast aside the barriers. Having engaged in vision thinking, they now have a different perspective from which to view the issue. This perspective may remove some of the confusion or complexity about how to resolve aspects of the issue. It might provide clarity about which previously perceived barriers are true issues to resolution and which existed in the thinker's mind more as a function of the convoluted nature of the issue rather than an insurmountable barrier. While some barriers are likely to remain, a perception of reduced barriers would make a solution seem more possible. There is plenty of evidence in the research literature to support that imagining a positive outcome increases the perceived

possibility of its occurrence (Carroll, 1978; Gregory et al., 1982; S. Sherman, J. et al., 1985; K. K. Szpunar & Schacter, 2013).

Perceived possibility is linked with efficacy, so I further propose that an increase in perceived possibility from vision thinking raises efficacy, and hence motivation. Efficacy is the belief in one's ability to achieve results (Bandura, 1982). Once achieving a particular outcome is perceived as more likely, one's efficacy is therefore also increased. For example, in a study where participants simulated their team perfectly completing an obstacle course, they believed their team would perform better compared to controls (Shearer, Thomson, Mellalieu, & Shearer, 2007). The link between vision thinking and increased efficacy and motivation was demonstrated in the five studies in the three preceding chapters. There is a solid case for vision thinking to raise perceived possibility, then efficacy and motivation. However, there is also research literature that shows that positive fantasies can be demotivating. This research needs to be addressed in the context of vision thinking – how does this demotivating mechanism apply, or not, to vision thinking?

But Positive Fantasies can be Demotivating

Research findings show that having positive fantasies about a desired outcome can demotivate and deenergise people to pursue the outcome (H. B. Kappes & Oettingen, 2011; H. B. Kappes, Oettingen, & Mayer, 2012; Oettingen & Mayer, 2002). Oettingen and Mayer (2002) found that positive fantasies can provide enjoyment of the desired future outcome and satisfaction so the impetus to pursue the goal is diminished. According to findings it is positive expectancy judgements—beliefs that a desired outcome is likely to occur—that motivate effort and success in attaining the desired outcome, not the positive fantasy itself (A. Kappes & Oettingen, 2014; H. B. Kappes & Morewedge, 2016). H. B. Kappes, Sharma, and Oettingen (2013) found that the more time an individual must invest to attain the desired outcome that is fantasised about, the less motivated they are to pursue it. So, motivation is

dependent on the balance between the level of satisfaction the fantasy provides, on one hand, and the expectancy belief and investment required for attaining the outcome, on the other.

Why Vision Thinking May be Different to Positive Fantasies

The studies thus far in this thesis have found that vision thinking is associated with higher motivation. Vision thinking and its associated effects can be distinguished from positive fantasies referred to above, in ways that support that vision thinking may motivate rather than demotivate pursuit towards the imagined outcome.

First, as outlined above, I propose that vision thinking raises perceived possibility (which leads to increased efficacy and motivation). The distinction between vision thinking and fantasies is that fantasies do not raise perceived possibility. Fantasies may satisfy and therefore deenergise and demotivate the thinker to act to attain the desired outcome. The research on fantasies that reveals the demotivating effect, applies predominantly to fantasies that focus on the self—for example, finding a romantic partner, losing weight, and getting good grades and career opportunities (H. B. Kappes et al., 2012; Oettingen & Mayer, 2002; Oettingen & Wadden, 1991)—rather than on complex collective or societal issues. In the fantasy research, formation of the fantasy focusses on the self, the fantasising is driven from personal desires that are known to the self; the ideal that is created is an expression of wants and desires and indulging in the fantasy is a virtual experience of those desires. Vision thinking, on the other hand, is about the collective, and focuses on complex issues. In vision thinking, the ideal state to imagine is with these complex issues solved. The process of vision thinking is to enlighten an end state through unrestraint, by casting aside barriers and complexity. Vision thinking allows the thinker to reach a solution, and even though the solution may not be realistic, it has taken the thinker to a place where a realistic resolution may now seem simpler and more possible.

Second, in vision thinking, because of the nature of vision thinking (i.e., it is about a collective issue, and the thinker develops a perfect or extremely positive solution, which the thinker could not achieve alone), the concern is not about the motivation of the thinker to achieve the vision (as it is for the fantasies in the fantasy research) but rather about their motivation to contribute to resolving or improving the issue on which the vision is based. So, the possibility assessment that feeds the thinker's expectancy judgement which informs motivation, can be based on a more achievable target.

Possibility Assessment Post Vision Thinking

So, I propose that vision thinking has the capacity to increase motivation. However, there are still avenues where possibility assessment could lower expectancy beliefs, and hence motivation, post vision thinking. As mentioned earlier, prospection is a staged process of thinking, and planning with its associated feasibility or possibility assessment, follows simulation (Baumeister et al., 2016; K. K. Szpunar et al., 2014). Considering the effects of possibility assessment associated with planning is therefore important as it gives a realistic view of how motivational tendencies that have arisen from vision thinking might translate into practice. While planning can have beneficial effects on motivation in general (Miller, Galanter, & Piribram, 1960), the possibility assessment aspect may make the vision thinker realise limitations to achieving their vision, So the possibility assessments that come with planning may lower the thinker's increased perceptions of possibility gained during the vision thinking, thus lowering the motivational gains too.

Additionally, the possibility assessments inherent in planning may curb motivation by increasing the thinker's perceptions of the difficulty and effort required to act towards achieving the vision. A study by H. B. Kappes et al. (2013) found that when people were induced to engage in a positive fantasy, their motivation to act toward realising the fantasy was lower if the perceive effort required was high rather than low. This shows that

perceptions of high effort to act can be demotivating. So, the possibility assessments inherent in planning may lower the motivation gained by vision thinking, by increasing perceptions of difficulty or effort.

Applying Vision Thinking in Planning

The barrier reducing effects of vision thinking that I propose apply during the simulation phase (i.e., during vision thinking) could provide benefits in the planning phase too. The planning phase requires the thinker to map out steps to achieve the desired outcome. If the goal is complex, there can be many barriers to discerning a path to success. If, instead of being instructed to "plan how to get to your goal", the thinker is instructed to "plan how you *got* to your goal" their focus is directed to simulating success with their planning, reducing the level of focus they would otherwise have on the associated difficulties. However, there is still some realism required of the thinker because they are asked to plan. I propose that with this direction, the thinker would tend to home in on the most feasible paths and outcomes for success. For a complex goal, this frees the thinker from the jumble of competing forces (i.e., possibilities for success counteracted by the associated difficulties), and allows them to put a positive framework in place to build the rest of the planning around (including addressing the difficulties, which is a necessary part of the planning), and to perceive the goal as more possible.

The study in this chapter will therefore include a condition where after a standard vision thinking exercise, participants engage in a vision planning phase where they are asked to imagine how they achieved the vision thinking scenario (called utopian planning). The prediction is that participants in this condition will have increased motivation, due to increased perceived possibility, compared with participants who are asked to engage in a non-vision thinking (i.e., realistic) planning phase after the standard vision thinking exercise.

The Present Research

The present research investigates the role of perceived possibility during vision thinking; arising from vision thinking (particularly regarding its effect on efficacy); and then during the planning phase of prospection that follows vision thinking.

Despite instructions to the contrary, it can be assumed that possibility assessment occurs to some degree during the vision thinking. To the extent that it does, it undermines engagement in vision thinking:

H1. The level of possibility assessment is negatively correlated with engagement in vision thinking.

Vision thinking, with the thinker presumably setting aside obstacles or plausibility considerations, increases perceptions of possibility, with subsequent positive implications for motivation:

H2. Vision thinking leads to increased perceived possibility and in turn increased efficacy which increases motivation.

Planning focuses the thinker back to questions of feasibility and, hence, possibility assessment. Possibility assessments, efficacy, and conversely, difficulty and effort, should be predictive of motivation.

H3. Planning induces possibility assessment which leads to (a) lower perceived possibility and in turn less efficacy, (b) greater perceptions of difficulty and effort needed, and mediated via (a), or (b) lower motivation.

In contrast, utopian planning, backward-looking from an imagined achievement of the outcome, is predicted to reduce the assessment of possibility:

H4. Planning that incorporates vision thinking leads to greater motivation than regular planning, via increased perceived possibility.

STUDY 5.1

Study 5.1 is an online study where participants engaged in individual vision thinking and some also engaged in one of two types of planning (regular planning or utopian planning), all on the theme of combatting climate change. The study sought to explore the role of perceived possibility in vision thinking, both how possibility assessment occurs inherently within vision thinking and how this occurrence impacts motivation, and how vision thinking's unrestrained nature may increase perceptions of possibility leading to increased motivation.

Method

The study was conducted online. Initially a survey measured participants' demographics. Participants were then randomly allocated to engage individually in one of four tasks: a vision thinking task, a vision thinking task with a planning phase, a vision thinking task with a utopian planning phase, a control task. Participants then completed survey questions that measured their engagement in vision thinking, collective action predictor tendencies (social identity, efficacy, emotions) and motivation for collective action based on the theme of combatting climate change, possibility assessment during vision thinking, perceived possibility of combatting climate change, and perceived difficulty and effort for both the self and the collective to act on climate change.

Participants

Participants were US citizens or permanent residents recruited via M-Turk (N = 590). The sample comprised 251 females, 338 males, 1 other (M_{age} = 37.99, SD = 11.64).

An a priori power analysis using G*Power version 3.1.9.2 indicated a required sample size of $N = 176$ per condition for 80% power detecting an effect size $d = 0.3$ at a significance level of $\alpha = .05$, for a two-tailed t-test (the basis for comparing effects in the vision thinking versus control condition, the vision thinking versus planning condition, and the planning versus utopian planning condition).

Materials

Manipulations

Participants were assigned to one of four conditions:

Vision Thinking Task. In the vision thinking condition participants were required to engage in a vision thinking task (for a minimum of 3 minutes) that asked them to imagine a perfect or utopian state of things in relation to the theme of combatting climate change. Participants were given the following instructions:

> Imagine a perfect or utopian state of things where the world has completely combatted climate change. Imagine the positive aspects of this perfect state of things. Try not to let your thinking be constrained by how things are now or what it feels like now. Give your thinking free reign. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated with what you are imagining. Stay focussed on the features of this imagined world. Take as long as you need to.

On completion of the task, participants were asked to describe, in writing, their imagined world in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Control Task. For the control condition, participants were asked to think for a minimum of 3 minutes about what is currently being done to combat climate change. Participants were given the following instructions:

> Think about what is currently being done to combat climate change. Stay focussed on what is being done, not on what should be done, or on what is not being done. Take as long as you need to.

On completion of the task, participants were asked to describe, in writing, what they thought about, in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Vision Thinking Plus Planning Task. In the condition that incorporated a vision thinking and a planning task, participants were required to engage in the task (for a minimum of 3 minutes) that asked them to imagine a perfect or utopian state of things in relation to the theme of combatting climate change and then plan how to get there. Participants were given the following instructions:

> Imagine a perfect or utopian state of things where the world has completely combatted climate change. Imagine the positive aspects of this perfect state of things. Try not to let your thinking be constrained by how things are now or what it feels like now. Give your thinking free reign. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated with what you are imagining. Now, plan how to get to this perfect state of things, how can this be achieved, what can be done? Stay focussed on thinking about how to achieve this. Take as long as you need to.

On completion of the task, participants were asked to describe, in writing, their imagined world in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Vision Thinking Plus Utopian Planning Task. In the condition that incorporated a vision thinking and a utopian planning task, participants were required to engage in the task

(for a minimum of 3 minutes) that asked them to imagine a perfect or utopian state of things in relation to the theme of combatting climate change and then to imagine how the world got to that perfect state of things (in contrast to the vision thinking plus planning task that asked participants to plan how to get there). Participants were given the following instructions:

> Imagine a perfect or utopian state of things where the world has completely combatted climate change. Imagine the positive aspects of this perfect state of things. Try not to let your thinking be constrained by how things are now or what it feels like now. Give your thinking free reign. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated with what you are imagining. Now, imagine how we got to this perfect state of things, how was this achieved, what was done? Stay focussed on thinking about how this was achieved. Take as long as you need to.

On completion of the task, participants were asked to describe, in writing, their imagined world in as much detail as possible. This was to help reinforce their thinking and focus relating to the task.

Measures

Unless otherwise stated, all items were scored on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Vision Thinking Components. Self-perceived engagement in vision thinking was measured by the level of the vision thinking latent variable, constructed from the four components of vision thinking.

Mental representations were measured with four items (α = .97): 1) *During the thinking task I formed an impression of how a different future could be*; 2) *During the thinking task I visualised aspects of an alternative future;* 3) *During the thinking task I felt*

what a different future would be like; 4) *During the thinking task I imagined a future that is different to the current reality.*

Unrestraint comprised four items (α = .60): 1) *During the thinking task I thought in a completely unrestrained way;* 2) *During the thinking task my thinking was limited/restricted* (reverse scored); 3) *During the thinking task I was concerned about the feasibility of what I thought about* (reverse scored); 4) *During the thinking task I thought about things that are impossible in the current reality.*

Creativity had four items (α = .85): 1) *I put a high level of creative input into the thinking task;* 2) *I came up with some creative thoughts during the thinking task;* 3) *I did not think creatively during the thinking task* (reverse scored)*;* 4) *I was not engaged in the thinking task in a creative way* (reverse scored).

Positiveness had four items (α = .84): 1) *What I thought about during the thinking task represented an utterly perfect world (or state of things*); 2) *What I thought about during the thinking task represented an extremely positive state of things;* 3) *The things I thought of in the thinking task were not at all positive* (reverse scored); 4) *The things I thought of in the thinking task did not represent a perfect world* (reverse scored).

Identity. In-group identification was measured using the same eight item scale (α = .93) as in Study 4.1 derived from Leach et al. (2008), with the wording customised to the study theme of climate change. For example, *Being a supporter of climate change action gives me a good feeling.* Refer to Appendix U for the full list of items.

Efficacy. Three items measured individual efficacy (α = .92): *I can have a positive impact on mitigating the effects of climate change; I can help mitigate the effects of climate change; There are actions I can take to mitigate the effects of climate change.*

Emotions. Two items measured hope (r = .75): *I feel hope that the impacts of climate change will be mitigated; I feel hope that the world will effectively mitigate the impacts of climate change.* One item measured anger: *I feel angry that climate change has not been combatted.*

Motivation. Motivation was measured with nine items (α = .91). There were three items that measured general motivation for collective action: *I want to become actively involved in mitigating the effects of climate change; I am motivated to act to improve the situation with the climate crisis; I plan to increase my actions to mitigate the effects of climate change.* There were four items to measure intention to take collective action: *There are a variety of things that people can do to improve universal access to education; please indicate below how much you intend to take each of the following actions:* 1) *Become a member of an action group advocating for change,* 2) *Discuss the issue with friends and associates,* 3) *Post on social media*, 4) *Sign a petition*, 5) *Make moderate changes to my lifestyle (e.g., reduce electricity use, drive less);* 6) *Invest 5% of my income to make my home more energy efficient.*

Possibility Assessment. Possibility assessment was measured using two items (r = .5): 1) *During the thinking task, I felt that what I thought about needed to be possible*; 2) *During the thinking task, I made sure that I thought about only things that were feasible.*

Perceived Possibility. The perceived possibility of combatting climate change was measured with two items (r = .66): 1) *It is absolutely possible to mitigate the impacts of climate change*; 2) *Eliminating the impacts of climate change is entirely possible.*

Difficulty and Effort. Difficulty for the self to act to mitigate climate change was measured with two items (r = .58): 1) *It would be easy for me to contribute to mitigating the impacts of climate change* (reversed-scored); 2) *It would be difficult for me to take practical*

steps to combat climate change. Difficulty for the collective to act to mitigate climate change was measured with two items (r = .39): 1) *It would be easy for supporters of action against climate change to contribute to mitigating the impacts of climate change* (reverse-scored); 2) *It would be difficult for supporters of action against climate change to take practical steps to combat climate change*.

Effort for the self to act to mitigate climate change was measured with one item: *Practical steps I could take to combat climate change would generally require considerable effort*. Effort for the collective to act to mitigate climate change was measured with one item: *Practical steps supporters of climate change action could take to combat climate change, would generally require considerable effort.*

Procedure

Using the Qualtrics survey platform, participants initially completed demographic questions, followed by either of the four tasks based on random assignment. Then participants completed the measures for the vision thinking components, possibility assessment, collective action predictors, motivation, perceived possibility, and difficulty and effort.

Results

Confirmation of the Vision Thinking Collective Action Model

As in previous studies, a confirmatory factor analysis confirmed the vision thinking latent variable and structural equation modelling confirmed the vision thinking collective action model.

Vision Thinking Latent Variable

Table 5.1 shows the means, standard deviations and Pearson's correlations for the vision thinking components.

Table 5.1

Means, Standard Deviations and Pearson's Correlations for the Vision Thinking Components

Variable	M	SD	Mental rep	Creativity	Positiveness
Mental rep	4.99	1.95	-	-	-
Creativity	5.04	1.41	0.47***	-	-
Positiveness	4.82	1.57	0.55***	0.53***	-
Unrestraint	4.29	1.11	0.47***	0.46***	0.47***

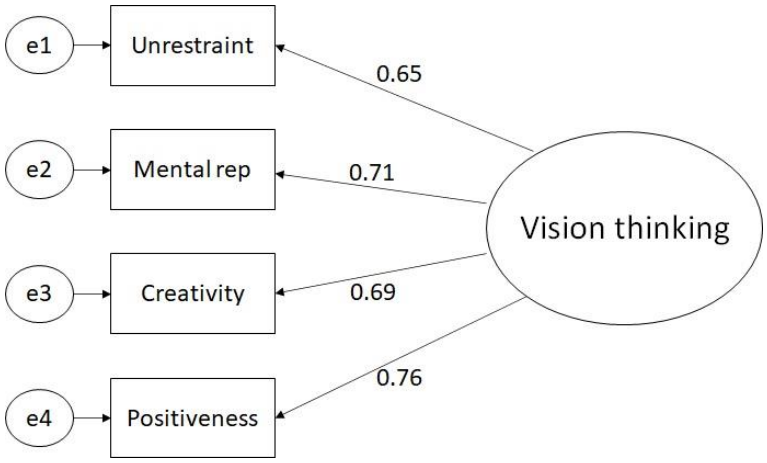
Note. $N = 297$.

*** $p < .001$

A confirmatory factor analysis using the package *Lavaan* (bootstrapping from 1,000 bootstrap samples) showed the four vision thinking components loaded on to the latent factor vision thinking. The sample size was 297 and there were no missing data. The standardised loadings are shown in Figure 5.1. The appropriate fit indices indicate close fit between the model and the data: $\chi^2(2) = 1.37$, $p = .503$, comparative fit index (CFI) = 1.00, SRMR = .01.

Figure 5.1

Vision Thinking Latent Variable



Note. Showing standardised loadings.

Vision Thinking Collective Action Model

As in previous studies the dataset confirmed the vision thinking collective action model. The results are presented in Appendix V.

Perceived Possibility During Vision Thinking

I explored the extent to which possibility assessment occurs during vision thinking; and tested if increased possibility assessment results in less engagement in vision thinking (H1).

Occurrence of Possibility Assessment During Vision Thinking

The measures to ascertain the extent to which the possibility of what was being imagined was considered during the vision thinking task included: 1) *During the thinking task, I felt that what I thought about needed to be possible* (referred to as PossAss1 below); 2) *During the thinking task, I made sure that I thought about only things that were feasible* (referred to as PossAss2 below).

Means and standard deviations for these possibility assessment measures in the vision thinking task and control conditions are presented in Table 5.2.

Table 5.2

Means and Standard Deviations for Possibility Assessment Measures by Condition

	PossAss1	PossAss2	PossAss (average)
Vision thinking task[a]	4.84 (1.73)	3.89 (1.88)	4.35 (1.58)
Control[b]	5.29 (1.53)	5.26 (1.46)	5.27 (1.32)

Note. PossAss (average) is the average of PossAss1 and PossAss2.
[a]n = 150. [b]n =147.

Scores on the 7-point Likert scale represent: 1 = *Strongly disagree,* 2 = *Disagree,* 3 = *Somewhat disagree,* 4 = *Neither agree nor disagree,* 5 = *Somewhat agree,* 6 = *Agree, 7* = *Strongly agree*. One sample t-tests showed that in the vision thinking task *PossAss1* was significantly greater than the scale midpoint of 4, $t(149) = 5.92$, $p < .001$, $d = 0.48$; and *PossAss2* was not significantly different to the scale midpoint $t(149) = -0.91$, $p < .362$, $d = 0.07$. It is evident that possibility assessment occurs when people are required to engage in vision thinking.

Although some possibility assessment occurs during vision thinking, possibility assessment was lower for the vision thinking condition compared with the control condition. An independent samples t-test shows that the average measure for possibility assessment (PossAss[average]) is lower in the vision thinking task condition compared with the control condition: $t(287.29) = 5.46$, $p < .001$, $d = 0.61$.

Relationship between Possibility Assessment and Engagement in Vision Thinking

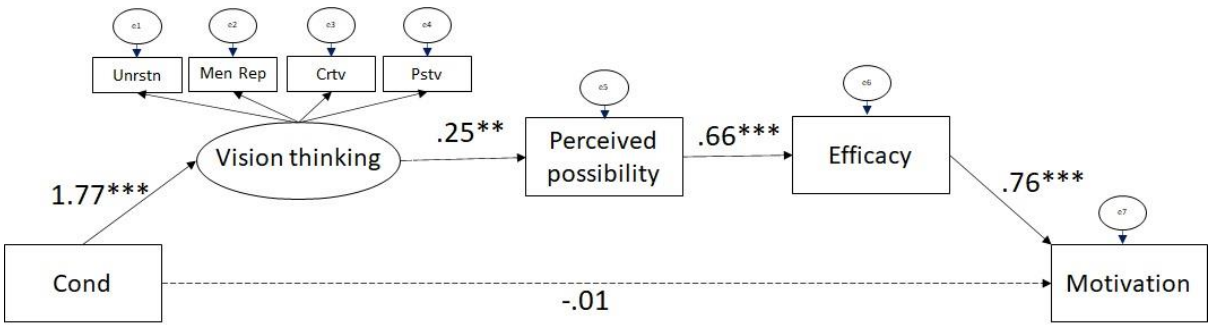
Lavaan was used to test the hypothesis that engagement in vision thinking decreases as possibility assessment during vision thinking increases. Engagement in vision thinking and possibility assessment (i.e., using both items for possibility assessment) were negatively related: $B = -0.45$ (unstandardised), $SE = 0.13$, 95% CI[-0.73, -0.20], confirming the hypothesis.

Perceived Possibility Arising from Vision Thinking

Lavaan (using bootstrapping from 1,000 bootstrap samples) was used to conduct structural equation modelling to test if engagement in vision thinking (by inducement of vision thinking) led to increased perceived possibility and in turn increased individual efficacy and then greater motivation ($N = 297$). The results are presented in Figure 5.2.

Figure 5.2

Condition on Motivation Mediated via Perceived Possibility and Efficacy



Note. Showing unstandardised estimates.

There was a significant indirect effect of vision thinking inducement to vision thinking engagement on motivation via perceived possibility and (individual) efficacy: *B* = 0.22 (unstandardised), *SE* = 0.07, 95% CI[0.08, 0.37]. There was not a significant direct effect of vision thinking inducement on motivation: *B* = -0.01 (unstandardised), *SE* = 0.10, 95% CI[-0.21, 0.17]. The total effect was marginally significant: *B* = 0.21 (unstandardised), *SE* = 0.13, 95% CI[-0.00, 0.46].

Possibility Assessment During Planning

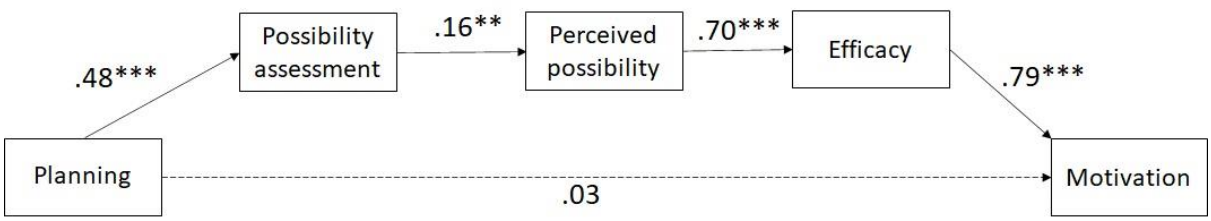
Three separate mediation analyses (using *Lavvan* with bootstrapping from 1,000 boot strap samples) were conducted to test if planning (vision thinking task condition versus vision thinking plus planning task condition) induces possibility assessment leading to, respectively for each analysis: (a) decreased perceive possibility (of the vision being realised) and in turn decreased efficacy, (b) increased perceived difficulty, and (c) increased perceived effort, and in turn leading to reduced motivation. The sample size was 293. Results for the separate models are presented below in Figures 5.3 to 5.5.

Mediation with Possibility Assessment and Perceived Possibility and Efficacy

Results for the serial mediation of planning on motivation via possibility assessment leading to perceived possibility and efficacy, are presented in Figure 5.3.

Figure 5.3

Planning on Motivation Mediated via Possibility Assessment, Perceived Possibility and Efficacy



Note. Showing unstandardised estimates.

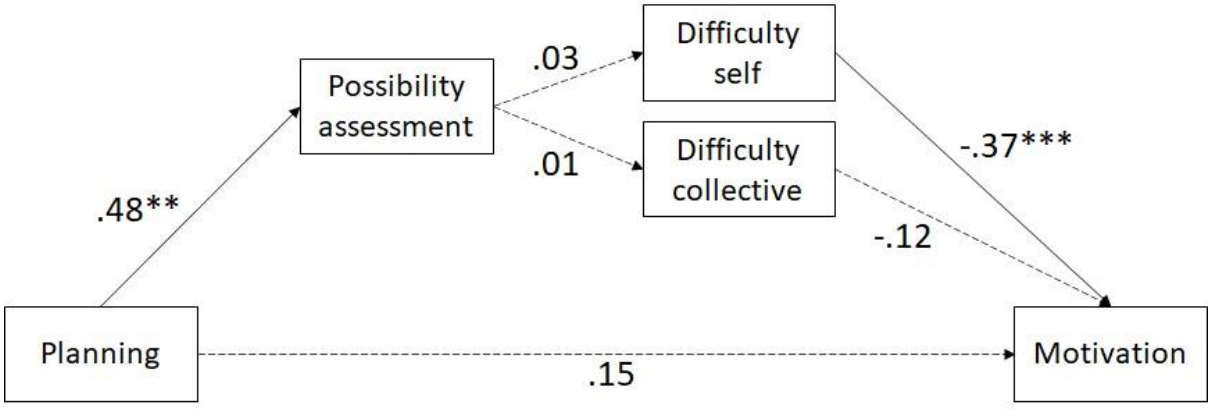
While planning led to increased possibility assessment as expected, increased possibility assessment was associated with increased, not decreased, perceived possibility. As expected, perceived possibility was associated with increased efficacy and then motivation. There was a significant indirect effect of planning on motivation via possibility assessment, perceived possibility and efficacy: *B* = 0.04 (unstandardised), *SE* = 0.02, 95% CI[0.01, 0.09]. There was not a significant direct effect of planning on motivation: *B* = 0.03 (unstandardised), *SE* = 0.11, 95% CI[-0.17, 0.27]. The total effect was not significant: *B* = 0.07 (unstandardised), *SE* = 0.11, 95% CI[-0.14, 0.32].

Mediation with Possibility Assessment and Perceived Difficulty

Results for the serial mediation of planning on motivation via possibility assessment leading to perceived difficulty, are presented in Figure 5.4. The model differentiates the effects for perceived difficulty for the self (to act to mitigate climate change) from perceived difficulty for the collective (to act to mitigate climate change).

Figure 5.4

Effect of Planning on Motivation via Possibility Assessment and Perceived Difficulty



Note. Showing unstandardised estimates.

Planning was associated with increased possibility assessment, but increased possibility assessment was not associated with perceptions of difficulty for either the self or

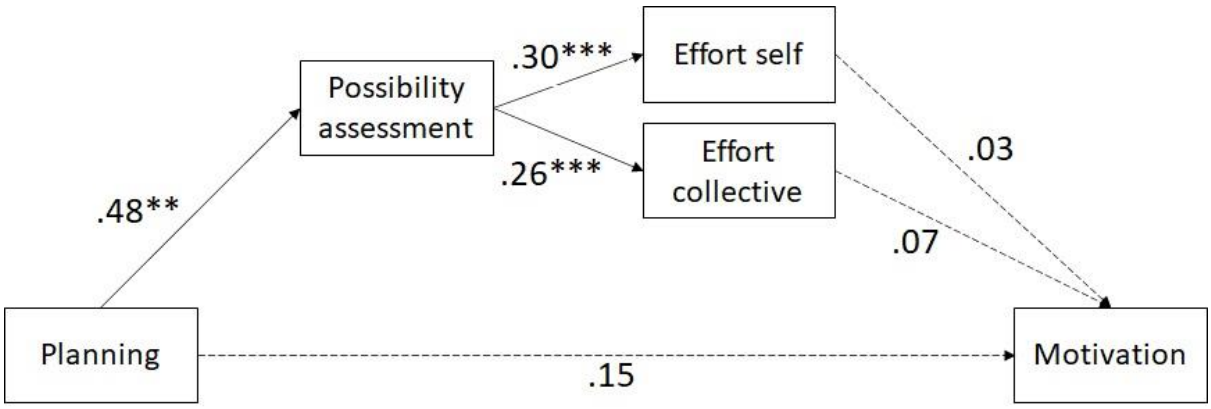
the collective. However, perceptions of difficulty for the self (but not for the collective) were negatively related to motivation. There was not a significant direct effect of planning on motivation: *B* = 0.15 (unstandardised), *SE* = 0.14, 95% CI[-0.11, 0.44].

Mediation with Possibility Assessment and Perceived Effort

Results for the serial mediation of planning on motivation via possibility assessment leading to perceived effort, are presented in Figure 5.5. The model differentiates the effects for perceived effort for the self (to act to combat climate change) from perceived effort for the collective (to act to combat climate change).

Figure 5.5

Effect of Planning on Motivation via Possibility Assessment and Perceived Effort



Note. Showing unstandardised estimates.

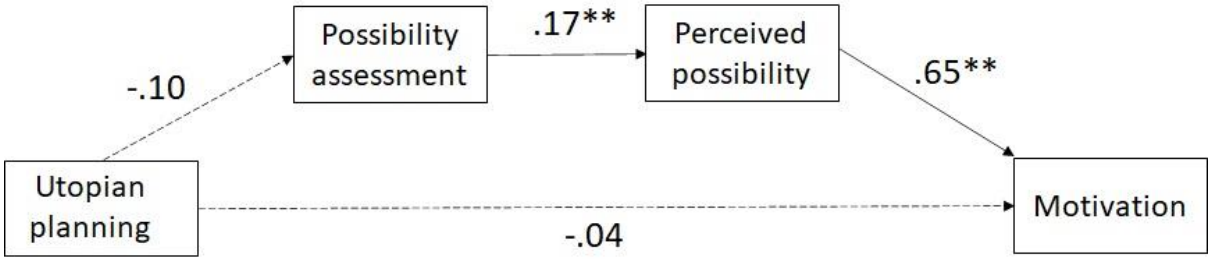
Planning was associated with increased possibility assessment, which was positively associated with perceptions of effort for both the self and the collective. Perceptions of effort for both the self and the collective, however, were not related to motivation. There was not a significant direct effect of planning on motivation: *B* = 0.15 (unstandardised), *SE* = 0.16, 95% CI[-0.14, 0.48].

Utopian Planning

The hypothesis is that planning that incorporates vision thinking (i.e., utopian planning, where the planning phase involves vision thinking, as opposed to vision thinking plus planning where regular planning follows vision thinking), leads to greater motivation than regular planning, via decreased possibility assessment, leading to increased perceived possibility. Results of the mediation analysis are presented in Figure 5.6 and reveal that there was no effect of condition (i.e., utopian planning versus regular planning) on possibility assessment. Possibility assessment was positively related to perceived possibility, which in turn was positively associated with motivation. There was no direct effect of condition on motivation (*B* = -0.04, *SE* = 0.13, 95% CI[-0.29, 0.22]).

Figure 5.6

Effect of Utopian Planning on Motivation via Possibility Assessment and Perceived Possibility



Note. Showing unstandardised estimates.

Discussion

Perceptions of possibility relate to vision thinking in various ways, and it has been the purpose of this chapter to unpack their intermeshed effects and clarify the role they play in the process and outcomes of vision thinking. Although vision thinking is characterised by unrestraint, assessments of the possibility of what is being imagined, may infiltrate the thinking and assessments of possibility can limit engagement in vison thinking. Still, as vision thinking is designed to set aside considerations of present feasibility and possibility, it

increases the perceived possibility of the imagined outcome occurring. Unlike future thinking associated with fantasies, which has been found to be demotivating, vision thinking is associated with heightened motivation via increased perceived possibility.

Looking in more detail at the findings, first, although vision thinking is characterised by unrestraint—allowing the thinker to transcend the current reality to imagine a more ideal future without being held back by considerations of the feasibility of this ideal future—possibility assessments of what one is thinking about do inherently occur during vision thinking. To the extent that they do occur, the actual engagement in self-perceived vision thinking (as indicated by its characteristic qualities) is reduced. Possibility assessment is lower in vision thinking than in the control task. So, although possibility assessment creeps into vision thinking, vision thinking is characterised and given value (in terms of its link with motivation) by the fact that this assessment is limited. Yet, possibility assessment increases once the thinker is asked to also plan how their imagined ideal future would be achieved.

Second, vision thinking increases perceived possibility, which is associated with higher efficacy (a collective action predictor) and motivation. It is an interesting paradox that if one begins assessing how possible their imagined future is it reduces their vision thinking, but if they can overcome this tendency and more rigorously engage in vision thinking, it expands what is seen as possible. Clearly, being able to induce vision thinking, or encourage oneself to engage more strongly in vision thinking, is useful for increasing motivation via perceptions of possibility.

The finding that vision thinking increases perceived possibility, which is in turn associated with heightened motivation, is contrary to findings that positive fantasies demotivate (H. B. Kappes & Oettingen, 2011; H. B. Kappes et al., 2012; Oettingen & Mayer, 2002). Positive fantasies demotivate because they provide satisfaction to the thinker, without

increasing positive expectancy judgements which are a key driver of motivation (A. Kappes & Oettingen, 2014; for a review H. B. Kappes & Morewedge, 2016). I proposed that vision thinking might be different because vision thinking is about a complex collective issue, and it serves to simplify the issue, by removing and making a solution seem more possible. The finding that perceived possibility increases with vision thinking provides support to this idea. Also, regarding vision thinking outcomes, the concern with motivation is not to raise the thinker's motivation to achieve the idealised state, but rather to make a positive contribution towards resolution of the issue — the target of the motivation is therefore more achievable.

Given that expectancy beliefs are known to inform motivation (Oettingen, 2012; Oettingen & Mayer, 2002), I also tested if planning affects expectancy beliefs, and hence motivation. Specifically, I tested the effects of planning induced expectancy beliefs due to (a) considerations of the feasibility of achieving the vision, and (b) and effort and difficulty associated with taking action towards achieving the vision. Motivation post planning is a more realistic measure of motivation, that is translatable to real world scenarios, as planning is an inherent part of the prospection process (Baumeister et al., 2016; K. K. Szpunar et al., 2014). Planning requires the thinker to consider the feasibility of outcomes so they can determine a path to achieving their goal. It was expected that the level of possibility assessment that occurs during planning would lower the gains in motivation from vision thinking. The thinker was asked to plan how to achieve their ideal state of things where the impacts of climate change had been combatted. Planning did increase possibility assessment as expected, but surprisingly this was associated with increased perceived possibility and motivation. This may have been due to beneficial effects of planning (e.g., breaking the final desired outcome down into smaller manageable chunks, setting out clear steps to achieve aspects of the goal etc). Testing the effects of perceived difficulty and effort arising from possibility assessment during planning, showed that perceived effort for both the collective

and the self, increased with planning but these perceptions did not affect motivation. Possibility assessments did not increase perceptions of difficulty for either the self or the collective, so this was not a mechanism in reducing motivation. In any case, the important finding is that the possibility assessments during the planning phase did not deplete the gains in motivation from vision thinking (and in fact enhanced them).

Finally, I tested so see if the mechanism in vision thinking that raises perceived possibility has similar value when applied to the planning phase. I tested if a vision thinking task followed by a utopian planning task (i.e., where the thinker was asked to imagine how they achieved the vision thinking scenario) would raise perceived possibility, by lowering possibility assessments, and hence motivation, compared with a vision thinking task followed by a regular planning task. However, there was no difference in possibility assessment between the regular planning and the utopian planning.

In summary, although possibility assessment is part of vision thinking, it is the relatively unrestrained nature of vision thinking that gives it the capacity to increase efficacy (a collective action predictor) and motivation via increased perceived possibility. The thinking is freer (i.e., less possibility assessment) for vision thinking, which is at the simulation end of prospection, compared with thinking in the planning phase. Unlike the outcomes from the positive fantasy research, vision thinking raises perceived possibility which is associated with increased efficacy and motivation) that is sustained through subsequent possibility assessments, even when those possibility assessment involve perceptions of difficulty for the self to attain the goal.

CHAPTER 6: Social Identity Formation in Vision Thinking and Group Effects

This chapter examines social identity formation in vision thinking, and how it is affected by vision thinking that involves interaction with others compared with vision thinking that is done alone by the individual.

A social identity is an individual's sense of self which comes from membership of a group that is meaningful and important to them (Turner, 1985). The pathway from vision thinking to motivation to take collective action, via social identity, is a fundamental part of the vision thinking collective action model. The preceding studies in this thesis have consistently demonstrated the strength of this pathway. This pathway matters not only because it leads to immediate motivation to take collective action, but also because the formation of a social identity sustains ongoing motivation to take collective action (Louis et al., 2020).

Social identity is also a fundamental consideration in leadership (Haslam et al., 2011; Steffens et al., 2014), a field very relevant to vision thinking. Forming or strengthening a shared social identity for the group (being led) is an important aspect of leading change. Research over the last decade has shown that to gain influence, leaders need to be seen as representative of the shared beliefs, values, and norms of the group, and they need to be perceived to be working for the group to advance the group's collective interest – they need to be seen as a prototype of that social identity. The implication for leaders is that they need to form an identity for the group, and for themselves as a representative of that group, that facilitates their capacity to influence the group (Haslam, 2004; Haslam et al., 2011, 2015; Steffens et al., 2013a; Steffens et al., 2014; van Knippenberg & Hogg, 2003). So, a shared social identity is not only a predictor of collective action, but specifically in the context of

vision thinking with its connection to leadership, it connects the leader to the visions of the group members and facilitates the leader to influence the group members.

Vision Thinking for Social Identity Formation

Self-categorisation theory explains how an individual forms a social identity (Turner et al., 1987). Reflecting on self-categorisation theory in the context of vision thinking will expound how vision thinking could promote the formation of a social identity. According to self-categorisation theory, interaction between individuals in a setting that emphasises their similarity can lead them to categorise themselves as group members, with a shared social identity (Turner et al., 1987). Such things as perceived similarity to others in attitudes and values, being in the same circumstances, a common fate, shared goals, proximity and social contact, shared outcomes, shared threat, and a common enemy can be the basis for a common categorisation of self and others and the formation of a shared identity (Turner et al., 1987; Turner et al., 1994; Turner & Reynolds, 2012).

Accordingly, social contexts, social interaction, and social influence processes (including leadership) that foster the perception of sharedness, closeness or consensus, promote the self-categorisation of the members within this social context, into group membership with each other. These processes of self-categorisation would occur irrespective of the content or quality of what is shared or held in common. I will refer to these self-categorisation processes, that are based on social interaction but are independent of the nature of what is being shared, as *generic* mechanisms of social identity formation. From generic mechanisms we can distinguish *vision thinking specific* mechanisms, which are due to individuals forming shared views, consensus and norms based on the specific qualities of vision thinking (i.e., mental representations of the future, positiveness, creativity, and unrestraint).

Generic Mechanisms for Social Identity Formation

The generic self-categorisation mechanisms in vision thinking are those that would be present in other activities that share features—except the unique combination of the four vision thinking components—with vision thinking. In vision thinking done in interaction with others these generic mechanisms would include proximity and social contact (Turner et al., 1987), communication (Postmes et al., 2006), group interaction (Thomas et al., 2016), a shared goal (Wegge & Haslam, 2003), and the sharing of ideas and of one's identity (mechanisms conducive to the bottom-up process of inductive social identity formation) (Postmes, Haslam, et al., 2005). For vision thinking conducted in interaction with others, to detect a specific contribution by vision thinking to the self-categorisation processes that leads to a shared social identity—beyond self-categorisation due to generic mechanisms—group vision thinking would need to be compared with an activity that also provides these generic mechanisms, for example, a positive group discussion.

Vision Thinking Specific Mechanisms for Social Identity Formation

I propose that what distinguishes vision thinking from other positive group interactions and types of thinking is that the unique combination of characteristics in vision thinking (i.e., the formation of mental representations, creativity, positiveness, unrestraint) leverages additional self-categorisation.

The nature of vision thinking aligns with the self-categorisation account of how group member identities are formed by individuals. The positiveness of vision thinking and the formation of this positiveness into a mental representation underpins the formation of a social identity. According to social identity theory, people seek to establish or maintain positive social identities (Tajfel, 1982). In vision thinking the thinker generates a positive image or representation of a future that implicates their collective. It acts as an assumed consensus about a future that would be valuable to the group; a positive understanding of their group in

the future. A social consensus is vital to the process of self-categorising as a group member, and to the expression of social identity (Postmes et al., 2006).

The unrestraint of vision thinking contributes to the self-categorisation process because it enables the formation of a *positive* mental representation that may not be obtainable with other types of thinking (i.e., where ideas must be feasible). The value of vision thinking derives from the construction of an image of the future that is more positive than the current reality, so that it can motivate positive change. The unrestrained nature of vision thinking frees the thinker to construct a more positive future, despite the complexities and barriers to change that hold the current reality as it is.

Creativity is also central to self-categorisation in the vision thinking context (Haslam, Adarves-Yorno, Postmes, & Jans, 2013). First, a mental representation could not exist without a creative process. Second, the fact that vision thinking is a creative process means the thinker is more connected to the vision. Connection with the vision, to which the thinker perceives others are connected, is crucial to the self-categorisation process (i.e., it emphasises similarity and shared outcomes with others). Furthermore, engagement in a creative process that requires effort and thought, leads to an investment in the outcome (Collins & Amabile, 1999). Being invested in the mental representation, means the thinker values it and is connected to it, setting the foundation for the self-categorisation process that arises from vision thinking.

Vision Thinking in Groups

The self-categorisation processes described above, that are supported by the four vision thinking components, and lead to the formation of a social identity, apply at the individual level of vision thinking. When vision thinking occurs in interaction with others, it creates a setting where group members influence each other's thinking. The vision thinking

specific qualities that lead to self-categorisation are likely to be enhanced by social influence factors.

In group vision thinking, group members create mental representations of a future that would be valuable to the group. As individuals share their mental representations with group members, social influence processes, mutual validation and shared consensus building are likely to lead to a clearer, shared and identity-defining, mental representation. The creative aspect of vision thinking is likely to be enhanced by interaction with others and the pooling of ideas from diverse sources (Wong, Chow, Lau, & Gong, 2015). Additionally, process of group polarisation—where together as a group members form more extreme views and make more extreme decisions than the prior inclination of each individual group member (Lord, Ross, & Lepper, 1979)—could lead to a group norm being shifted towards more extreme, more radically positive, unrestrained, and innovative thinking.

Engaging in vision thinking in interaction with others—where group members are interacting to establish a shared positive vision—may be especially effective at creating a shared social identity among group members.

The Present Research

The present research investigates the role of vision thinking in social identity formation, based on the theme of climate change action. The first objective is to test the effectiveness of group vision thinking, compared with a control group task (discussion about what is currently being done to combat climate change), in facilitating identity formation. Both identification with the cause (i.e., with supporters of climate change action generally) and identification with the task group (i.e., those with which the study participant completed the thinking/discussion task) are considered as outcome measures. The prediction is that

vision thinking facilitates social identity formation more than the control group activity, mediated by the extent of engagement in vision thinking.

H1. Group vision thinking leads to greater social identity formation (both identification with the cause, and identification with the task group) than positive group discussion, mediated by engagement in vision thinking.

The second objective is to examine whether group vision thinking leads to greater social identity formation (identification with the cause) than individual vision thinking. The prediction is that group vision thinking—due to processes of social interaction, mutual social influence, shared consensus building, and group polarization enhancing the qualities of vision thinking—will lead to greater engagement in vision thinking than will individual vision thinking, in turn leading to increased social identity formation:

H2. Compared with individual vision thinking, group vision thinking leads to greater social identity formation (identification with the cause), mediated by engagement in vision thinking.

In addition, I will explore differences in the levels of the separate vision thinking components (mental representations, unrestraint, positiveness, creativity) for (a) group vision thinking compared with positive group discussion, and (b) group vision thinking compared with individual vision thinking.

STUDY 6

Study 6, based on the theme of climate change, and run online, examined how vision thinking leads to social identity formation, and the differences in social identity formation between group vision thinking and individual vision thinking.

Method

The study was conducted entirely online. Initially a survey measured participants' demographics. Participants were then randomly allocated to engage in a vision thinking task involving online interaction with other study participants in small groups, a control discussion task involving online interaction with others, or an online individual vision thinking task, all based on the theme of combatting climate change. Participants then completed survey questions that measured their engagement in vision thinking, social identity, efficacy, emotions (hope and anger) and motivation for collective action in relation to combatting climate change.

Participants

Participants were US citizens or permanent residents recruited via M-Turk (N = 697). The sample comprised 380 females, 308 males, 9 other (M_{age} = 40.08, SD = 12.22).

Seventy-nine participants were removed from the original sample. Participants were removed if they left the group chat before the task was complete, did not contribute to the group task (indicated by no text responses), or were part of a group where all other members either left the chat early or did not contribute.

Given the grouped nature of the data and the likely need for multilevel analysis, a similar study (Thomas et al., 2016) was used as the basis for determining the number of participants required in the present study. The study was similar in terms of the study structure (i.e., online chat room for group discussion), effects to be detected, and make up of conditions (i.e., two group discussion conditions plus an individual control condition). The aim was to recruit 240 participants to each of the group conditions and 175 to the individual condition.

Materials

Manipulations

Participants were assigned to one of three conditions: a group vision thinking task in interaction with others; a group discussion task in interaction with others; and an individual vision thinking task.

Group Vision Thinking Task. In the group vision thinking task participants were required to engage in a vision thinking task (for 5 minutes) in interaction with other participants, that asked them to imagine a perfect or utopian state of things in relation to the theme of combatting climate change.

Participants were given the following set of instructions (generic to both the group vision thinking condition and the group discussion condition):

> On the next page we would like you to undertake a group thinking task via an online chat room (written interaction only, no audio or video). Initially you will be put into a virtual waiting room until 3 other people have joined the group; this shouldn't take longer than a couple of minutes (you can use this waiting time to prepare for the task). Then the group chat will begin.

Participants were then given instructions specific to the group vision thinking condition:

> Protocol for the group chat: (a) do not comment negatively on others' contributions; (b) focus on being creative and generating ideas, not assessing ideas.
>
> Your task as a group is to imagine a perfect or utopian state of things where the world has completely combatted climate change. Imagine the positive aspects of this perfect state of things. Try not to let your thinking be constrained by how things are now or

what it feels like now. Give your thinking free reign. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated with what you are imagining. Stay focussed on the features of this imagined world.

Please start the group chat by describing an aspect of this perfect world, then build on the ideas of others.

Group Discussion Task. In the group discussion condition participants were required to engage in a group discussion task (for 5 minutes) in interaction with other participants, that asked them to discuss what is currently being done to combat climate change. Participants were given the same set of generic instructions as in the group vision thinking condition (refer above). Participants were then given instructions specific to the group discussion condition:

Protocol for the group chat: (a) do not comment negatively on others' contributions; (b) ensure the group discussion stays focussed on the task.

Your task as a group is to discuss what is currently being done to combat climate change. Stay focussed on what is being done, not on what should be done, or on what is not being done.

Please start the group chat by offering a comment (about what is being done about climate change), then build on the discussion of others.

Individual Vision Thinking Task. In the individual vision thinking condition participants were required to engage in a vision thinking task (for 3 minutes) by themselves, that asked them to imagine a perfect or utopian state of things in relation to the theme of combatting climate change. Participants were given the following instructions:

Imagine a perfect or utopian state of things where the world has completely combatted climate change. Imagine the positive aspects of this perfect state of things.

> Try not to let your thinking be constrained by how things are now or what it feels like now. Give your thinking free reign. Imagine the outcomes as vividly as you can and allow yourself to feel any emotions associated with what you are imagining. Stay focussed on the features of this imagined world.

On completion of the task, participants were asked to describe, in writing, their imagined world in as much detail as possible (for 2 minutes). This was to help reinforce their thinking and focus relating to the task.

Measures

Unless otherwise stated, all items were scored on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*).

Vision Thinking Components. Self-perceived engagement in vision thinking was measured by the level of the vision thinking latent variable, constructed from the four components of vision thinking.

Mental representations were measured with four items (α = .96): 1) *During the thinking task I formed an impression of how a different future could be*; 2) *During the thinking task I visualised aspects of an alternative future;* 3) *During the thinking task I felt what a different future would be like;* 4) *During the thinking task I imagined a future that is different to the current reality.*

Unrestraint comprised four items (α = .73): 1) *During the thinking task I thought in a completely unrestrained way;* 2) *During the thinking task my thinking was limited/restricted* (reverse scored); 3) *During the thinking task I was concerned about the feasibility of what I thought about* (reverse scored); 4) *During the thinking task I thought about things that are impossible in the current reality.*

Creativity had four items (α = .90): 1) *I put a high level of creative input into the thinking task;* 2) *I came up with some creative thoughts during the thinking task;* 3) *I did not think creatively during the thinking task* (reverse scored)*;* 4) *I was not engaged in the thinking task in a creative way* (reverse scored).

Positiveness had four items (α = .80): 1) *What I thought about during the thinking task represented an utterly perfect world (or state of things*); 2) *What I thought about during the thinking task represented an extremely positive state of things;* 3) *The things I thought of in the thinking task were not at all positive* (reverse scored); 4) *The things I thought of in the thinking task did not represent a perfect world* (reverse scored).

Identity. There were two social identity measures: in-group identification with a group promoting the cause (of climate change action); in-group identification with the task group (for the group vision thinking and group discussion conditions only).

Identification with a Group Promoting the Cause. In-group identification with a group promoting the cause was measured using the same eight item scale (α = .93) used in Study 4.1, derived from Leach et al. (2008), with the wording customised to the study theme of climate change. For example: *Being a supporter of climate change action gives me a good feeling.* Refer to Appendix U for the full list of items.

Identification with the Task Group. In-group identification with the task group was measured with three items (α = .88): *I feel solidarity with my chat room group; I have respect for my chat room group members; I am like other members of my chat room group.*

Efficacy. Two items measured individual efficacy (*r* = .72): *I can help mitigate the effects of climate change; There are actions I can take to mitigate the effects of climate change.*

Emotions. Two items measured hope (r = .66): *I feel hope that the impacts of climate change will be mitigated; I feel hope that the world will effectively mitigate the impacts of climate change.* One item measured anger: *I feel angry that climate change has not been combatted.*

Motivation. Motivation was measured with eight items (α = .90). There were two items that measured general motivation for collective action: *I want to become actively involved in mitigating the effects of climate change; I plan to increase my actions to mitigate the effects of climate change.* There were six items to measure intention to take collective action: *There are a variety of things that people can do to improve universal access to education; please indicate below how much you intend to take each of the following actions:* 1) *Become a member of an action group advocating for change,* 2) *Discuss the issue with friends and associates,* 3) *Post on social media,* 4) *Sign a petition,* 5) *Make moderate changes to my lifestyle (e.g., reduce electricity use, drive less);* 6) *Invest 5% of my income to make my home more energy efficient.*

Procedure

Using the Qualtrics survey platform, participants initially completed demographic questions, before being randomly assigned to one of the three conditions. For the group vision thinking task and the group discussion task, the chat platform application ChatPlat was embedded in the Qualtrics survey page. The group task commenced when four participants had joined the chat room. Participants could see all participants' contributions posted in chronological order on the survey page, including their own. Participants completed the online chat task and progressed to the next survey page. Participants in the individual vision thinking task completed their task directly in Qualtrics then progressed. All participants then completed the measures for the vision thinking components, social identity, efficacy, emotions (hope and anger), and motivation for collective action.

Results

Assessing Need for Multilevel Analysis

To determine if multilevel analysis was required, for each condition involving groups (group discussion, group vision thinking) the intraclass correlation coefficient (ICC) (i.e., the ratio of variance explained by the multilevel structure [variance between groups] to the variance of the outcome variable [vision thinking component]) was calculated for the vision thinking components (mental representation, positiveness, creativity, unrestraint). The function *lmer()* in the *R* package *lme4* was used. The results are presented in Table 6.1.

Table 6.1

Intraclass Correlation Coefficients

Condition	Unrestraint	Mental rep	Creativity	Positiveness
Group discussion[a]	.005	.156	.078	.072
Group vision thinking[b]	.001	.000	.026	.006

Note. [a]*n* = 258 (group discussion condition). [b]*n* = 279 (group vision thinking condition).

In the group vision thinking condition, all the ICCs were considerably lower than 0.1, and so multilevel analysis was not deemed necessary for this condition in isolation (Zhang & Wang, 2017). However, in the group discussion condition three of the vision thinking components had intraclass correlations close to or greater than 0.1 so multilevel analysis was deemed necessary for any analysis which included the group discussion condition.

Group Vision Thinking versus Group Discussion

Multilevel analysis was used for the analyses in this section.

Vision Thinking Latent Variable

The robustness of the vision thinking latent variable (used in subsequent analysis) was tested. Table 6.2 shows the means, standard deviations and Pearson's correlations for the vision thinking components.

Table 6.2

Means, Standard Deviations and Pearson's Correlations for the Vision Thinking Components

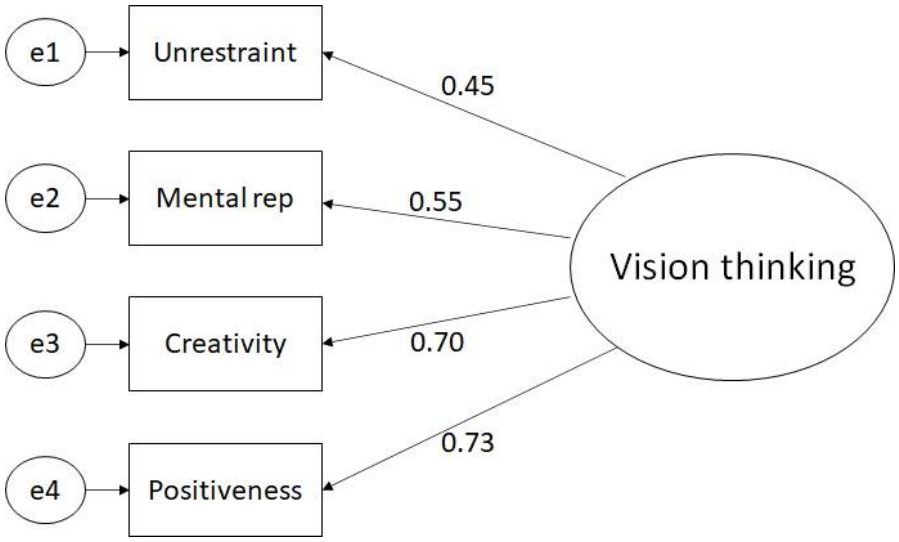
Variable	*M*	*SD*	Mental rep	Creativity	Positiveness
Mental rep	5.49	1.56	-	-	-
Creativity	5.37	1.24	.47***	-	-
Positiveness	5.07	1.36	.58***	.55***	-
Unrestraint	4.26	1.02	.45***	.46***	.51***

Note. $N = 537$, group vision thinking and group discussion conditions.
*** $p < .001$

A confirmatory factor analysis (CFA) was run using *Laavan* in *R* version 3.6.3 employing multilevel modelling across the sample to account for the between group variance in the group discussion condition (the vision thinking latent variable was treated as a within only construct: level 1 was within, and level 2 was between). The sample size was 537 (for the group vision thinking condition and the group discussion condition combined) and there were no missing data. The number of task groups (i.e., vision thinking task groups or discussion task groups) across both conditions was 160 with the group size ranging from two to four with an average of 3.4. The standardised loadings are shown in Figure 6.1. The appropriate fit indices indicate a close fit between the model and the data: $\chi^2(2) = 0.94$, $p = .626$, comparative fit index (CFI) = 1.00, SRMR = .02.

Figure 6.1

Vision Thinking Latent Variable



Note. Showing standardised loadings.

The focus in this chapter is the effect of group vision thinking versus individual vision thinking on identity formation. However, for completeness and confirmation of the vision thinking collective action model with the present dataset, multilevel structural equation modelling analysis was run for the vision thinking collective action model and is presented in Appendix W. The planned analysis assumes that the vision thinking collective action model stands for this dataset. The analysis confirms the model.

Social Identity Formation

To test if group vision thinking leads to greater social identity formation, mediated by engagement in vision thinking, than positive group discussion, structural equation modelling was run using *Lavaan* in *R* version 3.6.3 employing multilevel modelling. The group discussion condition was assigned a value of 0, and the group vision thinking condition a value of 1. The mediation was tested separately for both social identity measures (i.e., identification with a group promoting the cause, identification with the task group).

Table 6.3 reports the means, standard deviations, bivariate correlations, and internal consistency measures for the dependent variables.

Table 6.3

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	*M*	*SD*	Identity (cause)	Identity (task)
Identity (cause)	5.35	1.13	-	-
Identity (task)	5.53	1.23	.58***	-
Motivation	5.29	1.16	.81***	.48***

Note. $N = 537$.

***$p < .001$.

Group Promoting the Cause. Overall there was no difference in social identity (with a group promoting the cause) for the group vision thinking condition compared with the group discuss condition ($B = 0.14$, $SE = 0.10$, $t(535) = 1.42$, 95% CI[-0.05, 0.33]), just a trend towards greater social identity for the group vision thinking condition. However, there was more engagement in vision thinking in the group vision thinking condition than in the group discussion condition ($B = 1.61$, $SE = 0.12$, 95% CI[1.37, 1.85]), and more engagement in vision thinking was associated with greater social identity ($B = 0.63$, $SE = 0.08$, 95% CI[0.48, 0.78]). The indirect effect of condition (group vison thinking, group discussion) on social identity via vision thinking was significant ($B = 1.01$, $SE = 0.13$, 95% CI[0.75, 1.27]).

Task Group. Social identity (with the task group) was significantly higher in the group vision thinking condition than the group discussion condition ($B = 0.37$, $SE = 0.11$, $t(535) = 3.49$, 95% CI[0.16, 0.57]). Increased engagement in vision thinking was associated with greater social identity ($B = 0.59$, $SE = 0.08$, 95% CI[0.43, 0.75]). The indirect effect of

condition (group vison thinking, group discussion) on social identity via vision thinking was significant (*B* = 0.95, *SE* = 0.14, 95% CI[0.68, 1.22]).

For further exploration a multiple regression using *Lavaan* was used to test the relative strength of the contribution to motivation, of identification with the task group versus identification with a group promoting the cause. The results reveal that for identification with the task group the relationship to collective action motivation was non-significant (*B* = 0.02, *SE* = 0.03, 95% CI[-0.04, 0.08]) whereas identification with the cause was significantly related to motivation (*B* = 0.83, *SE* = 0.04, 95% CI[0.75, 0.89]).

Group Vision Thinking versus Individual Vision Thinking

The analysis in this section did not require multilevel analysis.

Vision Thinking Latent Variable

The robustness of the vision thinking latent variable (used in subsequent analysis) was tested. Table 6.4 shows the means, standard deviations and Pearson's correlations for the vision thinking components.

Table 6.4

Means, Standard Deviations and Pearson's Correlations for the Vision Thinking Components

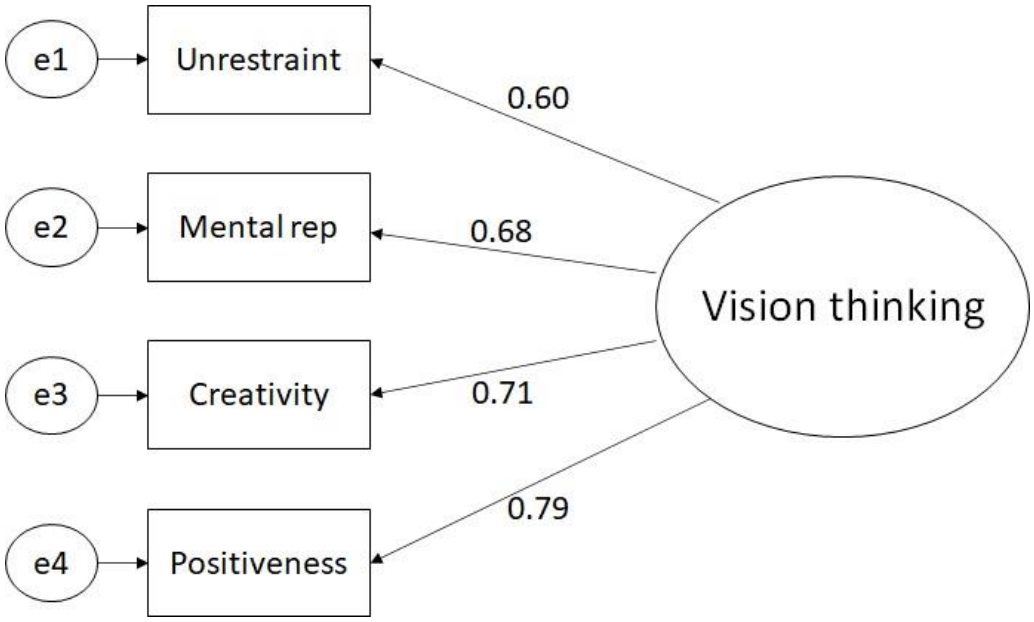
Variable	*M*	*SD*	Mental rep	Creativity	Positiveness
Mental rep	6.33	1.56	-	-	-
Creativity	5.70	1.01	.50***	-	-
Positiveness	5.84	1.02	.55***	.54***	-
Unrestraint	4.81	0.93	.35***	.45***	.49***

Note. $N = 439$, group vision thinking and individual vision thinking conditions.
*** $p < .001$

A confirmatory factor analysis using the package *Lavaan* in *R* version 3.6.3 (bootstrapping from 1,000 bootstrap samples) showed the four vision thinking components loaded on to the factor vision thinking. The sample size was 439 and there were no missing data. The standardised loadings are shown in Figure 6.2. The appropriate fit indices indicate a good fit between the model and the data: $\chi^2(2) = 7.78$, $p = .020$, comparative fit index (CFI) = 0.99, SRMR = .02.

Figure 6.2

Vision Thinking Latent Variable



Note. Showing standardised loadings.

For confirmation of the vision thinking collective action model with the group vision thinking and individual vision thinking conditions, structural equation modelling was run using *Lavaan* (bootstrapping from 1,000 bootstrap samples). The results are presented in Appendix W. The analysis confirms the model.

Social Identity Formation

To test if group vision thinking leads to greater social identification with a group promoting the cause than individual vision thinking, via vision thinking engagement, structural equation modelling was employed (using *Lavaan* and bootstrapping from 1,000 bootstrap samples). The group vision thinking condition was assigned a value of 0, and the individual vision thinking condition a value of 1.

The means, standard deviations, bivariate correlations, and internal consistency measures for the dependent variables are reported in Table 6.5.

Table 6.5

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	*M*	*SD*	Identity (cause)
Identity (cause)	5.32	1.14	-
Motivation	5.32	1.20	0.81***

Note. $N = 439$.

*** $p < .001$.

Overall, there was a marginal difference between conditions, reflecting a higher social identity for the group vision thinking condition compared with the individual vision thinking condition ($B = -0.20$, $SE = 0.11$, $t(437) = -1.81$, 95% CI[-0.42, 0.01]). There was no effect of condition on engagement in vision thinking ($B = 0.07$, $SE = 0.06$, 95% CI[-0.05, 0.19]), and engagement in vision thinking was associated with greater social identity ($B = 0.89$, $SE = 0.11$, 95% CI[0.68, 1.13]).

Vision Thinking Components

Differences in levels of each of the four vision thinking components between (a) the group vision thinking condition and the group discussion (control) condition, and (b) the

group vision thinking condition and individual vision thinking condition is presented in this section.

Group Vision Thinking vs. Group Discussion

Mental Representations. The level of mental representations was higher in the group vision thinking condition (M = 6.29, SD = 0.87) compared with the group discussion condition (M = 4.61, SD = 1.68), $t(379.12) = 14.34$, $p < .001$, $d = 1.93$.

Unrestraint. Unrestraint was higher in the group vision thinking condition (M = 4.71, SD = 0.92) compared with the group discussion condition (M = 3.76, SD = 0.89), $t(533.84) = 12.14$, $p < .001$, $d = 1.03$.

Positiveness. Positiveness was higher in the group vision thinking condition (M = 5.82, SD = 1.03) compared with the group discussion condition (M = 4.26, SD = 1.20), $t(507.91) = 16.07$, $p < .001$, $d = 1.51$.

Creativity. Creativity was higher in the group vision thinking condition (M = 5.70, SD = 1.01) compared with the group discussion condition (M = 5.02, SD = 1.36), $t(474.45) = 6.50$, $p < .001$, $d = 0.67$.

Group Vision Thinking vs. Individual Vision Thinking

Mental Representations. There was no difference in the level of mental representations between the individual vision thinking condition (M = 6.39, SD = 0.82) and the group vision thinking condition (M = 6.29, SD = 0.87), $t(349.09) = -1.20$, $p = .231$.

Unrestraint. Unrestraint was higher in the individual vision thinking condition (M = 4.97, SD = 0.93) compared with the group vision thinking condition (M = 4.71, SD = 0.92), $t(327.43) = -2.78$, $p = .006$, $d = 0.31$.

Positiveness. There was no difference in positiveness between the individual vision thinking condition (M = 5.87, SD = 1.02) and the group vision thinking condition (M = 5.82, SD = 1.03), $t(333.55) = -0.57$, $p = .568$.

Creativity. There was no difference in creativity between the individual vision thinking condition (M = 5.69, SD = 1.01) and the group vision thinking condition (M = 5.70, SD = 1.01), $t(332.23) = .09$, $p = .929$.

Discussion

This study has shed light on the formation of social identity during self-perceived vision thinking, and on differences with how individual vision thinking (i.e., vision thinking alone) versus group vision thinking (i.e., vision thinking in interaction with others) promotes social identity. Findings support that the unique combination of characteristics of vision thinking (positiveness, creativity, unrestraint, and the formation of mental representations) contribute to the formation of a social identity over and above established mechanisms for identity formation.

A comparison between individuals interacting in small groups in an online chat, on either a positive discussion task or a vision thinking task (both based on the theme of combatting climate change), revealed that those doing the vision thinking task formed significantly higher social identification with their group than those doing the discussion task. The elevation in social identity was mediated by higher engagement in vision thinking. This finding demonstrates that vision thinking offers more to the self-categorisation process—categorisation of the self as a group member with a shared identity—than the established (generic) mechanisms such as proximity, social contact, communication, group interaction, working on a shared task, that were common to both task groups.

Our main interest, however, with vision thinking is its capacity to promote motivation for collective action (via the collective action predictors: social identity, efficacy, emotions). In this study, social identification with a group promoting the cause (i.e., a group working to combat climate change) is more strongly related to motivation (for the *individual* to take collective action) than is social identification with the group the individual completed the task with – similar findings have been reported by Simon et al. 1998. In fact, the contribution of task group identity to motivation became insignificant alongside the contribution of cause identity. So, if the objective is to raise motivation for the individual to take collective action, without the support of their task group, then vision thinking would need to lift identification with the cause. There was no difference in identification with the cause between the group discussion participants and the group vision thinking participants (there was a trend towards higher identification in the vision thinking group). But participants in the group vision thinking task engaged more in vision thinking and more engagement in vision thinking was associated with stronger identification with the cause. So, inducing vision thinking through the group vision thinking task led to greater identification with the cause indirectly via engagement in vison thinking, but not as a total effect.

Elaborating further about the lack of a total effect: throughout the studies in this thesis, there has been a consistent finding that inducement of vision thinking is associated with increased collective action predictors and motivation via engagement in vision thinking, but inducement of vision thinking as a total effect on the collective action predictors and motivation is not significant. The finding in the present study of no total effect of vision thinking inducement on social identification with the cause aligns with the consistent findings of no total effect of vision thinking inducement on the collective action predictors. Refer to Chapter 7 for a discussion about the lack of a total effect, and how this might reflect on the meaning of the significant indirect effects (via vision thinking engagement) that we do find.

Turning now to the difference between vision thinking in groups and vision thinking individually: a comparison between the two showed that there was a marginally significant greater positive effect on social identity (with a group promoting the cause) for group vision thinking. However, contrary to the prediction that engagement in vision thinking would be higher for group vision thinking, therefore leading to higher social identity, there was no difference in engagement in vision thinking. The finding is interesting because it shows that individual vision thinking is equally effective at inducing engagement in vision thinking as group vision thinking, but that any tendency for higher social identity in group vision thinking is due to something other than the level of vision thinking engagement. This tendency to greater social identity in the group vision thinking condition is most likely due to the established, non-vision thinking specific, self-categorisation mechanisms (e.g., social contact, communication, group interaction) that promote social identity. These generic self-categorisation mechanisms were not available in the individual vision thinking condition which had no social interaction.

The fact that there was no difference in engagement for group versus individual vision thinking supports that the benefits of self-categorisation that come from the collective *awareness* in individual vision thinking (i.e., the perception by the individual thinker that the collective would be connected to the vision because the vision is about the collective and serves the collective), is as effective as the self-categorisation that comes from social interaction in group vision thinking. It seems that there are no benefits from actual social connection compared with an awareness of connection for the self-categorisation process in vision thinking. In other words, vision thinking – irrespective of whether done in groups or individually – is social identity forming because it envisages a future *of us, for us*.

Finally, there was generally no difference in the levels of the four components of vision thinking (mental representations, positiveness, creativity, unrestraint) between group

vision thinking and individual vision thinking, as would be expected given there was no difference in the level of engagement in vision thinking between the groups. The only difference was for unrestraint which was higher in the individual vision thinking condition. This may have been due to apprehension about evaluation from others on behalf of the participants in the group condition (Camacho, 1996). If so, it signals a potential disadvantage with group vision thinking compared to individual vision thinking. In contrast, each of the four vision thinking components was significantly higher in the group vision thinking condition compared with the group discussion condition, which would be expected given the higher engagement in vision thinking in the group vision thinking condition.

Although the findings from this study give interesting insights, one thing to consider is how well the two conditions (group vision thinking versus individual vision thinking) compare on providing opportunity for engagement in vision thinking. What supports individual vision thinking and what supports group vision thinking is different. Individual vision thinking needs an environment conducive to concentrating alone. Group vision thinking requires the participation and interaction of others, so factors that moderate this interaction reduce the capacity for engagement in vision thinking. In this study the social interaction in the group vision thinking condition was via an online chat room where participants shared their thinking via short text exchanges. This style of interaction can be somewhat stilted with crossover responses (i.e., a group member typing a response to one idea that has been shared but by the time they submit their response the communication thread has moved on). Also, it is difficult to know exactly how well participants in the individual vision thinking condition were able to concentrate completing their task online. Both conditions did show meaningful output: the group chat text responses were on topic and represented a building of ideas, as did the descriptions of the individual thinker's imagined worlds. In-person interaction may have supported more intensity of engagement between

participants, potentially better enabling the interactive mechanisms that predict self-categorisation to be realised. On the other hand, there might also have been greater evaluation apprehension. In any case, the findings give insight into the fact that both types of vision thinking tasks (group and individual) lead to engagement in vision thinking and are associated with greater social identity and motivation.

CHAPTER 7: General Discussion

In this thesis I explored vision thinking—the simulation of a positive or ideal future of a collective—as a process that may motivate collective action. While historically "vision" concerning a collective has been understood and studied as a projection by leaders reflecting their view or aspiration for an organisation and or society (van Knippenberg & Stam, 2014), there has been a shortfall in research on what happens at the individual or group level when members of the collective, to whom the vision is targeted, engage with the vision, and whether this raises their motivation to act towards the vision. The investigations in this thesis show that vision thinking, operationalised as thinking comprising the formation of mental representations, creativity, positiveness, and unrestraint, can be induced, and directed towards a specific target, and is associated with increased motivation for collective action via the collective action predictors (social identity, efficacy, emotions) in the social identity model of collective action (e.g., Agostini & Van Zomeren, 2021).

In this chapter, I discuss the key findings of this thesis in relation to the theoretical questions I set out to address: Can vision thinking be defined and operationalised? Does vision thinking raise motivation for collective action via the collective action predictors, and if so, what are the mechanisms? Can vision thinking be induced? How is engagement in vision thinking affected by the context of the thinker and by social and group interaction factors? I will then draw out insights and consider practical implications for the research findings. Finally, I will discuss limitations in this research and suggest avenues for future study.

Operationalisation of Vision Thinking

Work in this thesis has operationalised self-perceived vision thinking and tested the operationalisation across all seven studies. The concept of thinking in relation to vision is not

new; as already mentioned, leaders project their visions to their followers, and organisations often have a stated vision, both of which assume some meaningful engagement on behalf of those the visions are meant to influence. However, previously, to my knowledge, there has not been a measurement for engagement in vision thinking.

In this thesis I defined vision thinking as prospection that focuses on the simulation of a positive or ideal future relating to a collective. To operationalise self-perceived vision thinking I identified its essential characteristics, those that must be present, and that together uniquely define it: positiveness, creativity, unrestraint, and the formation of mental representations. The latent construct self-perceived vision thinking comprising these four characteristics was supported across all studies (except in the first study, most likely due to a poor measurement item for unrestraint).

I refined the measurement items for the vision thinking components over the first four studies. Four items each, two of them reverse scored, measure unrestraint, positiveness, and creativity. The measures for the formation of mental representations needed to capture the different aspects of mental representations. Mental representations come from the construction of scenarios (Taylor, Pham, Rivkin, & Armor, 1998; Taylor & Schneider, 1989). Mental representations are an encoding of information in memory that are created, retained and accessed (R. Smith & Queller, 2001). A mental representation is not, for example, just a visual image, it can encompass feelings, beliefs, attitudes, impressions. So, the measurement items for the formation of mental representations covered impressions, visualisation, feeling, and imagining.

This vision thinking scale was used to measure how successfully self-perceived vision thinking was induced; to detect self-perceived vision thinking within other forms of thinking (e.g., planning, and positive discussion); and to identify self-perceived vision thinking

patterns in response to real life scenarios (i.e., in response to the gender equity in leadership strategy in a government department [Study 2.2]). The scale was worded to be transferrable across these different scenarios and was not topic specific (i.e., specific to a particular vision thinking theme).

All the studies in this thesis measured *self-perceived* vision thinking (i.e., all the measures were self-report measures). As such, verification of engagement in vision thinking as an independently measured activity is required as a next step in operationalising the latent construct vision thinking.

Vision Thinking and the Social Identity Model of Collective Action

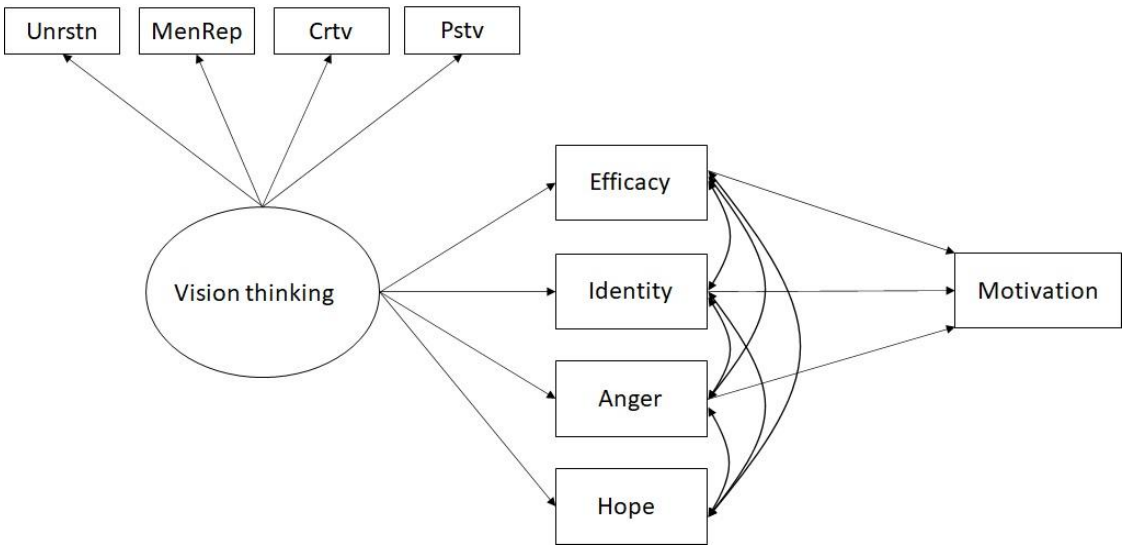
The core investigation in this thesis was to determine if vision thinking can raise motivation for collective action via more proximal collective action predictors (social identity, efficacy, and the emotions hope and anger). The model I proposed for how vision thinking may do this, is based on the established integrative social identity model of collective action (SIMCA) (Van Zomeren et al., 2008), with some modifications. I used emotions (anger and hope) in place of perceived injustice. I also treated the collective action predictors as correlated parallel mediators, without assuming a single causal directionality between them (refer to the Chapter 2 introduction for the justification). I call this model the vision thinking collective action model (VTCA). The present studies provide general support for the VTCA model with some caveats (which will be considered in detail later in this discussion): findings were generally correlational in nature; and there was no consistent overall effect of vision thinking inducement on the collective action predictors or motivation.

Across the seven studies, vision thinking was always associated with social identity and efficacy which in turn were always associated with motivation. In all but one of the five studies where anger was measured, vision thinking was associated with anger. Anger was

associated with motivation in four of these five studies. So, identity and efficacy are solid predictors in the model, and there is fair support for anger. The role of hope in the model was less sure. Vision thinking was associated with hope in all but one of the studies, but hope was associated with motivation in only one of the studies. Each of the collective action predictors (identity, efficacy, anger, hope) were nearly always correlated. Given that hope was usually associated with vision thinking and generally correlated with the other collective action predictors, it is possible that hope still plays a role and that it mediates a path from vision thinking to the other collective action predictors and, via those, to collective action. The inclusion of hope as a mediator is supported by prior findings that suggest that hope is a predictor of collective action support (Bury et al., 2020), specifically via enhanced efficacy beliefs (Greenaway et al., 2016); moreover, there is evidence that imagining a positive future raises hope and, via hope, collective action motivation (Wenzel et al., 2022). Similarly, one of the studies in this thesis did show a path from hope to motivation. Nevertheless, the role of hope is not clear. Figure 7.1 shows the version of the VTCA model supported by the findings in this thesis.

Figure 7.1

The Vision Thinking Collective Action Model



Note. The residual error symbols have been omitted from the diagram for simplicity.

I will turn now to the more detailed understandings from this thesis of the pathways from vision thinking to motivation via efficacy, and from vision thinking to motivation via social identity.

Perceived Possibility and the Efficacy Path to Motivation

Perceptions of possibility play a key and interesting role in the pathway from vision thinking to motivation via efficacy. Vision thinking, which is characterised by unrestraint—where the thinker transcends their current reality to imagine a future that may not be feasible with no regard for whether it is feasible—elevates the thinker's perceptions that the envisaged future is possible. In short, *imagining the impossible makes it seem more possible*. These increased perceptions of possibility are positively associated with efficacy, and hence motivation. Furthermore, when possibility assessments are brought back into focus for the thinker, by instructing them to plan how they will achieve their vision, this does not deplete their motivation to take collective action towards achieving the vision. In fact, the possibility assessments the thinker engages in post vision thinking, increase motivation via increased perceived possibility. So, any motivational gains from vision thinking are sustained, and potentially enhanced through the planning stage of prospection. This finding is contrary to findings in the positive fantasy literature—that mostly focuses on fantasies relating to the individual—that the imagination of positive alternatives can be demotivating (Oettingen & Mayer, 2002).

It is possibly that the collective aspect of vision thinking upholds its capacity to lift perceived possibility and motivation. The target of vision thinking is about the collective; vision thinking is about imagining resolution to a collective issue. The multifaceted and complex nature of collective issues make discerning a path to resolution difficult. Vision thinking gives the thinker a way to look at the issue from a point of success, simplifying the

complexity. This approach may help the thinker identify desirable end points and possible pathways to resolution.

So, the pathway from vision thinking to motivation, via efficacy, is underpinned by the increase in the perceived possibility of attaining the vision, that arises from vision thinking. The collective aspect of vision thinking appears to contribute to the capacity of vision thinking to raise perceived possibility and motivation. We will now consider the other pathway from vision thinking to motivation, explored in this thesis, the pathway via social identity.

Social Identity Path to Motivation

Vision thinking is social identity forming for people who vision think in groups. Moreover, inducing either individual or group vision thinking leads to greater engagement in vision thinking which is positively associated with social identification with a cause. So, social identity plays a fundamental role in translating vision thinking to motivation.

There are intricacies with how vision thinking affects social identity. Inducing vision thinking in groups forms a social identity among group members more so than positive discussion. This shows that vision thinking offers something specific to the social identification process over and above the generic mechanisms for social identity formation that arise from the development of shared views and the reinforcement of similarities via communication and social influence (e.g., Jans, Leach, Garcia, & Postmes, 2014; Postmes, Spears, et al., 2005). From the identity that is formed, vision thinking might add the benefits of a shared *positive* identity that is linked to an ideal future for the common cause and is based on positivity and motivational inspiration

Identification with group members is linked to motivation to work with the group to progress the cause (Study 2.1). Identification with the group is therefore valuable to spur the

group to act together for the cause. The type of social identity that is most effective at inspiring individuals to act for the cause, without the immediate support of their (vision thinking) group, is identification with a group promoting the cause. Inducement of vision thinking has a positive indirect effect on identification with a group promoting the cause, via engagement in vision thinking, but there was no overall effect (albeit a trend).

Surprisingly, inducement of group vision thinking and individual vision thinking promotes equivalent engagement in vision thinking. Group vision thinking has a marginally significant greater positive association with social identity than individual vision thinking. This marginal difference most likely reflects the generic social identity formation mechanisms that are present in group interaction but not specific to vision thinking. I reflect on the finding that individual vision thinking is as effective as group vision thinking below in the section *Further insights.*

Inducing Vision Thinking and Factors that Affect Engagement

Being able to induce vision thinking is fundamental to its utility. If vision thinking is only ever spontaneous on behalf of the thinker, and cannot be inspired or prompted by others, its use for promoting collective action is limited.

Vision thinking can be induced. By instructing people to imagine, without constraints, a perfect or utopian state of things (in relation to a theme about a collective issue, e.g., mitigating the effects of climate change, universal access to education, gender equity in politics), they will engage in vision thinking. The nature of vision thinking appears to help thinkers engage with the thinking, evidenced by the fact they do engage, even when they feel threatened by the vision thinking theme or if it clashes with their beliefs. Perhaps people engage because the thinking is pleasant, and the unrestrained aspect frees them from threat and other negative factors.

Interestingly, system justifying tendencies—supporting the status quo that the vision thinking theme challenges (Jost, 2019)—do not hinder engagement; in fact, higher system justification is associated with *more* engagement in vision thinking. This suggests that high system justifiers use vision thinking to envision a future that accommodates their system justifying needs (and even to an extent they also do so in the control condition). This finding is interesting because system justification is an established impediment to collective action (see Jost, 2015, for a review of the mechanisms). From the present studies, we know that generally, higher engagement in vision thinking is associated with the collective action predictors and motivation for collective action. Further investigation is required to ascertain the effects of vision thinking engagement on these predictors for high system justifiers specifically. Does system justification moderate the effect of vision thinking engagement on the collective action predictors and motivation?

Thinkers who experience threat or a clash with beliefs regarding the vision thinking theme could also be envisioning a future that accommodates their threat or clash with beliefs, hence their capacity to engage in vision thinking despite their resistance to the theme. In fact, for participants with high outright levels of threat (i.e., not just high relative to the mean level of threat, but high on the Likert scale) engagement in vision thinking was markedly higher than for participants with lower threat, in the control condition as well as the vision thinking condition. This response of high threat participants further supports that they may use vision thinking as an alleviation from the threat.

The engagement of thinkers who find the vision thinking theme insurmountable, adds weight to the idea that the nature of vision thinking supports engagement. The unrestrained component of vision thinking is likely to be the factor that most prompts engagement. Because the thinking must be unrestrained, it sends the message to the thinker that it does not matter if the issue they are thinking about is insurmountable. The thinker is in fact

encouraged to imagine things that are impossible because that is the only way they can form a perfect world in their imaginations. The path from vision thinking to motivation via efficacy, shows that this style of thinking then lifts the perceived possibility of attaining what is imagined. So, the nature of vision thinking, especially the unrestrained aspect, appears to support engagement in vision thinking.

Some factors that relate to the personal context of the thinker aid engagement in vision thinking, hence making inducement of vision thinking more effective. The creativity of the thinker, interest in the vision thinking theme, and knowledge about the vision thinking theme all support increased engagement in vision thinking. Knowing what helps and what hinders engagement in vision thinking means that a leader, for example, can adapt how they induce the vision thinking, to get the most effective outcomes.

Prescribing vision thinking (i.e., inducing vision thinking with direction to imagine stipulated outcomes relating to the theme) does not detract from the thinker's ability to engage in vision thinking, relative to freer vision thinking; it appears to offer some benefits to engagement (although this of course would depend on the nature of the prescription). When interest in the vision thinking theme was high, prescription increased engagement in vision thinking; this did not occur for low interest in the theme. There are also indications that prescription aids engagement when threat and clash with beliefs concerning the vision thinking theme is high. For thinkers with a high clash with beliefs, prescription (compared to free vision thinking) lowered the clash with beliefs that thinkers experienced during the vision thinking task which led to higher engagement in vision thinking. The prescriptive instructions may have emphasised a closer alignment with the thinker's beliefs and goals concerning the vision thinking theme (i.e., allaying the clash with beliefs) compared with the free vision thinking instructions, thus enabling social influence, and facilitating compliance with the instructions. There were similar tendencies for high threat participants. While

prescription did not lower threat during vision thinking for participants with high initial threat, it did lower the perceived unimportance of the task and resistance to engagement which in turn increased engagement in vision thinking. Overall prescription seems to be a useful tool. Leaders could use prescription to channel the vision thinking to a specific aspect of the vision thinking theme and doing so may benefit overall engagement in vision thinking, including for those thinkers who have a resistance to the overall theme of the vision thinking.

Further Insights

An interesting insight arising from this research is that individual vision thinking is as effective as group vision thinking (via a chatroom) at inducing engagement in vision thinking. This finding implies that a *perception* by the thinker that they are connected to the collective via their vision, supports the self-categorisation process just as well as concrete interaction with members of the collective. In individual vision thinking, a thinker's perceived connection with the collective, via the vision, is likely to come from the intent of forming the vision: the vision is positive for the collective, it is intended to serve the collective. If individual vision thinking is as effective as group vision thinking (and there is a caveat here because the group vision thinking was conducted online via a chat room), it is a potential benefit because it is not always efficient or possible to bring people together directly to engage in activities such as vision thinking.

There are further upsides and downsides to group versus individual vision thinking. Study 6 indicated that in group vision thinking, group members might experience evaluation apprehension (Camacho, 1996), as their thinking was not as unrestrained as thinkers undertaking individual vision thinking. On the other hand, group vision thinking has the advantage of being able to raise social identity with the group one is completing the task with, which is valuable if the group is to work together on progressing the cause.

Implications for Leadership

Vision thinking and my study of it here concerns members of a collective (how they engage in vision thinking, and how this motivates them); the focus is on followers not leaders. Vision thinking, however, is intrinsically linked to transformational leadership: the stimulus for vision thinking can come from leaders; the outcomes of vision thinking of a shared social identity and motivation for collective action, are respectively what leaders need for leadership, and the outcome they seek from their leadership.

Vision thinking is connected to leadership in three fundamental ways. First, leaders project their vision to followers to inspire them, and organisations have vision statements (developed by leaders, sometimes in collaboration with organisation members) to guide and enthuse organisation members and employees. The intent is that followers, organisation members, employees, engage with the vision. The visions are positive, often ideal, representations of a future state, they describe outcomes for the collective, they are not concerned about restraints and feasibility. For followers to truly engage with these visions, they must "think" the vision too. The impetus for vision thinking often comes from leaders, and leaders' visions can only be given meaning when followers engage with them (see Carton & Lucas, 2018).

Second, vision thinking links to leadership via social identity. Vision thinking is social identity forming (at least for group members who vision think together). As per the social identity approach applied to leadership, leaders derive their power to influence their followers through a sense of shared social identity. Followers want to work together, and derive meaning from working together, as an "us" unit towards a shared group outcome (Haslam et al., 2011; Hogg, 2001; Reicher, Haslam, & Platow, 2018; Steffens et al., 2014; van Knippenberg & Hogg, 2003). To be effective, leaders must present themselves as an embodiment—a "prototype"—of the shared values, goals and attributes that define the group

(Haslam et al., 2011; Turner, 1985), and sometimes they must be “entrepreneurs of identity” who instigate and nurture the formation of a social identity (Reicher & Hopkins, 2001; N. K. Steffens, S. A. Haslam, M. K. Ryan, & T. Kessler, 2013b). Leaders can promote a vision and induce followers to engage in vision thinking, thereby presenting themselves as prototypical of the social identity that forms during the vision thinking process.

Third, vision thinking is associated with motivation (via collective action predictors: social identity, efficacy, anger). The point of leadership is to galvanise followers, the collective, to achieve a common goal. Vision thinking, induced by leaders, helps set the direction and the agency for motivation towards a goal. Leaders can use vision thinking as a tool to direct the motivation of their followers to specific ends (Halevy, Berson, & Galinsky, 2011).

In terms of some of the finer points of leaders using vision thinking as a tool, vision thinking has the capacity to be shaped and more specifically targeted through prescription (directing the thinker to envisage specified outcomes). Not only does this prescription allow the leader to direct the motivation of the followers, but it appears to aid engagement in vision. Leaders can also control the setting for vision thinking, for example the duration, intensity, surrounding environment, pre-engagement, preparation (e.g., increasing knowledge about the issue), and they can do these things to account for the personal context of the thinker. Importantly, leaders can get personally involved in group vision thinking, being present to prompt, interact and help shape the vision and the social identity in interaction with their followers. Leaders can use vision thinking in a structured overt way or more informally.

Limitations and Future Research

The present research is not without limitations and there are several avenues for future research, with regards to the interpretation of findings, methodology and practice, and theoretical integration.

Questions of Causality

A limitation inherent to mediation analyses is that the relationships between mediators and outcome variables are merely correlational and, thus, do not permit causal inferences (Fiedler, Schott, & Meiser, 2011). In the present research this applies to the link between collective action predictors and collective action motivation; there is no evidence from the present studies that the collective action predictors cause motivation. There is strong support, though, in the collective action research literature for the causal effect of these predictors on motivation (see Agostini & Van Zomeren, 2021, for a recent meta-analysis).

The same caution about causal inferences applies to the relationship between vision thinking engagement—measured as a latent construct in the present research—and the collective action predictors. The present research treats vision thinking engagement as a mediator, for which the empirical data merely show a correlational relationship to the outcome variables. Therefore, and because no overall effect of vision thinking inducement on motivation was detected in the present studies (this is discussed below), a causal effect of the observed indirect effects from vision thinking inducement to the collective action predictors, and motivation cannot be inferred. However, two sets of results from the studies provide tentative support for the causal effect of vision thinking inducement on the collective action predictors. Investigation of the pathway from vision thinking to efficacy via perceived possibility, revealed a marginal total effect of vision thinking inducement on efficacy. Correspondingly, for the pathway from vision thinking to social identity, there is a total effect of vision thinking inducement on social identification with the group members completing

the vision thinking task. Nevertheless, further research is needed to solidify conclusions about the causal effects of vision thinking engagement.

Counteracting Processes

For most studies, there was no overall effect of vision thinking inducement on motivation, just strong indirect effects. Across the studies, the *direct* effect from vision thinking inducement to motivation fluctuates from non-significant to negative (in most cases). A negative direct effect, thus, seems to counteract the positive indirect effect of vision thinking inducement on motivation. There are two possible explanations for such a suppression effect. The first is that inducing vision thinking causes reactance for some thinkers which lowers their motivation (S. S. Brehm & Brehm, 1981). It is possible that instructions to imagine a positive future and paint a 'rosy picture' leads to resistance when participants do not feel inclined to think this way, either because they are more pessimistic or cynical about the issue or because they feel threatened by what they are asked to imagine. However, evidence from the studies does not support this interpretation. First, exploratory analyses (not reported) using variables measured in Study 4 that could represent negative reactance (e.g., engagement difficulty, resistance to engagement, lack of interest) did not show any indication of suppression. Furthermore, results from Chapter 3 (both Study 3.1 and Study 3.2) show that when threat and clash with beliefs regarding the vision thinking theme (potential drivers of a negative reactance) are high, vision thinking inducement does not lower their engagement in vision thinking (in most cases it increases it, just by less than when these variables are low). Nevertheless, it cannot be completely discounted that those who indicated feelings of threat or a clash with their beliefs, were not somehow put off from engaging in vision thinking by the collective action issue.

However, a second, more likely, explanation for the suppression effect is that the control condition (i.e., consider what is currently being done to improve the collective issue)

entailed an active ingredient, absent in the vision thinking instruction, that also lifted motivation. In this scenario, both conditions would increase motivation: the vision thinking condition via engagement in vision thinking, and the control condition via another mechanism. What this mechanism in the control condition (but absent in the vision thinking condition) could be is not clear, though it is possible that it instils a sense that 'positive things are happening right now', 'we are on a trajectory of progress', which may feed beliefs and motivation for change. While this suppression is a possibility, it does not negate the findings and indications we did see of causal effects of vision thinking (over and above the control condition): the marginal causal effect of vision thinking inducement on motivation via the efficacy path (Chapter 5); the causal effect of vision thinking inducement on social identification with the task group (Chapter 6). Moreover, in Chapter 3 when the personal context factors were accounted for in the model (as covariates) the overall effect of vision thinking inducement on motivation became significant.

To understand the suppression effect further, future studies could measure participants' motivation and collective action predictors at baseline, and then experimentally manipulate vision thinking and active control conditions; or alternatively a passive control condition could be added (in which participants do not engage in any task). This would help to disentangle the indirect effects of vision thinking instruction from the direct effect of the active control; both conditions could have significant total effects on collective action motivation but mediated differently. Another suggestion for future studies is to set the vision thinking condition participants on the same footing as the control condition participants by having participants in both conditions initially engage in the control task (e.g., consider what is currently being done to improve the collective issue). Next the vision thinking participants could be given the vision thinking task; the additional contribution of vision thinking to the collective action predictors and motivation could then be gauged.

Methodological Improvements

The present research relied on self-report measures of collective action motivation. An advance in future studies would be to use actual behaviours of collective action support or participation. Recent research has highlighted variations in the applicability of different adaptions of the social identity model of collective action (namely SIMCA and EMSICA) for predicting collective action, based on whether intentions or (self-report) past behaviours were measured (see also Agostini & Van Zomeren, 2021; Keshavarzi, McGarty, & Khajehnoori, 2021). While the present studies included measures of specific behaviour intentions, which tend to correlate highly with actual behaviour (Ajzen & Fishbein, 1980), actual behaviour measures would demonstrate motivation outcomes.

The manipulation used for vision thinking could be strengthened. In the present studies, the manipulation was minimal; it involved a 3-minute, usually online, imagination task. Future research could adopt a more intense impactful manipulation with a longer duration of engagement in vision thinking, a more conducive environment, preparation work to prime participants, and the use of repetition (e.g., multiple sessions of vision thinking over time). A stronger manipulation would aid detection of some of the weaker effects identified in the present studies, such as the effects of prescribing vision thinking, plus it would give a better idea of how vision thinking could be used in a practical setting (e.g., within an organisation as part of a change management program).

Theoretical Expansion and Integration

In this thesis I used the integrative social identity model of collective action (Van Zomeren et al., 2008) and the related encapsulated model of social identity in collective action (Thomas et al., 2009) as the bases for theory development for how vision thinking might relate to collective action. More recent developments of the social identity collective

action model have begun to incorporate other variables as collective action predictors, such as moral convictions (Van Zomeren, 2013; Van Zomeren, Postmes, et al., 2012; Van Zomeren, Postmes, Spears, & Bettache, 2011). A moral conviction is a strong absolute stance with a moral underpinning (Skitka, 2010; Skitka et al., 2005). Future study of vision thinking should incorporate moral conviction into the model, as it is conceivable that vision thinking foments a more impassioned and moralistic view about the importance of the collective action goal.

Other foci for further research include: the emotion pathway from vision thinking to motivation for collective action (deeper exploration of the role of anger, hope and other emotions); differential effects of each of the separate vision thinking components (mental representations, positiveness, creativity, unrestraint); wider investigation of the effects of group interaction during vision thinking on engagement in vision thinking, and on the other collective action predictors (the present studies only examined the overall effect of group interaction on engagement in vision thinking, and on social identity formation); and the integration of vision thinking with leadership processes (a social identity approach to how leaders could instil vision thinking in their followers).

Conclusion

The research presented here contributes to the collective action, collective prospection, and leadership research. This research confirms a model that explains how unrestrained positive simulation about a collective's future connects the thinker to the collective and connects to the thinker's motivation to improve the circumstances of the collective, via the collective action predictors (social identity, efficacy, emotions). Specifically, the research shows the capacity of unrestrained thinking about overcoming collective issues, to increase the perceived possibility of resolving such issues, and to develop social identification relating to improving the issue, so that people want to work together for change. Understanding how members of a collective engage in such thinking puts meaning to

the concept of visions created and projected by leaders. Being able to measure and induce this thinking—vision thinking—and understanding what affects an individual's ability to engage in this thinking, facilitates its use as a tool for leaders to direct the motivation of their followers towards collective change.

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Appendix A

Instruction Leaflets

Group task – creating an ideal/utopian vision

The lab assistant will guide you through the group task.

The task – creating and ideal/utopian vision

Your task as a group is to create a picture or vision of an ideal/utopian Flinders University of the future (in terms of how it caters for students).

Build this ideal/utopian vision based on the premise that the purpose of a university for a student is to advance student learning, support student well-being, and prepare students for future career success. Include anything you can think of that would help the university excel in these aims.

Some things you might consider include: opportunities, activities, learning, people, spaces, social opportunities, technologies, structures, connections, and opportunities external to the university.

Importantly, try to be as creative, expansive and unlimited in your thinking as you can – don't hold back. Don't worry if you mention things that you think might already exist, and don't worry about the feasibility of ideas. Be as creative as you can and remember to focus on building an ideal/utopian vision of Flinders University in the future, with *no* time or money constraints.

Protocol

- Encourage all group members to participate
- Don't comment negatively on others' contributions
- Focus on generating a plan that could be realistically implemented.
- Take responsibility for keeping the rest of the group on task and ensuring the discussion stays on track
- Don't worry if you think you are taking longer than others to write your ideas, perhaps you are being more thoughtful

The best vision

Each vision will be rated by an independent assessor against the below criteria. Members of the group that created the best ideal/utopian vision will each receive $30 cash (the winning group will be notified after June when all the studies have run). The vision will be judged on the following criteria:

- Most creative
- Most ideal
- Most clearly articulated
- Most beneficial to students

You can refer to the information on this sheet throughout the group task as you feel you need to.

Group task – developing a plan

The lab assistant will guide you through the group task.

The task – developing a plan

Your task as a group is to develop a plan for how Flinders University can be improved from a student perspective.

Build this plan based on the premise that the purpose of a university for a student is to advance student learning, support student well-being, and prepare students for future career success.

Some things you might consider include: opportunities, activities, learning, people, spaces, social opportunities, technologies, structures, connections, and opportunities external to the university.

The plan that you develop needs to be realistic, able to be implemented within 12 months and within a budget of about $100,000 (just do your best job with estimating what you could achieve within these limits).

Protocol

- Encourage all group members to participate
- Don't comment negatively on others' contributions
- Focus on generating a plan that could be realistically implemented.
- Take responsibility for keeping the rest of the group on task and ensuring the discussion stays on track
- Don't worry if you think you are taking longer than others to write your ideas, perhaps you are being more thoughtful

The best plan

Each plan will be rated by an independent assessor against the below criteria. Group members who contributed to development of the best plan will each receive $30 cash (the winning group will be notified after June when all the studies have run).

- Most realistic (able to be implemented)
- Fits time and budget constraints (12 months, $100,000)
- Most clearly articulated
- Most beneficial to students

You can refer to the information on this sheet throughout the group task as you feel you need to.

Appendix B

Intraclass Correlations Coefficients

Intraclass correlation coefficients for all the collective action and motivation measures, and the vision thinking components by condition (visioning task, planning task), for Study 2.1, are presented in Table B.1. Several are greater than 0.1, indicating that multilevel analysis is preferred (Zhang & Wang, 2017).

Table B.1

Intraclass Correlations for Dependent Variables and Vision Thinking Components

	Visioning condition[a]	Planning condition[b]
Mot individual	0.005	0.000
Mot group	0.244	0.026
Identity task group	0.285	0.389
Identity cause	0.149	0.000
Efficacy individual	0.000	0.000
Efficacy task group	0.357	0.409
Hope	0.000	0.000
Mental representations	0.067	0.000
Creativity	0.179	0.013
Positiveness	0.211	0.000
Unrestraint	0.165	0.000

Note. [a]n = 49 (planning task). [b]n = 50 (visioning task). Number of groups = 24.

Appendix C

Vision Thinking Latent Variable

Table C.1 provides the parameter estimates from the confirmatory factor analysis for the latent variable vision thinking (Study 2.1).

Table C.1

Unstandardised Loading Estimates and Parameter Estimates for the Vision Thinking Latent Variable

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
Loading					
Positiveness	1.00			1.00	1.00
Creativity	0.93	0.21	.000	0.53	1.34
Mental rep.	1.50	0.51	.003	0.50	2.49
Unrestraint	0.13	0.25	.620	-0.37	0.37
Variances					
Positiveness	1.05	0.28	.000	0.50	1.60
Creativity	1.06	0.21	.000	0.65	1.48
Mental rep.	0.20	0.35	.579	-0.49	0.88
Unrestraint	2.21	0.37	.000	1.49	2.92
Vision Thinking	0.50	0.26	.054	-0.01	1.00

Note. $N = 99$ (planning and visioning conditions combined).

The fit indices are: $\chi^2(2) = 3.29$, $p = .193$, comparative fit index (CFI) = .98, SRMR = .05.

Appendix D

Unstandardised Loadings and Parameter Estimates

Connection with the Task Group

Table D.1 provides the parameter estimates from the structural equation modelling of the vision thinking collective action model for the outcome variables corresponding to connection with the task group (Study 2.1).

Table D.1

Unstandardised Loading Estimates and Parameter Estimates for the Vision Thinking Collective Action Model (Relating to Connection with the Task Group)

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
	Loading of vision thinking components onto vision thinking				
Mental rep.	1.00			1.00	1.00
Creativity	0.82	0.17	.000	0.49	1.16
Positiveness	1.04	0.23	.000	0.59	1.50
	Loading of vision thinking onto collective action predictors				
Identity	0.39	0.10	.000	0.20	0.59
Efficacy	0.48	0.16	.002	0.18	0.79
Hope	0.02	0.20	.912	-0.37	0.41
	Loading of collective action predictors onto motivation				
Identity	0.47	0.12	.000	0.23	0.71
Efficacy	0.78	0.10	.000	0.60	0.97
Hope	-0.06	0.05	.193	-0.15	0.03
Vision thinking	-0.02	0.10	.813	-0.23	0.18

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
			Covariances		
Identity & Hope	0.18	0.11	.100	-0.03	0.39
Identity & Efficacy	0.24	0.06	.000	0.11	0.36
Hope & Efficacy	0.25	0.14	.067	-0.02	0.52
			Variances		
Mental rep.	0.68	0.19	.000	0.32	1.04
Creativity	0.97	0.19	.000	0.59	1.35
Positiveness	0.77	0.21	.000	0.35	1.18
Identity	0.42	0.06	.000	0.30	0.54
Efficacy	0.68	0.11	.000	0.47	0.90
Hope	2.24	0.34	.000	1.75	3.10
Motivation	0.47	0.07	.000	0.34	0.60
Vision Thinking	0.83	0.26	.001	0.34	1.34

Note. $N = 99$.

The fit indices are: $\chi^2(8) = 5.50$, $p = .703$, comparative fit index (CFI) = 1.00, SRMR = .04.

Connection with the Cause

Table D.2 provides the parameter estimates from the structural equation modelling of the vision thinking collective action model for the outcome variables corresponding to connection with the cause (Study 2.1).

Table D.2

Unstandardised Loading Estimates and Parameter Estimates for the Vision Thinking Collective Action Model (Relating to Connection with the Cause)

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
	Loading of vision thinking components onto vision thinking				
Mental rep.	1.00			1.00	1.00
Creativity	0.62	0.20	.002	0.23	1.01
Positiveness	0.74	0.24	.002	0.28	1.21
	Loading of vision thinking onto collective action predictors				
Identity	0.23	0.12	.047	0.00	0.46
Efficacy	0.17	0.14	.238	-0.11	0.44
Hope	-0.08	0.19	.671	-0.45	0.29
	Loading of collective action predictors onto motivation				
Identity	0.83	0.09	.000	0.63	1.02
Efficacy	0.36	0.10	.000	0.18	0.55
Hope	0.01	0.05	.856	-0.09	0.10
Vision thinking	-0.02	0.08	.779	-0.18	0.13
	Covariances				
Identity & Hope	0.20	0.14	.145	-0.07	0.48
Identity & Efficacy	0.50	0.10	.000	0.30	0.70
Hope & Efficacy	0.56	0.16	.001	0.25	0.88

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
			Variances		
Mental rep.	0.39	0.29	.171	-0.17	0.95
Creativity	1.00	0.19	.000	0.62	1.37
Positiveness	0.96	0.22	.000	0.54	1.39
Identity	0.76	0.11	.000	0.54	0.98
Efficacy	0.93	0.14	.000	1.74	3.09
Hope	2.42	0.34	.000	1.74	3.09
Motivation	0.46	0.07	.000	0.34	0.59
Vision Thinking	1.00	0.34	.004	0.33	1.67

Note. $N = 99$.

The fit indices are: $\chi^2(8) = 5.89$, $p = .659$, comparative fit index (CFI) = 1.00, SRMR = .04.

Appendix E

Social Identity Measures

Derived from Ellemers et al. (1999).

Identification with what the GEiL strategy stands for:

- My values and beliefs align with the GEiL strategy.
- I have respect for others in the DTF[5] who support the GEiL strategy.
- I identify with others in the DTF who support the GEiL strategy.
- I would like to (continue to) be working with others in the DTF who support the GEiL strategy.

Identification with the leadership team:

- I have respect for the leadership team with the DTF that is implementing the GEiL strategy.
- In terms of my values and beliefs about the GEiL strategy, I am like members of the leadership team who are promoting it.
- I do (or would) like to be supporting the work of the leadership team in terms of the GEiL strategy.

Identification with the department:

- I feel good about being a member of the DTF.
- I would like to continue working for the DTF.
- I think the DTF has a lot to be proud of.

[5] Department of Treasury and Finance

Appendix F

Vision Thinking Latent Variable

Table F.1 provides the parameter estimates from the confirmatory factor analysis for the latent variable vision thinking (Study 2.2).

Table F.1

Unstandardised Loading Estimates and Parameter Estimates for the Vision Thinking Latent Variable

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
Loading					
Unrestraint	1.00			1.00	1.00
Mental rep.	0.74	.08	.000	0.58	0.91
Creativity	0.96	0.10	.000	0.77	1.15
Positiveness	0.88	0.12	.000	0.66	1.11
Variances					
Unrestraint	0.98	0.21	.000	0.57	1.39
Mental rep.	0.88	0.15	.000	0.58	1.18
Creativity	0.84	0.19	.000	0.48	1.21
Positiveness	2.07	0.33	.000	1.43	2.71
Vision Thinking	2.50	0.49	.000	1.54	3.46

Note. $N = 105$.

The fit indices are: $\chi^2(2) = 7.93$, $p = .019$, comparative fit index (CFI) = .97, SRMR = .03.

Appendix G

Unstandardised Loadings and Parameter Estimates

Table G.1 provides the parameter estimates from the structural equation modelling of the vision thinking collective action model (Study 2.2).

Table G.1

Unstandardised Loading Estimates and Parameter Estimates for the Vision Thinking Collective Action Model

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
	Loading of vision thinking components onto vision thinking				
Unrestraint	1.00			1.00	1.00
Mental rep.	0.74	0.09	.000	0.58	0.92
Creativity	1.06	0.11	.000	0.84	1.28
Positiveness	0.99	0.17	.000	0.65	1.34
	Loading of vision thinking onto collective action predictors				
Identity	0.40	0.08	.000	0.27	0.58
Efficacy	0.57	0.10	.000	0.38	0.86
Hope	0.52	0.14	.000	0.28	0.84
	Loading of collective action predictors onto motivation				
Identity	0.33	0.14	.018	0.09	0.62
Efficacy	0.46	0.12	.000	0.23	0.69
Hope	0.02	0.09	.803	-0.13	0.21
Vision thinking	0.11	0.09	.221	-0.06	0.29
	Covariances				
Identity & Hope	0.33	0.14	.018	0.09	0.62
Identity & Efficacy	0.46	0.12	.000	0.23	0.69
Hope & Efficacy	0.02	0.09	.803	-0.13	0.21

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
			Variances		
Unrestraint	1.25	0.31	0.000	0.63	1.84
Mental rep.	1.03	0.22	0.000	0.56	1.42
Creativity	0.63	0.24	0.009	0.21	1.14
Positiveness	1.82	0.55	0.001	0.79	2.92
Identity	0.72	0.17	0.000	0.38	1.04
Efficacy	1.30	0.29	0.000	0.77	1.93
Hope	1.52	0.37	0.000	0.84	2.28
Motivation	0.42	0.07	0.000	0.42	0.28
Vision Thinking	2.23	0.43	0.000	1.43	3.07

Note. $N = 105$.

The fit indices are: $\chi^2(14) = 33.99$, $p = .002$, comparative fit index (CFI) = .96, SRMR = .06.

Appendix H

Social Identity Measures

Social identity measures derived from Leach et al. (2008).

Solidarity

- I feel a bond with other people who support sustainable cities.
- I feel no commitment what-so-ever to other people who support sustainable cities. (reverse)

Satisfaction

- People who support sustainable cities have nothing to be proud of. (reverse)
- I am glad to be a supporter of sustainable cities.

Centrality

- Being a supporter of sustainable cities is an important part of how I see myself.
- The fact that I am a supporter of sustainable cities is an important part of my identity.

Individual self-stereotyping

- I have absolutely nothing in common with the average person who supports sustainable cities. (reverse)
- I am similar to the average person who supports sustainable cities.

In-group homogeneity

- Supporters of sustainable cities are very similar to each other.
- People who support sustainable cities have a lot in common with each other.

Appendix I

Vision Thinking Latent Variable

Table H.1 provides the parameter estimates from the Confirmatory Factor Analysis for the latent variable vision thinking (Study 2.3).

Table I.1

Unstandardised Loading Estimates and Additional Parameter Estimates for the Vision Thinking Latent Variable

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
Loading					
Unrestraint	1.00			1.00	1.00
Mental rep.	0.66	0.10	.000	0.47	0.86
Creativity	0.67	0.11	.000	0.47	0.89
Positiveness	0.86	0.13	.000	0.61	1.10
Variances					
Unrestraint	0.58	0.10	.000	0.38	0.78
Mental rep.	0.52	0.07	.000	0.39	0.65
Creativity	0.79	0.10	.000	0.61	0.97
Positiveness	0.85	0.11	.000	0.64	1.06
Vision Thinking	0.74	0.15	.000	0.46	1.03

Note. $N = 105$.

The fit indices are: $\chi^2(2) = 1.88$, $p = .390$, comparative fit index (CFI) = 1.00, SRMR = .02.

Appendix J

Vision Thinking Collective Action Model

Table J.1 provides the parameter estimates from the structural equation modelling of the vision thinking collective action model (Study 2.3).

Table J.1

Unstandardised Loading Estimates and Parameter Estimates for the Vision Thinking Collective Action Model

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
	Loading of vision thinking components onto vision thinking				
Unrestraint	1.00			1.00	1.00
Mental rep.	0.72	0.11	.000	0.53	0.96
Creativity	0.70	0.13	.000	0.48	0.99
Positiveness	1.15	0.12	.000	0.96	1.43
	Loading of condition on to vision thinking				
Condition	0.75	0.13	.000	0.49	0.99
	Loading of vision thinking onto collective action predictors				
Identity	0.37	0.08	.000	0.21	0.51
Efficacy	0.32	0.08	.000	0.21	0.51
Anger	0.22	0.05	.000	0.12	0.30
Hope	0.17	0.07	.017	0.01	0.30
	Loading of collective action predictors onto motivation				
Identity	0.37	0.08	.000	0.21	0.51
Efficacy	0.32	0.08	.000	0.21	0.51
Anger	0.22	0.05	.000	0.12	0.30
Hope	0.17	0.07	.014	0.01	0.30
Vision thinking	0.06	0.15	.669	-0.19	0.39

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
			Covariances		
Identity & Efficacy	0.32	0.09	.000	0.15	0.50
Identity & Anger	0.31	0.09	.000	0.14	0.31
Identity & Hope	0.09	0.06	.122	-0.02	0.20
Hope & Efficacy	0.09	0.06	.134	-0.03	0.22
Anger & Efficacy	0.21	0.11	.054	0.01	0.42
Anger & Hope	0.09	0.08	.223	-0.05	0.26
			Variances		
Unrestraint	0.74	0.10	.000	0.54	094
Mental rep.	0.54	0.11	.000	0.36	0.78
Creativity	0.84	0.14	.009	0.57	1.13
Positiveness	0.62	0.12	.000	0.38	0.86
Identity	0.71	0.09	.000	0.53	0.87
Efficacy	0.81	0.15	.000	0.51	1.08
Anger	1.49	0.18	.000	1.11	1.82
Hope	0.64	0.12	.000	0.42	0.89
Motivation	0.49	0.06	.000	0.36	0.58
Vision Thinking	0.44	0.09	.000	0.28	0.63

Note. $N = 209$.

The fit indices are: $\chi^2(21) = 80.54$, $p = .000$, comparative fit index (CFI) = .90, SRMR = .06.

Appendix K

Creativity Scale

Measures were derived from a scale initially developed by Zhou and George (2001).

1. I suggest new ways to achieve goals or objectives.
2. I come up with new and practical ideas to improve performance.
3. I search out new technologies, processes, techniques, and/or product ideas.
4. I suggest new ways to increase quality.
5. I am a good source of creative ideas.
6. I am not afraid to take risks.
7. I promote and champion ideas to others.
8. I exhibit creativity on the job when given the opportunity to.
9. I often have new and innovative ideas.
10. I come up with creative solutions to problems.
11. I often have a fresh approach to problems.
12. I suggest new ways to perform work tasks.

Appendix L

Optimism Scale

Measures were taken from the revised Life Orientation Test (Scheier et al., 1994). The filler questions were removed from the question set.

1. I suggest new ways to achieve goals or objectives.
2. I come up with new and practical ideas to improve performance.
3. I search out new technologies, processes, techniques, and/or product ideas.
4. I suggest new ways to increase quality.
5. I am a good source of creative ideas.
6. I am not afraid to take risks.
7. I promote and champion ideas to others.
8. I exhibit creativity on the job when given the opportunity to.
9. I often have new and innovative ideas.
10. I come up with creative solutions to problems.
11. I often have a fresh approach to problems.
12. I suggest new ways to perform work tasks.

Appendix M

Self-regulatory Focus Scale

Measures were derived from Lockwood et al. (2002).

1. In general, I am focused on preventing negative events in my life. (prevention focus)
2. I am anxious that I will fall short of my responsibilities and obligations. (prevention focus)
3. I frequently imagine how I will achieve my hopes and aspirations. (promotion focus)
4. I typically focus on the success I hope to achieve in the future. (promotion focus)
5. I frequently think about how I can avoid failures in my life. (prevention focus)
6. I am more orientated to preventing losses than I am towards achieving gains. (prevention focus)
7. In general, I am focused on achieving positive outcomes in my life. (promotion focus)
8. Overall, I am more oriented toward achieving success than preventing failure. (promotion focus)

Appendix N

Gender Specific System Justification Scale

The gender-specific system justification scale in Jost and Kay (2005):

1. In general, relations between men and women are fair.
2. The division of labour in families generally operates as it should.
3. Gender roles need to be radically restructured. (reverse)
4. For women, the United States is the best country in the world to live in.
5. Most policies relating to gender and the sexual division of labour serve the greater good.
6. Everyone (male or female) has a fair shot at wealth and happiness.
7. Sexism in society is getting worse every year. (reverse)
8. Society is set up so that men and women usually get what they deserve.

Appendix O

Social Identity Scale

The scale for multicomponent in-group identification in Leach et al. (2008).

Solidarity

- I feel a bond with people who support equal representation of women in politics.
- I feel solidarity with those who support gender equity in politics.
- I feel committed to other people who support equal numbers of women (to men) in politics.

Satisfaction

- I am glad to be a supporter of gender equity in politics.
- I think that supporters of gender equity in politics have a lot to be proud of.
- It is pleasant to be a supporter of equal representation of women in politics.
- Being a supporter of gender equity in politics gives me a good feeling.

Centrality

- I often think about the fact that I am a supporter of equal representation of women in politics.
- The fact that I am a supporter of equal numbers of women in politics is an important part of my identity.
- Being a supporter of gender equity in politics is an important part of how I see myself.

Individual self-stereotyping

- I have a lot in common with the average person who supports equal representation of women in politics.

- I am similar to the average person who supports gender equity in politics.

In-group homogeneity

- Supporters of gender equity in politics have a lot in common with each other.
- People who support equal representation of women in politics are very similar to each other.

Appendix P

Vision Thinking Latent Variable

Table P.1 provides the parameter estimates from the Confirmatory Factor Analysis (CFA) for the latent variable *vision thinking* (Study 3.1).

Table P.1

Unstandardised Loading Estimates and Parameter Estimates for the Vision Thinking Latent Variable

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
Loading					
Positiveness	1.00			1.00	1.00
Unrestraint	0.67	0.10	0.000	0.47	0.84
Mental rep.	0.83	0.12	0.000	0.59	1.08
Creativity	0.37	0.08	0.000	0.21	0.52
Variances					
Positiveness	1.19	0.22	0.000	0.76	1.62
Unrestraint	0.70	0.11	0.000	1.01	1.78
Mental rep.	1.39	0.20	0.000	0.79	1.23
Creativity	1.01	0.11	0.000	0.79	1.23
Vision Thinking	1.50	0.31	0.000	0.89	2.11

Note. $N = 182$.

The fit indices are: $\chi^2(2) = 1.49$, $p = .475$, comparative fit index (CFI) = 1.00, SRMR = .02.

Appendix Q

Vision Thinking Collective Action Model

Table Q.1 provides the parameter estimates from the Structural Equation Modelling (SEM) of the vision thinking collective action model (Study 3.1).

Table Q.1

Unstandardised Loading Estimates and Additional Parameter Estimates for the Vision Thinking Collective Action Model

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
	Loading of vision thinking components onto vision thinking				
Positiveness	1.00			1.00	1.00
Mental rep.	0.82	0.11	0.000	0.61	1.07
Unrestraint	0.59	0.08	0.000	0.44	0.76
Creativity	0.35	0.08	0.000	0.20	0.51
	Loading of condition on to vision thinking				
Condition	0.71	0.20	0.000	0.34	1.14
	Loading of vision thinking onto collective action predictors				
Identity	0.53	0.09	0.000	0.36	0.74
Efficacy	0.53	0.10	0.000	0.35	0.76
Anger	0.55	0.14	0.000	0.27	0.85
Hope	0.51	0.11	0.017	0.30	0.73

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
	Loading of collective action predictors onto motivation				
Identity	0.56	0.11	0.000	0.35	0.79
Efficacy	0.32	0.10	0.001	0.12	0.51
Anger	0.08	0.04	0.057	-0.00	0.16
Hope	-0.05	0.06	0.036	0.02	0.33
Vision thinking	0.21	0.11	0.051	-0.01	0.42
	Covariances				
Identity & Efficacy	0.85	0.15	0.000	0.54	1.13
Identity & Anger	0.73	0.15	0.000	0.43	1.03
Identity & Hope	0.64	0.13	0.000	0.38	0.91
Hope & Efficacy	0.65	0.16	0.000	0.34	0.98
Anger & Efficacy	0.70	0.16	0.000	0.38	0.98
	Variances				
Positiveness	1.11	0.20	0.000	0.73	1.49
Mental rep.	1.37	0.26	0.000	0.87	1.99
Unrestraint	0.79	0.12	0.000	0.55	1.04
Creativity	1.01	0.14	0.000	0.76	1.28
Identity	0.89	0.13	0.000	0.60	1.12
Efficacy	1.21	0.18	0.000	0.82	1.54
Anger	2.50	0.27	0.000	1.94	3.01
Hope	1.60	0.22	0.000	1.17	2.01
Motivation	0.52	0.10	0.000	0.32	0.71
Vision Thinking	1.45	0.27	0.000	0.97	2.04

Note. N = 182.

The fit indices are: $\chi^2(21) = 64.97$, $p = .003$, comparative fit index (CFI) = .95, SRMR = .08.

Appendix R

Multivariate Analyses (Study 3.1)

All Personal Context Variables

Table R.1 provides the parameter estimates from the structural equation modelling multivariate analysis for the regression of condition and all of the personal context variables onto vision thinking and onto motivation in a model where vision thinking mediates the relationship between condition and motivation.

Select Personal Context Variables

Table R.2 provides the parameter estimates from the structural equation modelling multivariate analysis for the regression of condition and select personal context variables (i.e., those that were found to significantly regress onto vision thinking in the analysis present directly above), onto vision thinking and onto motivation in a model where vision thinking mediates the relationship between condition and motivation.

Table R.1

Unstandardised Loading Estimates and Additional Parameter Estimates for the Personal Context Variable Multivariate Analysis

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
	Mediator variable model (outcome: Vision Thinking)				
Condition	0.63	0.17	0.000	0.30	0.97
Reg focus	-0.21	0.19	0.270	-0.58	0.18
Optimism	0.03	0.13	0.802	-0.21	0.29
Creativity	0.51	0.13	0.000	0.24	0.74
Threat	0.15	0.10	0.127	-0.03	0.36
SJ	0.29	0.12	0.016	0.07	0.54
Insurmountable	-0.02	0.17	0.891	-0.25	0.19
Interest	0.23	0.11	0.029	0.01	0.44
Political orientation	-0.02	0.04	0.655	-0.09	0.06
Attitude	-0.03	0.11	0.828	-0.24	0.22
	Dependent variable model (outcome: Motivation)				
Vision thinking	0.49	0.14	0.000	0.28	0.85
Condition	-0.02	0.14	0.882	-0.33	0.23
Reg focus	-0.10	0.13	0.000	0.28	0.85
Optimism	-0.10	0.08	0.216	-0.27	0.05
Creativity	0.19	0.12	0.115	-0.11	0.39
Threat	-0.09	0.09	0.327	-0.26	0.09
SJ	-0.18	0.12	0.110	-0.43	0.02
Insurmountable	-0.02	0.07	0.827	-0.15	0.11
Interest	0.23	0.07	0.002	0.07	0.36
Political orientation	-0.07	0.04	0.058	-0.13	0.02
Attitude	0.29	0.10	0.003	0.10	0.50

Note. $N = 182$.

Table R.2

Unstandardised Loading Estimates and Additional Parameter Estimates for Select Personal Context Variable Multivariate Analysis

				95% CI	
	B	*SE*	*p*	*LL*	*UP*
	Mediator variable model (outcome: Vision Thinking)				
Condition	0.63	0.17	0.000	0.33	0.98
Threat	0.19	0.06	0.002	0.32	0.15
Interest	0.23	0.08	0.005	0.08	0.39
SJ	0.27	0.11	0.019	0.05	0.49
Creativity	0.49	0.11	0.000	0.28	0.69
	Dependent variable model (outcome: Motivation)				
Vision thinking	0.51	0.13	0.000	0.29	0.83
Condition	-0.01	0.15	0.971	-0.33	0.29
Threat	-0.05	0.07	0.476	-0.17	0.08
Interest	0.42	0.09	0.000	0.26	0.58
SJ	-0.22	0.10	0.032	-0.42	-0.03
Creativity	0.16	0.11	0.141	-0.08	0.36

Note. $N = 182$.

Appendix S

System Justification Scale

The scale for system justification (Kay & Jost, 2003) used in Study 3.2:

1. In general, I find society to be fair.
2. In general, the American system operates as it should.
3. American society needs to be radically restructured. (*reverse*)
4. The United States is the best country in the world to live in.
5. Most policies serve the greater good.
6. Everyone has a fair shot at wealth and happiness.
7. Our society is getting worse every year. (*reverse*)
8. Society is set up so that people usually get what they deserve.

Appendix T

Social Identity Scale

The scale for multicomponent in-group identification in Leach et al. (2008).

Solidarity

- I feel a bond with people who support universal access to education.
- I feel solidarity with those who universal access to education.
- I feel committed to other people who support universal access to education.

Satisfaction

- I am glad to be a supporter of universal access to education.
- I think that supporters of universal access to education have a lot to be proud of.
- It is pleasant to be a supporter of universal access to education.
- Being a supporter of universal access to education gives me a good feeling.

Centrality

- I often think about the fact that I am a supporter of universal access to education.
- The fact that I am a supporter of universal access to education is an important part of my identity.
- Being a supporter of universal access to education is an important part of how I see myself.

Individual self-stereotyping

- I have a lot in common with the average person who universal access to education.
- I am similar to the average person who universal access to education.

In-group homogeneity

- Supporters of universal access to education have a lot in common with each other.
- People who support universal access to education are very similar to each other.

Appendix U

Social Identity Measures

Adapted from a scale for multicomponent in-group identification in Leach et al. (2008).

Solidarity

- I feel a bond with other people who support climate change action.
- I feel solidarity with those who support climate change action.

Satisfaction

- I think that supporters of climate change action have a lot to be proud of.
- Being a supporter of climate change action gives me a good feeling.

Centrality

- The fact that I am a supporter of climate change action is an important part of my identity.
- Being a supporter of climate change action is an important part of how I see myself.

Individual self-stereotyping

- I am similar to the average person who supports climate change action.

In-group homogeneity

- Supporters of climate change action have a lot in common with each other.

Appendix V

Vision Thinking Collective Action Model

Table V.1 shows the means, standard deviations, and bivariate correlations for the dependent variables.

Table V.1

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	*M*	*SD*	Identity	Efficacy	Anger	Hope
Identity	5.04	1.33	-	-	-	-
Efficacy	5.36	1.31	0.79***	-	-	-
Anger	4.92	1.85	0.68***	0.50***	-	-
Hope	5.16	1.55	0.63***	0.62***	0.36***	-
Motivation	4.90	1.31	0.82***	0.76***	0.66***	0.53***

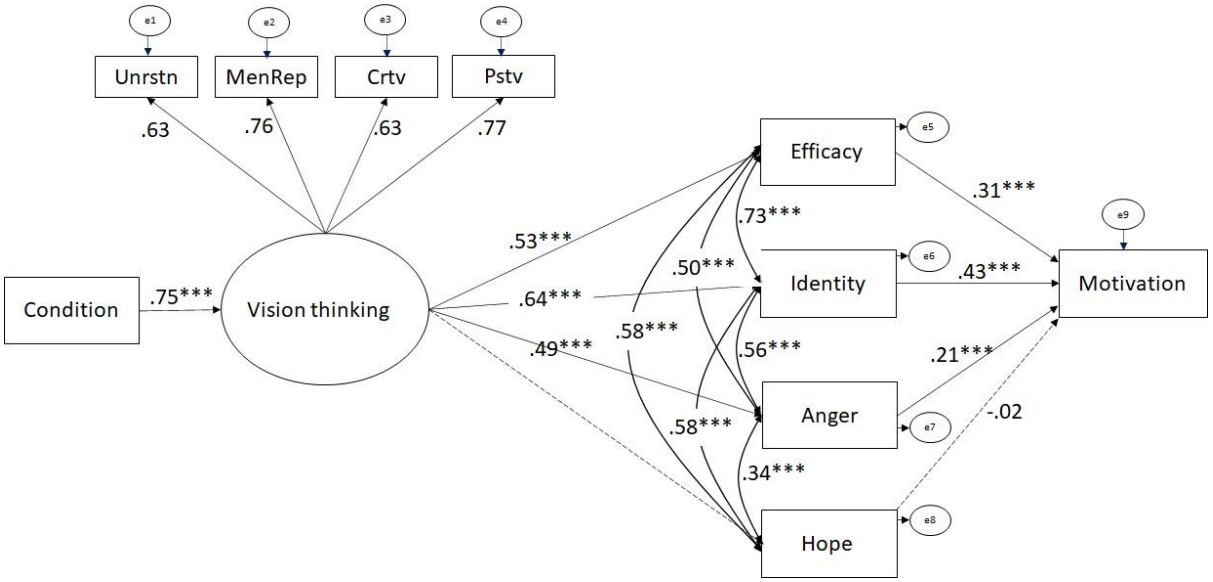
Note. N = 297. (Vision thinking and control conditions)

*** $p < .001$.

Structural equation modelling using *Lavaan* in *R* version 3.6.3 (maximum likelihood estimation and bootstrapping from 1,000 bootstrap samples) revealed a good fit between the vision thinking collective action model and the data: $\chi^2(20) = 45.08$, $p = .001$, comparative fit index (CFI) = .98, SRMR = .03. The standardised loadings are shown in Figure V.1.

Figure V.1

Vision Thinking Collective Action Model



Vision thinking was positively associated with efficacy, identity, hope (but not anger); efficacy and identity (but not hope or anger) were in turn positively associated with motivation. As implied by these relationships, there was a significant path from vision thinking to motivation via identity: *B* = 0.55 (unstandardised), *SE* = 0.14, 95% CI [0.32, 0.86], and a significant path from vision thinking to motivation via efficacy: *B* = 0.32 (unstandardised), *SE* = 0.11, 95% CI [0.14, 0.58]. The indirect effect via hope was insignificant: *B* = -0.02 (unstandardised), *SE* = 0.50, 95% CI [-0.12, 0.06]). The indirect effect via anger was also insignificant: *B* = 0.08 (unstandardised), *SE* = 0.05, 95% CI [-0.01, 0.19]).

Appendix W

Vision Thinking Collective Action Model

Group Vision Thinking and Group Discussion

Table W.1 shows the means, standard deviations, and bivariate correlations for the dependent variables.

Table W.1

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	*M*	*SD*	Identity	Efficacy	Anger	Hope
Identity	5.35	1.13	-	-	-	-
Efficacy	6.00	1.07	0.70***	-	-	-
Anger	5.09	1.53	0.60***	0.35***	-	-
Hope	5.55	1.24	0.59***	0.55***	0.28***	-
Motivation	5.29	1.16	0.81***	0.70***	0.59***	0.52***

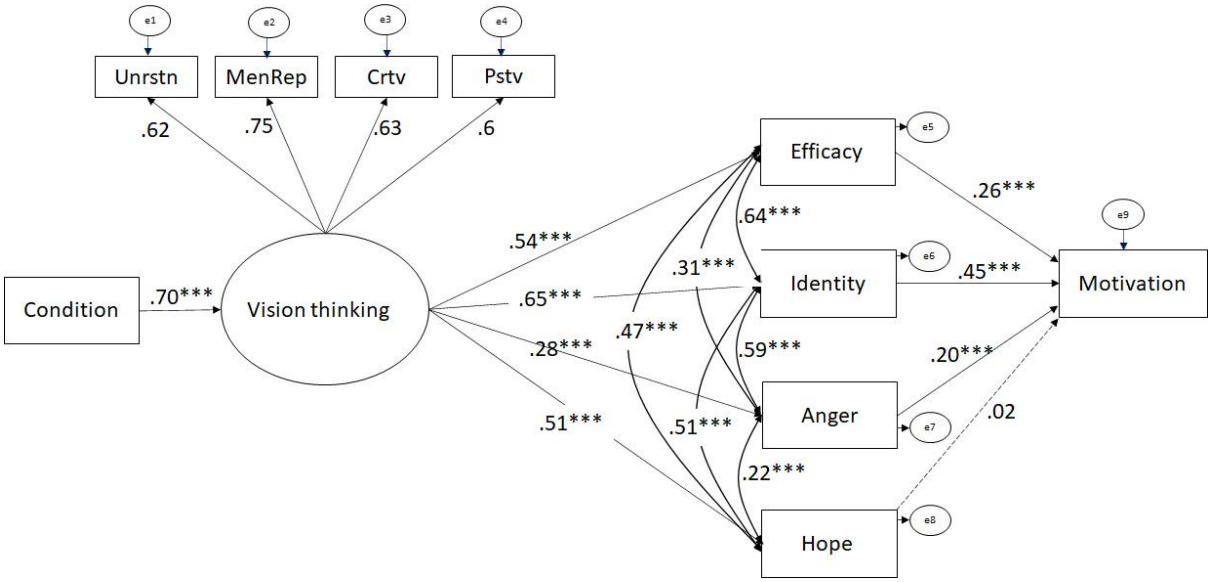
Note. N = 537. Motivation = motivation to take collective action.

*** $p < .001$.

Multi-level analysis structural equation modelling using *Lavaan* in *R* version 3.6.3 (bootstrapping from 1,000 bootstrap samples) revealed a good fit between the vision thinking collective action model and the data: $\chi^2(20) = 94.50$, $p = .000$, comparative fit index (CFI) = .97, SRMR = .05. The standardised loadings are shown in Figure W.1.

Figure W.1

Vision Thinking Collective Action Model



Note. Showing standardised loadings. Number of clusters (discussion groups) 160, average cluster size 3.6.

Group Vision Thinking and Individual Vision Thinking

Table W.2 shows the means, standard deviations, and bivariate correlations for the dependent variables.

Table W.2

Means, Standard Deviations, and Pearson's Correlations for the Dependent Variables

Variable	*M*	*SD*	Identity	Efficacy	Anger	Hope
Identity	5.34	1.14	-	-	-	-
Efficacy	5.68	1.11	0.73***	-	-	-
Anger	5.17	1.50	0.66***	0.45***	-	-
Hope	5.57	1.20	0.57***	0.53***	0.34***	-
Motivation	5.32	1.20	0.81***	0.72***	0.65***	0.48***

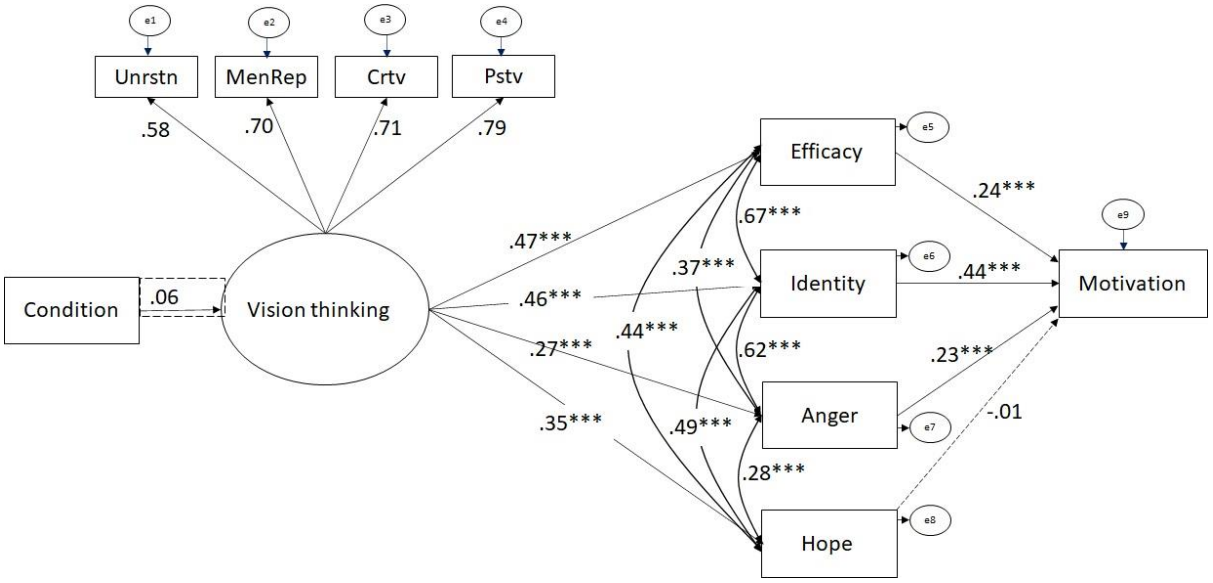
Note. N = 439. Motivation = motivation to take collective action.

*** $p < .001$.

Multi-level analysis structural equation modelling using *Lavaan* in *R* version 3.6.3 (bootstrapping from 1,000 bootstrap samples) revealed a good fit between the vision thinking collective action model and the data: $\chi^2(20) = 39.69$, $p = .005$, comparative fit index (CFI) = .99, SRMR = .04. The standardised loadings are shown in Figure W.2.

Figure W.2

Vision Thinking Collective Action Model



Note. Showing standardised loadings.