Putting things in perspective:

How goals and value shape the experience of emotion

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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Declaration

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

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Abstract

The aim of the studies in this thesis was to examine whether reminders of values and goals allow people to put stressors into perspective and thus reduce stress. Study 1 of the dissertation tested whether giving participants a chance to self-affirm, which means reminding them of important values other than the stress-causing stimulus, lowers the stressor's significance and makes them want to regulate their stress. In the second study, participants were reminded of important goals (versus less important goals or nothing in the control conditions) to determine whether reminders of important goals lower stress responses. Lastly, in Study 3, participants were instructed to put a stressor into perspective to see whether it would reduce stress on various explicit and implicit measures of stress and coping. The main findings of the thesis show that self-affirmation and instructed perspective taking have the potential to affect the experience of stress, especially when taking into account individual difference variables, such as trait anxiety or habitual perspective taking. The results are discussed in light of existing knowledge, and some recommendations are made for future research and specialists in the fields of social and clinical psychology.

Chapter 1. Introduction

People experience a variety of stressful events in their daily lives, such as failing exams, experiencing financial issues, or disagreements with family or friends. Stressful events have a significant impact on people (Updegraff & Taylor, 2021). Previous research has shown that stressful life situations can lead to depression, anxiety, or post-traumatic stress disorder (PTSD) (Scott, Sliwinski, & Blanchard-Fields, 2013).

However, people can learn techniques to help them control their reactions to negative experiences such as stress (Streamer, Seery, Kondrak, Lamarche, & Saltsman, 2017). Some techniques, such as emotion regulation strategies (i.e., techniques that aim to modulate the emotional experience) and self-distancing (i.e., a technique that involves mental distancing from a stressor), can be useful in regulating distressing feelings because they allow people to control or change their thoughts, feelings, and behaviour (Troy, Shallcross, & Mauss, 2013). Considering the significance of managing and reducing stress, the purpose of this research is to see if reminding people of their goals and values can help them regulate their stress reactions to events. The study specifically tests whether thinking of important values and goals or more important events than a stressor allows people to put stress into perspective and thus reduces stress. If so, people's (stress unrelated) goals and values could represent an easily available resource that allows them to manage stress without engaging in often difficult and challenging emotion regulation techniques (cf. Milyavskaya, Saunders, & Inzlicht, 2021). This introductory chapter first discusses background literature relevant to the studies described in the following chapters. It begins with an overview of the key components of emotion before moving on to relevant theories. In addition, this chapter provides an overview of emotion regulation and other techniques. The chapter concludes by explaining the aims and structure of the thesis.

1.1 Definitions of emotion

Emotion has been defined in various ways in the literature (see(Denzin, 2017) and it is important to understand the difference from other psychological states, such as moods and feelings. Moods are commonly interpreted in the literature as less intense generalised states that last much longer than emotions and feelings (Gendolla, 2000). As described by Lazarus (1991), a mood "is a transient reaction to specific encounters with the environment, one that comes and goes depending on particular conditions" (p. 47). Feelings, on the other hand, are defined as both the subjective experience of an emotional state and the subjective experience of physical drive states (Friedenberg & Silverman, 2011). Wierzbicka (1999) concurred with this view and added that people of all cultures can use their native languages to identify their feelings, such as "a feeling of hunger" or "a feeling of cold" (as cited in Munezero, Montero, Sutinen, & Pajunen, 2014, p. 102).

So, what exactly are emotions? James (1884) provided one of the early definitions, describing emotions as the bodily changes that follow the perception of an exciting fact, and that our feelings of the same change as they occur. Since then, over 90 alternative concepts have been articulated (Plutchik, 2001). Despite disagreements, among the various definitions, some theories consider emotion to be a state composed of subjective feelings, cognitive appraisal, action propensity, motor expression, and physiological arousal (see Figure 1.1) (as cited in Mulligan & Scherer, 2012). Among these components, subjective feelings and cognitive appraisal are regarded as important mechanisms for experiencing an emotion (Scherer, 2009). According to Shuman and Scherer (2014), each of the parts of an emotional episode serves a specific purpose.

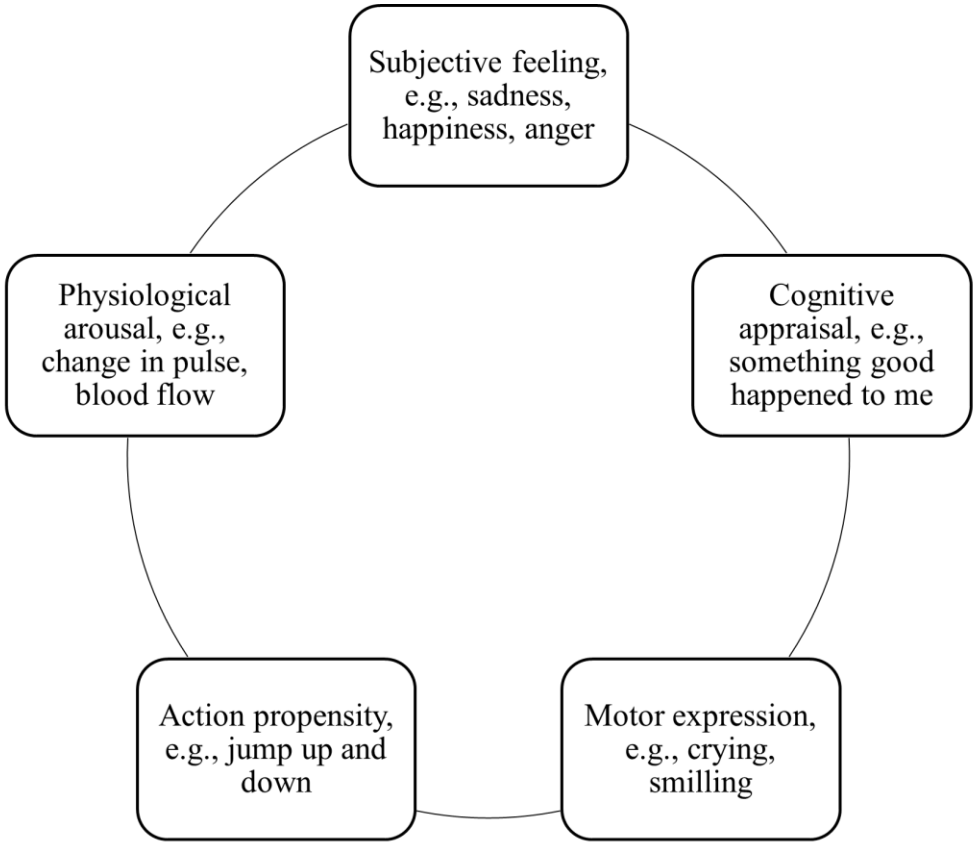

Figure 1.1. Emotional components (source: Shuman & Scherer, 2014)

This thesis examines how important goals or values change the experience of stress and emotion regulation, using stress as the common element caused by daily challenges that contribute to changes in emotions. Folkman (2013), for instance, defines stress as both a stimulus and a response. Stress as a stimulus is sometimes referred to as a stressor and is described as an occurrence that affects an individual (e.g., losing a job, getting divorced). As a response, stress is characterised by psychological arousal and unpleasant feelings. According to Lazarus (1966), stress is experienced when individuals think they are unable to cope using existing resources. Suldo, Shaunessy, and Hardesty (2008) define perceived stress as the interaction between an environmental cause (external stress), the body's physiological responses (distress), and a person's cognitive, emotional, and behavioural responses to this interaction. The following sub-sections now turn to several theories of emotions.

1.2 Cognitive appraisal theory

Affective science researchers disagree about various aspects of emotion (for an overview of the discussion on various emotion theories, see, for instance, Shuman and Scherer [2014]). It is not possible to cover this debate in full within the scope of this thesis, and thus this section focuses on describing cognitive appraisal theory as it is most relevant to the thesis.

One of the most widely applied theories in psychology is cognitive appraisal theory (or appraisal theory), which suggests that emotions are caused and differentiated by various appraisals of stimuli that a person encounters. Specifically, Moors (2017) explains that appraisals of goal relevance or irrelevance (e.g., whether an event is relevant or irrelevant to a person's current goal), and further of valence, (un)expectedness, or controllability, determine whether and which emotion is experienced. For instance, anger is experienced when an event is appraised as having negative goal consistency or conduciveness and external goal impediment responsibility, while pride is experienced when an event is appraised as having positive goal consistency or conduciveness and internal goal attainment responsibility. However, different scholars have applied this theory in a variety of ways, discussed in section 1.4.

It is necessary to acknowledge other theories, such as basic emotion theory and social constructionist emotion theory. According to basic emotion theory, individuals have a limited number of biologically and psychologically "basic" emotions, such as fear, anger, joy, and sadness (Wilson-Mendenhall, Barrett, & Barsalou, 2013), each shown in a structured recurring pattern and associated with specific behavioural components (Russell, 2017). In the literature on affective research, basic emotion theory has been applied in at least two ways. First, basic emotions are considered the essential parts that can be combined to make more complex emotions (Juslin, 2013). Second, basic emotion theory suggests that a small number

of emotions have a biological basis and that these emotions are recorded in human genes (e.g., Izard, 2013; Johnson-Laird & Oatley, 1992; Tooby & Cosmides, 1990).

Social constructionist theorists criticise the idea of viewing emotions primarily as the physiological or biological responses of individuals. They believe that emotions are learned behaviours that are produced, experienced, shaped, influenced, and expressed in particular social and cultural contexts (Lupton, 1998). Researchers who employ this theory are interested in how an individuals' emotions affect their sense of self and how they interact with other people and the environment (Boiger & Mesquita, 2012). This work will be guided by appraisal theory but interested readers can learn more about other theories of emotions in (Shuman & Scherer, 2014).

1.3 Emotion regulation

Emotion regulation refers to the ability to exert control over one's emotional state to prevent the adverse effects of emotions (Sheppes et al., 2014). Emotional control includes changes in the emotion itself, such as its intensity and duration, how one expresses emotions, and the situation that triggers emotions, enabling one to respond appropriately to the demands of an ever-changing environment (Aldao, 2013). It is necessary for people experiencing emotional dysregulation to use a variety of techniques to change their current state of emotion and achieve desired goals (Gross, 2015). Much research has focused on two common strategies – reappraisal and suppression – although people have called for research on other strategies, such as pursuing different regulation goals, strategies, or tactics (Ford et al., 2019). Cognitive reappraisal involves people altering their underlying appraisals of an emotion-inducing event, for example reappraising failure as a learning experience (Troy, Shallcross, Brunner, Friedman, & Jones, 2018). In contrast, suppression merely involves concealing the outward signs of inner emotions (Troy et al., 2018). These emotional regulation strategies are

associated with varying levels of positive effects and psychologically positive health outcomes over time.

1.4 Concepts of emotion regulation: Cognitive reappraisal, suppression, acceptance

Deficiencies in emotional reappraisal appear to be a good indicator of psychopathology (Gross & John, 2003). Eftekhari, Zoellner, & Vigil (2009) used cluster analysis to examine female participants with and without experiences of potentially traumatic events. Participants who regulated their emotions less effectively scored highly on the depression, anxiety, and posttraumatic stress disorder (PTSD) measures. In contrast, those who used reappraisal but not suppression most often and effectively had the lowest levels of these traits, which suggests that this pattern of emotion regulation may be the most effective in reducing distress.

The effectiveness of reappraisal is supported by several other studies, including experimental ones that allow causal conclusions. Hofmann, Heering, Sawyer, and Asnaani (2009) investigated the effects of emotion regulation techniques on an anxiety-inducing speaking task. The participants were assigned to one of three conditions: reappraisal, suppression, or acceptance. The reappraisal group were asked to recognise that the task posed no threat to them, the suppression group were asked to hide their feelings and behave in a way that would not let anyone watching them know that they were feeling anxious, and the acceptance group were told to accept their feelings and let them run naturally instead of controlling them. The findings showed that the suppression group reported more anxiety than the reappraisal group, and reappraisal was found to be more effective than both suppression and acceptance in moderating the subjective feeling of anxiety. In addition, the suppression group showed a greater increase in heart rate from baseline than the other two groups.

Another study that examined reappraisal (in the form of perspective taking) versus acceptance was carried out by Troy et al. (2018). Participants watched sad film clips. Reappraisers were asked to try and see the clip in a relatively positive light and were given suggestions as to how this could be achieved (e.g., by thinking about the positives the event might have on the characters' lives or good things the characters could learn from the experience). Acceptors were asked not to control or change their feelings but to allow them to run naturally. Reappraisal was associated with a larger decrease in negative and a larger increase in positive emotions during the clips and recovery period. This finding is consistent with findings from the previously mentioned studies. First, the study by Hofmann et al. (2009) favoured reappraisal over acceptance for decreasing negative emotions. This study also involved reframing the situation through recognition and understanding that the speaking task had no consequences and posed no threat to the participants. Similarly, Olatunji, Berg, Cox, & Billingsley (2017) were able to reduce negative emotions (i.e., disgust) in participants when they changed the meanings of stimuli (e.g., seeing vomiting as a way of relieving an illness).

To summarise, research has consistently demonstrated that reappraisal is associated with increased psychological well-being. Troy et al. (2018) define two emotional regulation strategies, namely cognitive reappraisal and acceptance, as the best reappraisal strategies with positive effects on emotions, cognitive development, and physiology. However, it is unclear whether these reappraisal strategies have different short-term consequences in terms of emotions or perceived cognitive costs. Despite the limitations of the research in taking the aspect of differential consequences of reappraisal strategies into account, it nonetheless recognises their importance in improving psychological health outcomes. The reappraisal strategy allows people to change the underlying appraisals contributing to negative outcomes of emotion. Those who re-evaluate a distressing situation with an optimistic outlook and look

for the positive aspects of negative circumstances can cope more easily with setbacks without expressing their distress. Empirical and scientific studies must expand their scope and consider reappraisal strategies other than cognitive reappraisal and suppression strategies.

1.5 Motivational accounts of emotion and emotion regulation

This thesis tests whether reminders of goals have a similar effect as reappraising (as described above) and allow people to evaluate and appraise negative emotional events and stressors in a different way, with positive consequences for their emotional experience and reaction. Goals are important in eliciting emotions and vice versa. Appraisal theory and motivational accounts of emotions (Buck, 1985; Frijda, 1986; Roseman, 1984) argue that emotional responses represent goals, such as aiming to reach safety when experiencing fear or aiming to repair or make up for immoral deeds when feeling guilt (e.g., Roseman, 1984; Vogt et al., 2017). Similarly, models of emotion regulation, such as those developed by Tamir, Vishkin, and Gutentag (2020), argue that the processes represent goals, such as to maintain, lower, or enhance an emotional state. For instance, the work of Tamir and colleagues has found that the expected usefulness of emotions influences how much people want to experience them. Based on goal theories, they hypothesised that people should only want to feel emotions that are considered useful, similar to goals that are only pursued when considered valuable. For example, in one study, they manipulated people's beliefs about the expected outcomes of emotions (Tamir, Bigman, Rhodes, Salerno, & Schreier, 2015). Participants who were led to believe that anger would be harmful (rather than beneficial) to their performance became less motivated to experience anger. This caused them to avoid (rather than select) anger-inducing stimuli (e.g., completing a novel task assessing their professional potential) and to experience less (rather than more) intense anger after being exposed to the stimuli they had chosen. In contrast, when people believed anger would be useful, they chose to experience it.

Here, this study extends these assumptions and argues that if emotions or emotion regulation responses are goals, they should follow the principles of goals; that is, they should respond to the presence of more important goals. This means that the emotional response should be lowered if a more important goal is present (cf. Kruglanski et al., 2001). For instance, appraisal theory argues that the emotion felt is an outcome of a relevance appraisal (Moors, Ellsworth, Scherer, & Frijda, 2013). Thus, if this relevance is lowered, the emotional response should also be lowered. Supporting this reasoning, self-control research has shown that emotional (i.e., positive) responses to tempting items, such as tasty yet high-calorie items, are lowered or even become negative when people are reminded of their dieting goals (e.g., Fishbach, Friedman, & Kruglanski, 2003; Papies, Stroebe, & Aarts, 2008).

This thesis therefore tests whether people also prioritise more important goals over less important ones that are yet stressful. For instance, when a student is stressed about getting a good mark in an exam and something becomes more important (they receive a marriage proposal or hear about the severe illness of a relative), is the emotional experience (stress) invoked by the exam lowered? If this is the case, then simply reminding people of important goals might cause them to lower their emotional state and could represent a readily available tool to cope with at least minor stressors.

1.6 Relevant related mechanisms and techniques

1.6.1 Self-affirmation

The suggested mechanism has some parallels with self-affirmation. Self-affirmation requires people to reflect on (positive) personal goals and values (Silverman, Logel, & Cohen, 2013). Affirming one's own significant values or positive personal characteristics has been shown in numerous studies (e.g., Creswell et al., 2005) to protect against stress. Creswell et al. (2005) discovered that when people were subjected to harsh social evaluation, delivering an impromptu speech in front of a judgemental audience, those who had

previously considered an important personal value did not experience a rise in the stress hormone cortisol. Researchers have also argued that this is successful because it alters the nature of the self under threat (Sherman, 2013). As a result, some researchers think that self-affirmation is effective because it promotes the trivialisation of threats (Critcher & Dunning, 2015).

Critcher and Dunning (2015) conducted experiments to examine the effectiveness of this strategy in reducing emotional threats and defensiveness and they tested whether it led to trivialisation and perspective taking. In their experiment, American undergraduates were randomly assigned to either an experimental condition in which they wrote about their most important value or skill or a control condition in which they completed "filler" questionnaires. The participants then completed a "behavioural test", which was supposed to be able to predict how the participants would behave in comparison to their peers. These participants then received (false) feedback made up of 24 negative and 12 positive statements given in a random order. The researchers kept track of how long each person took to read the negative feedback. Finally, the participants responded to two items that measured perspective ("*If one received negative feedback on the [behavioural test], were these behaviours specific enough that other aspects of a person could overcome these limitations*?") and ("*How important are the domains covered by the [behavioural test]*?"). The results showed that people in the self-affirmation condition spent more time looking at the negative feedback than those in the control condition. Also, the self-affirmed participants had greater perspective over the threat than did those in the control condition. Furthermore, the self-affirmed participants were no more likely to trivialise the threat than those in the control condition. The authors argue that this was because those in the self-affirmation condition were better at seeing things from different points of view. The findings indicate that self-affirmation does not lead to trivialisation of a threat or stressor; rather, it reminds people of

other vital parts of themselves and not just the threatened identity. Threatened self-aspects were less all-defining of the self (although just as important) for self-affirmed participants than for non-affirmed participants, and this broader perspective in considering the threat mediated the reduction of defensiveness through self-affirmation. However, it would be beneficial to test again whether self-affirmation encourages trivialisation of threats as indicated by prior studies (cf. Simon, Greenberg, & Brehm, 1995) because the question Critcher and Dunning (2015) used to measure perspective taking might have also tapped into trivialisation.

1.6.2 Self-distancing

Another strategy that aims to change the significance of a stress-inducing event in order to support stress regulation is self-distancing. This strategy encourages people to think about a negative experience from a self-distanced, third-person perspective (e.g., like a fly on a wall observing oneself). It allows people to process negative events in more adaptive ways (White, Kross, & Duckworth, 2015). People often take the first-person or self-immersed perspective when experiencing negative emotions (Michel-Kronler, Kaurin, Heil, & Berti, 2021). For example, people tend to ask common questions from first-person perspectives, such as “Why am I angry?” or “How could s/he do this?” when processing immense negative emotions. However, this is not effective in reducing emotion or solving the averse situation (Wisco al., 2015).

Self-distancing entails taking the third-person perspective when processing immense emotions (e.g., Why did Tooma feel angry?). The strategy often involves reflecting on past anger-inducing circumstances and the ability to reflect adaptively on negative experiences (Michel-Kronler et al., 2021). The strategy can be used in two different ways: first, by engaging visual shifts and examining self-affective experiences from an external point of view (fly on the wall); second, by engaging a linguistic shift using third-person self-talk, such

as “Why did Tooma feel angry?” (Michel-Kronler et al., 2021). Studies have shown that focusing on the reasons or factors influencing the person’s actions helps regulate emotions and reduce anxiety. Thus, it makes us less angry (Michel-Kronler et al., 2021). The third-person perspective changes situation-related thoughts about oneself and increases an individual's ability to manage negative emotions.

1.6.3 Perspective taking

Perspective taking has been identified as a habitual emotion regulation strategy that refers to reducing the importance of an event. In the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski, Kraaij, & Spinhoven, 2001), it is measured with responses to items such as “I think that it hasn’t been too bad compared to other things” and “I think that other people go through much worse experiences”. Theurel and Gentaz (2018) found that adolescents used reappraisal subtypes (i.e., putting things into perspective and positive reappraisal) more frequently than distraction.

Previous research has attempted to train people to put things into perspective as a way of reducing negative emotions. For instance, Schartau, Dalgleish, and Dunn’s (2009) study asked participants in an experimental group to practise applying appraisal themes associated with the concept of seeing the big picture when viewing a series of distressing training videos, either during or immediately following each film (e.g., bad things happen in the world, and I need to put them behind me and move on; there are usually some good aspects to every situation, and it is important to focus on these), while control participants viewed the same films without being instructed to rate them. Compared to the controls, the participants who practised appraisal showed lower levels of self-reported negative emotional responses to a final test film that all participants were told to appraise. While these studies suggest that perspective taking minimises negative impacts, it is unclear which perspective-changing approach reduces suffering. As numerous cognitive reappraisal techniques were tested

together (e.g., Troy et al., 2018), assessing the advantages of any particular strategy on its own is impossible. As a result, this study aims to test how perspective taking can alleviate stress.

1.7 Aims of this thesis

This thesis investigates in various ways how reminders of goals and values might change emotional experiences. People experience various emotional events or experiences that affect their mental and psychological well-being. Scholars have explored the effectiveness and differential consequences of various methods of emotion regulation. This thesis aims to expand on the existing knowledge of techniques to regulate emotions. The results will help address the research questions on how goals and values change in the face of adversity.

In terms of perspective taking, the thesis investigates whether providing an opportunity to self-affirm, such as being reminded of the importance of values and purposes other than the stress-causing stimulus, lowers the relevance of the stress and makes people want to engage in emotion regulation. It also tests whether reminders of goals, and not values, have a similar effect as self-affirmation. Second, it aims to determine how individual differences affect the use and efficacy of such a "putting things into perspective" technique, for example whether people with high trait anxiety will exhibit less stress or feel more stress (e.g., because the reminder of goals adds to their feelings of stress). Finally, it is also essential to understand whether perspective taking influences emotion regulation differently depending on whether a more important goal is positive or negative.

1.8 Outline of chapters

This chapter has addressed the background literature important to the investigations detailed in subsequent chapters. Before discussing emotion theories, it has first provided an

overview of the primary components of emotion. In addition, this chapter has offered an overview of emotion regulation and additional strategies. The chapter concludes by outlining the purpose and structure of the thesis. The remaining chapters are detailed in the following paragraphs.

Chapter 2: Self-affirmation prevents an increase in feelings of stress in trait anxiety

This chapter investigates whether providing an opportunity to self-affirm, that is, being reminded of the importance of values and goals other than the stress-causing stimulus, lowers the relevance of the stress and makes people want to engage in emotion regulation because the emotional reaction is perceived as less important and inappropriate. Previous research has shown the beneficial effects of self-affirmation and how self-affirmation can buffer against stress. This research took a different position in the self-affirmation manipulation that required participants in the experimental condition to affirm their most important value after the induction of stress, whereas participants in the control condition affirmed their least important value, to see whether self-affirmation would lower the relevance of the stressor. The study also accounts for trait anxiety. From this, it is possible to see whether self-affirmation helps anxious people to regulate stress.

Chapter 3: Putting things in perspective: Exploring the effect of goals differing in importance on emotional experience and emotion regulation

This chapter addresses whether being reminded of current, important goals lowers the relevance of a stressor and makes people want to engage in emotion regulation. Previous research has shown that emotional reactions to goal-relevant events change when more important goals alter their meaning and relevance. For instance, dieters' positive reactions to high-caloric food are lowered when reminded of their dieting goals (e.g., Fishbach et al., 2003; Papies et al., 2008). This research employed a goal task that required participants to think about current, important goals to see whether this reduced their stress response. Two

studies were conducted to address this, demonstrating whether goal importance in itself (beyond positive values as in Chapter 1) helps to regulate stress.

Chapter 4: "There are worse things in life": How comparisons with extreme positive and negative scenarios affect the experience of stress

This chapter examines whether engaging in perspective taking or being reminded of the significance of life situations other than the stress-causing stimulus reduces the stressor's relevance and increases people's desire to engage in emotion regulation. To test this idea, we created a manipulation comprising an instruction text and perspective scale to encourage participants to think about their stressor while looking at the bigger picture. In addition, we asked participants to compare the stressor to negative or positive events to investigate whether perspective taking influences emotion regulation differently depending on whether the events are positive or negative. Furthermore, we used both direct and indirect measures of stress to ensure that the study was not only measuring demand effects. This made it possible to see if more explicit instructions on perspective taking (aside from goal importance, as discussed in Chapter 3) help to reduce stress.

Chapter 5 discusses the overall research results and provides an outline of the research implications and contributions to theory and practice. Then, the chapter acknowledges the research limitations and gives recommendations for further research.

The research presented in Chapter 2 was presented at the Society of Personality and Social Psychology 2021 (SPSP) conference and the Society for the Study of Motivation (SSM) conference as a poster. An overview of the key focus of each empirical chapter is provided in Table 1.1.

Table 1.1. *Summary overview of empirical chapters in this thesis*

	Stress Induction	Perspective-Taking Measure	Aim
Chapter 2	Modified Trier Social Stress Test (TSST)	Self-affirmation manipulation: affirm the most important (versus least important; control condition) values.	To investigate whether giving people a chance to self-affirm or being reminded of the importance of things other than the stress-causing stimulus, changes how they feel about stress and makes them more likely to want to control their emotions.
Chapter 3	Insoluble anagram task	Reminders of goals varying in importance. (Write about current goals of varying importance.)	To assess whether being reminded of current and important goals lowers the relevance of the stressor and makes people want to engage in emotion regulation.
Chapter 4	Writing about an upcoming stressor (e.g., an assignment or exam)	A persuasive text instruction and a perspective-taking scale. (Put the stressor into perspective by comparing it to extreme positive and negative case scenarios.)	To investigate whether more explicit instructions on perspective taking lower self-reported stress and coping responses in various explicit and more implicit stress measures; also, to see whether this effect depends on whether the events that are used to create perspective are positive or negative.

Chapter 2. Self-Affirmation Prevents a Rise in Feelings of Stress in Trait Anxiety

Abstract

Emotions are responses to important events in people's lives. For instance, people feel fear when their safety is threatened or anger when somebody (or something) prevents them from achieving an important goal. This research aimed to investigate whether providing an opportunity to self-affirm, that is, being reminded of the importance of values other than the stress-causing stimulus, changes the experience of stress and makes people want to engage in emotion regulation because the stress is perceived as less important and inappropriate. To this end, 90 participants were asked to take part in an interview involving public speaking to induce stress (the Trier Social Stress Test). Importantly, the participants in the experimental condition were asked to affirm their most important value after the stress induction, whereas participants in the control condition affirmed their least important value. Their stress experience before and after the self-affirmation task was measured, in addition to their desire to regulate their stressful state and individual differences in trait anxiety and emotion regulation skills. Self-affirmation prevented a raise in feelings of stress in highly trait anxious participants. For participants in the non-affirming condition who were high in trait anxiety, feelings of stress increased. Trait anxious participants in the self-affirmation condition were also motivated to regulate their stress. The study concludes that self-affirmation may be an effective way of addressing stress for anxious individuals.

Keywords: Stress, Self-Affirmation, Emotion Regulation, Motivation

2.1 Introduction

Stress is a response to a stressful event, such as people experiencing fear or anger when their wellbeing is threatened or when someone (or something) prohibits them from pursuing a significant goal (Ehlers & Clark, 2000). Stress has the potential to impact health (Carver & Vargas, 2011; Sherman & Cohen, 2006) and it is therefore important to identify ways of coping with stress. This study tests whether self-affirmation helps people cope with a stressor. Self-affirmation is a mechanism that aims to protect self-integrity and tends to require people to reflect on (positive) personal goals and values, such as spending time with friends, or being a good parent (Silverman et al., 2013). Self-affirmation theory argues that this helps people to fulfil their basic need to protect their self-integrity and overcome threats to the self (Steele, 1988).

Numerous studies (e.g., McQueen & Klein, 2006; Sherman & Cohen, 2006) have indicated that self-affirmation leads to a significant improvement in different aspects of an individual's life, including achievement and well-being, as well as relationships. Affirming one's own significant values or positive personal characteristics can protect against stress (e.g., Creswell et al., 2005; Keough & Markus, 1998) and help bring about change in threatening situations by reducing defensive responses (e.g., Harris, Mayle, Mabbott, & Napper, 2007; Sherman & Cohen, 2006). This study aims to extend the existing research by applying self-affirmation in response to a strong stressor and investigating its relationship with emotion regulation.

2.1.1 Stress

Folkman (2013) describes stress as both a stimulus and a response. Stress as a stimulus is often called a stressor, and it is defined as an event that occurs and impacts an individual (e.g., losing a job, getting divorced). Stress as a response refers to the body's reaction and is characterised by psychological arousal and negative affect. According to

Lazarus (1966), stress is a relationship between an individual and the environment that is appraised by the person as significant (i.e., being unable to cope with it using existing resources). Suldo et al. (2008) introduced the notion of perceived stress, which refers to "interactions between an environmental precipitant (external stress); the physiological reactions of the body (distress); and a person's cognitive, emotional, and behavioural response to this interaction" (p. 274). This study tests how self-affirmation affects the experience of stress and emotion regulation.

2.1.2 Emotion regulation

Emotion regulation concerns processes that change the frequency, intensity, and duration of emotional states (Gross, 2014, 2015). Gross (1998) also defines emotion regulation as "the process by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (p. 275). The ways in which people regulate emotion are known as emotion regulation strategies (Gross, 1998, 2014, 2015). Emotion regulation strategies include cognitive and behavioural processes that modify emotional experiences (Gross, 1998).

Several emotion regulation strategies have been identified in the literature. For example, Larsen and Prizmic (2014) identified many strategies for reducing negative affect. Two are cognitive reappraisal (thinking about the emotion-eliciting event or the emotion in a different way) and suppression (trying to inhibit the expression or experience of a negative feeling; REF). In particular, research findings concerning cognitive reappraisal suggest that it can lead to decreased depression, less negative affect, and increased life satisfaction (Garnefski & Kraaij, 2006; Garnefski, Teerds, Kraaij, Legerstee, & van Den Kommer, 2004; Kashdan, Barrios, Forsyth, & Steger, 2006), and can reduce physiological arousal (Dandoy & Goldstein, 1990). In addition, it has been viewed as adaptive for processing memories and integrating new experiences (Ehlers & Clark, 2000; Gross, 2002). In contrast,

expressive suppression can result in increased levels of anxiety and negative affect (Gross & John, 2003), increased physiological arousal (Gross & Levenson, 1997), and poor recall of information (e.g., Bonanno, Papa, Lalande, Westphal, & Coifman, 2004; Richards & Gross, 1999). There is little research on self-affirmation as an emotion regulation strategy, leading to its consideration here.

2.1.3 Self-affirmation

Self-affirmation entails observing how individuals react and adapt to experiences that threaten their self-concept (Sherman et al., 2013). Self-affirmation allows individuals to develop a positive sense of themselves. The strategy helps to build a positive view of the self and improves people's self-esteem (Lannin, Guyll, Vogel, & Madon, 2013). Crowel et al. (2015) argue that the positive affirmation of one's values is a suitable self-affirmation strategy to develop a positive emotional orientation and avoid self-esteem threats.

Previous studies have demonstrated the beneficial effects of self-affirmation. For example, self-affirmation can help people accept and process self-threatening information that they might otherwise ignore or discard. In one study, for instance, people were shown evidence that went against what they thought about capital punishment (Cohen, Aronson, & Steele, 2000). Participants who had self-affirmed were more influenced by the counter-attitude information than those who had not self-affirmed, suggesting that self-affirmation makes people more open to information that challenges their beliefs.

2.1.4 The study

Although there have been many studies on self-affirmation, few have focused on the beneficial effects of self-affirmation and how self-affirmation can buffer against stress (Keough & Markus, 1998). In an unpublished study (Keough, Garcia, & Steele, unpublished, as cited in Keough & Markus, 1998), participants were asked to focus on either their most or

least important personal value prior to performing a stress task. The stress task was introduced by asking participants to write about how they felt about going to college. The results showed that participants who affirmed themselves using their most important value reported lower perceived stress, greater feelings of self-worth, and higher levels of state self-esteem compared to the group that focused on the least important value.

Furthermore, previous research has shown that people are not necessarily motivated to regulate their emotions, for example when the emotion seems useful, such as anger in competitions (Tamir & Millgram, 2017). Being motivated to regulate is therefore an important process to consider, as a lack of motivation might contribute to aberrant emotional responses similar to when using maladaptive strategies. Therefore, the study investigates whether self-affirmation cause people to be motivated to regulate their stress. Specifically, it was designed to investigate whether providing an opportunity to self-affirm, that is, being reminded of the importance of values and goals other than the stress-causing stimulus would lower the relevance of the stressor and make people want to engage in emotion regulation because they perceived the stressful reaction as less important and inappropriate. To do this, we asked participants to take part in a public interview to induce stress (the Trier Social Stress Test [TSST]). We manipulated self-affirmation by asking participants in the experimental condition to affirm their most important value after the stress induction, whereas the participants in the control condition affirmed their least important value. We looked at how stressed they were before and after the self-affirmation task. We also looked at how much they wanted to regulate their stress and how their trait anxiety and ability to regulate emotions were different.

2.1.5 Predictions

The study hypothesised that individuals in the self-affirmation condition would exhibit a more noticeable reduction in stress compared to those in the non-self-affirmation

condition, who were not instructed to affirm themselves. It was also predicted that self-affirmation might affect people differently depending on their anxiety, and their habitual tendency to employ reappraisal and suppression. For instance, putting things in perspective or being reminded of important goals might increase stress levels particularly for highly anxious individuals. The latter aspect of the study was exploratory.

2.2 Method

2.2.1 Participants

An a priori power analysis was conducted in G*Power to determine a sufficient sample size using an alpha value of 0.05, a power of 0.95, and an effect size of $d = 0.29$. It was estimated that 96 participants would be required. The final sample consisted of 93 psychology undergraduates at the University of Reading who took part in the study in exchange for course credit or £5. There were no restrictions on gender, ethnicity, or any other characteristics.

The data set was scanned for straight lining and central lining in the Likert scale responses. Straight lining is a form of response where the participants mark the same answer for most of the questions in the questionnaire pattern (Hair, Hult, Ringle, & Sarstedt, 2016). Central lining is when the participants select only the middle value in all the scale questions throughout the survey. No one was excluded at this stage. Three individuals withdrew from the study after they read the information sheet. After data examination, the final sample consisted of 90 participants, aged between 18 and 36 years old ($M = 20.50$ years, $SD = 3$ years). The majority of the sample was female (75 females, 15 males). The study was presented in the SONA system as a study "investigating cognitive abilities, attitudes and experiences". It was approved by the School of Psychology and Clinical Language Sciences Ethics Committee, University of Reading (2018-160-JV).

2.2.2 Materials

Stress induction

This experiment used a modified form of the Trier Social Stress Test (TSST) to induce stress by subjecting participants to a speech task (Kirschbaum, Pirke, & Hellhammer, 1993). A video camera and timer were installed and subjects were asked to imagine taking the role of a job applicant who was invited for a personal interview. The participants were provided with the following instructions:

> *We would like to investigate how job interview processes could be improved. Your task is the following:*
>
> *You are to mentally prepare a five-minute job interview talk describing why you would be a good candidate for your ideal job. Your speech will be videotaped and analysis by Dr Vogt's laboratory. You have five minutes to prepare the speech. You can take notes now, but you will not be able to use them later when you give the talk. Please make sure that you prepare the talk in five minutes.*

Following these instructions, participants were provided with paper and pen to outline their talks. However, they were not allowed to use the written notes for their speech.

Self-affirmation manipulation

The self-affirmation manipulation was prepared according to the description and protocol using in previous research (e.g., Cohen & Sherman, 2014; McQueen & Klein, 2006; van Dijk, van Koningsbruggen, Ouwerkerk, & Wesseling , 2011). The participants were presented with six values (religion, business, social, art, politics, and science) from the Allport–Vernon–Lindzey (AVL) study of values (Allport et al., 1960), which they ranked according to their personal importance. Then, they completed one of the AVL subscales consisting of 10 statements with 2 possible answers (e.g., “Which of the following goals do

you consider more important in education? (a) preparing students for making their own money with hard work, and (b) preparing students for participation in community life and caring for disadvantaged people in society"), from which they were asked to choose. For each statement, one answer reflects the scale's main value and the other reflects one of the remaining five values. Participants in the self-affirmation condition completed the scale that matched their previously indicated most important value. Participants in the non-self-affirmation condition completed the scale that matched their least important value. Again, this procedure was adapted from previous research (e.g., Tesser & Cornell, 1991).

2.2.3 Self-report measures

Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003; see, Appendix A) is a 10-item questionnaire that measures 2 emotion regulation strategies: cognitive reappraisal and expressive suppression. We used this questionnaire to measure participants' habitual tendencies to regulate their emotions. Participants were asked to rate each statement on a 7-point Likert-type scale (ranging from "strongly disagree" to "strongly agree"). Examples of the items measuring cognitive reappraisal are "When I want to feel more positive emotions (such as joy or amusement)" and "I change what I'm thinking about". Examples of the items to measure expressive suppression are "When I am feeling negative emotions" and "I make sure not to express them". The scale was found to have low to acceptable levels of internal reliability ($\alpha = .57$ for cognitive reappraisal and $\alpha = .81$ for expressive suppression).

State-Trait Anxiety Inventory (STAI)

The State-Trait Anxiety Inventory (STAI Form Y-2; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983; see Appendix B) is a 20-item scale that is used to measure trait anxiety in adults. Participants were asked to rate statements such as "I take disappointments so keenly that I can't put them out of my mind" and "I get in a state of tension or turmoil as I

think over my recent concerns and interests" on a 4-point scale (1 = *almost never* and 4 = *almost always*). An overall score between 20 and 80 is calculated. Higher scores represent the presence of high levels of anxiety. Lower scores indicate the presence of low levels of anxiety. A Cronbach's α of .94 was found in the present study.

2.2.4 Design and procedure

The study used a between-subjects design, in which participants were randomly allocated to either the self-affirmation condition or the non-self-affirmation condition. The study was programmed and presented using the Gorilla platform (Anwyl-Irvine, Massonnié, Flitton, Kirkham, & Evershed, 2018) and all instructions were presented on the screen. First, participants arrived at the testing room and were given an information sheet and a consent form. After providing informed consent, participants were asked for their demographic information (gender and age). Next, participants were asked to rate their stress levels using a five-point Likert scale ranging from 1 (*not at all stressed*) to 5 (*extremely stressed*) to measure their baseline stress. Hereafter, we induced stress using the TSST paradigm by announcing that they had to take the role of a job applicant who was invited for a personal interview. Following this, participants were asked to indicate their stress level again to measure their stress levels after the stress induction. After measuring stress, participants were then randomly allocated to the self-affirmation condition or the non-self-affirmation condition with the experimenter blind to the assigned condition as described above. After the self-affirmation task, all subjects were then asked to report their stress levels using the same Likert scale as before.

Participants were then requested to answer questions aimed at measuring whether there was a change in the importance of the task and their motivation to regulate. The items used to measure the relevance of the stress-evoking event were as follows:

(a) How relevant is the job interview talk that you will give later to you?

(b) How much does the job interview talk reflect you?

(c) How frustrated would you be if you did not perform well in the job interview talk?

(d) Do you feel the job interview talk is real to you?

We investigated these items because of our prior hypothesis. In addition, individuals were asked to respond to some items used to measure their motivation to regulate or express their stress. The items used to measure motivation to express stress (i.e., flight) were as follows:

(a) How much would you like to do another task that does not involve giving a speech?

(b) How much would you like to do a longer task that does not involve giving a speech?

(c) How much would you like to do a harder task that does not involve giving a speech?

To simplify the analyses, we averaged the ratings of all the items. This was justified by a Cronbach's alpha of .83. The items used to measure motivation to regulate stress were as follows:

(a) How much would you like to listen to relaxing music before the speech task?

(b) How much would you like to take a break to relax before the speech task?

(c) How much would you like to engage in a relaxing task before the speech task?

Again, to simplify the analyses, we averaged the ratings of all the items. This was justified by a Cronbach's alpha of .86. All these questions were answered using a five-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*).

Participants were then given five minutes to deliver a speech task and there was a timer on the screen that showed a countdown. The instruction was "You are to deliver a

speech describing why you would be a good candidate for your ideal job. You should speak for the entire five-minute time period. You are not allowed to use the notes". Following this, participants were asked to indicate their stress level again using the Likert scale as employed at baseline (see above). Subjects then completed the ERQ and STAI. Finally, participants were shown a debriefing screen explaining the true purpose of the study and thanked for their participation. Figure 2.1 outlines the key study procedures.

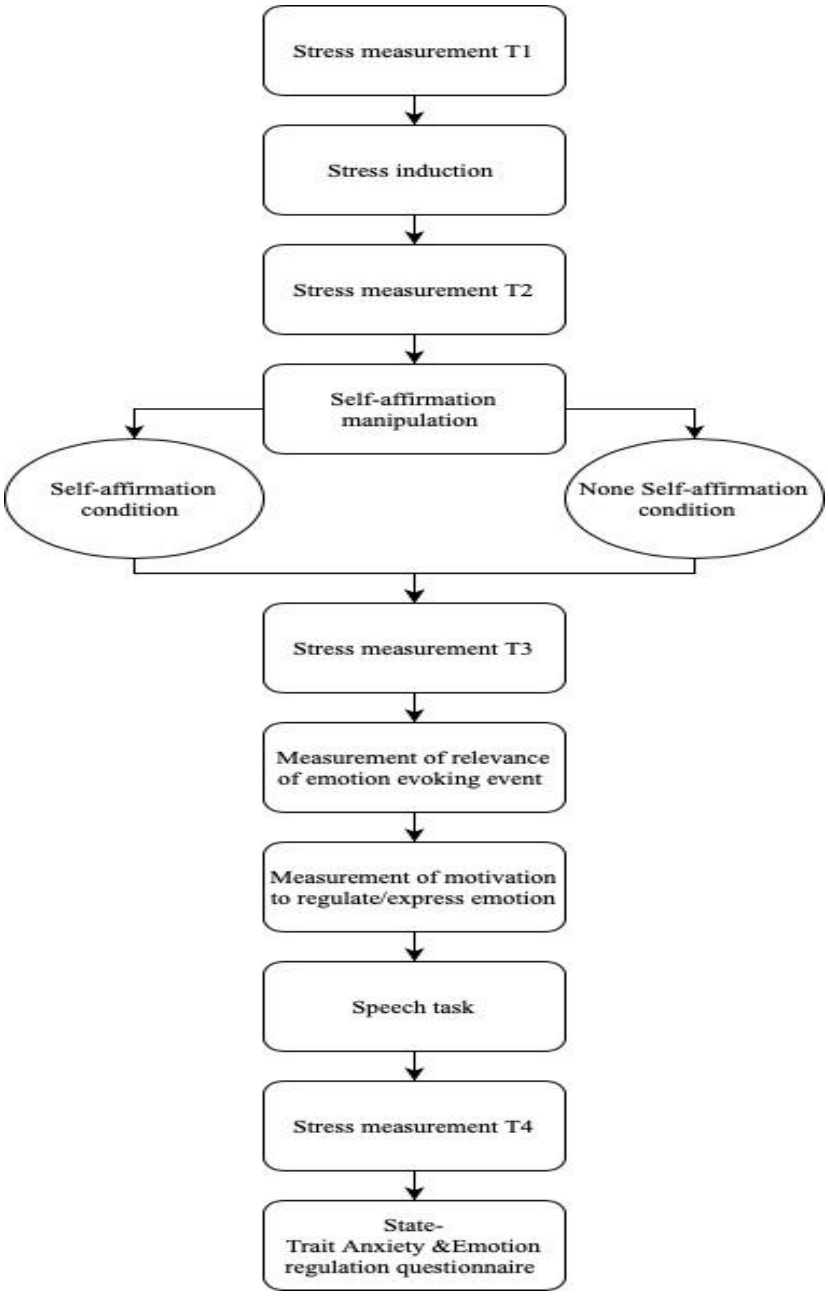

Figure 2.1. *Study procedure*

2.3 Results

2.3.1 Preliminary analysis

Randomisation check

As a proxy to check whether there were unintended differences between the groups on the individual difference variables (gender, age, trait anxiety, reappraisal, suppression), independent samples *t*-tests were carried out. None of these *t*-tests reached significance, so it can be concluded that the conditions did not vary according to these variables and that randomisation was successful (all *p* values > .40). Table 2.1 shows the mean differences between conditions. Also, a Chi-squared test revealed that there was no difference between conditions in terms of gender ($\chi^2(1, N = 90) = .72$, $p = 0.39$).

Table 2.1. *Results of t-test and descriptive statistics for all main variables by condition*

	Condition						95% CI for mean difference	
	Self-affirmation			Non-self-affirmation				
	M	*SD*	*N*	*M*	*SD*	*N*		*p*
Age	20.29	2.61	45	20.71	3.36	45	-.84, 1.68	.375
Trait Anxiety	47.46	3.73	45	47.93	3.57	45	-1.06, 1.99	.895
Reappraisal	30.68	5.07	45	31.42	4.90	45	-1.35, 2.82	.377
Suppression	14.68	5.03	45	14.46	5.07	45	-2.33, 1.89	.843

2.3.2 Main analyses

To examine the extent to which self-affirmation reduced stress experienced in response to the speech task, a repeated measures ANOVA was conducted with time as the within participants factor (baseline, post stress induction, post self-affirmation manipulation and after speech task), and condition as the between participants factor (self-affirmation and non-self-affirmation). This analysis exhibited a significant main effect of time ($F(1, 88) = 8.60$, $p < .001$, partial $\eta^2 = .089$). We did not find the expected interaction between time and condition ($F(1, 88) = .60$, $p = .437$, partial $\eta^2 = .007$). There was also no significant main effect of condition ($F(1, 88) = .087$, $p = .769$, partial $\eta^2 = .001$). (See Figure 2.2.) These results

suggest that there was no statistically significant effect of self-affirmation (vs. non-self-affirmation) on reported stress levels across the four measures of stress.

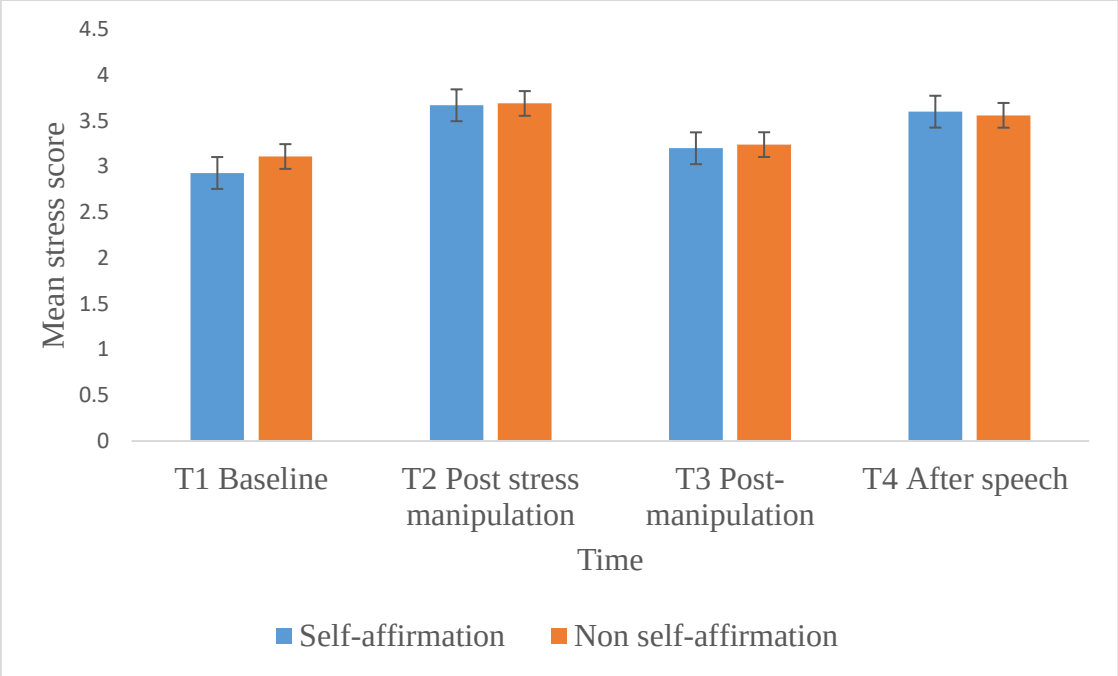

Figure 2.2. *Mean stress scores (1–5) across time for each of the self-affirmation conditions*

To ensure the TSST induced stress successfully, a repeated-measures ANOVA was conducted on the reported stress levels with time as the within participants factor (two: baseline, post stress induction), and condition as the between participants factor (two: self-affirmation and non-self-affirmation). This analysis showed that there was a significant main effect of time ($F(1, 88) = 43.76$, $p < .001$, partial $\eta^2 = .332$). This main effect was, as expected, not qualified by a significant interaction of time and condition ($F(1, 88) = .616$, $p = .435$, partial $\eta^2 = .007$). There was also no significant main effect of condition ($F(1, 88) = .309$, $p = .579$, partial $\eta^2 = .004$). Consequently, stress induction via the TSST was effective and the increase in participants' self-reported stress from baseline ($M = 3.02$, $SD = 1.02$) to post stress induction ($M = 3.68$, $SD = .91$) was not dependent upon condition (see Figure 2.3).

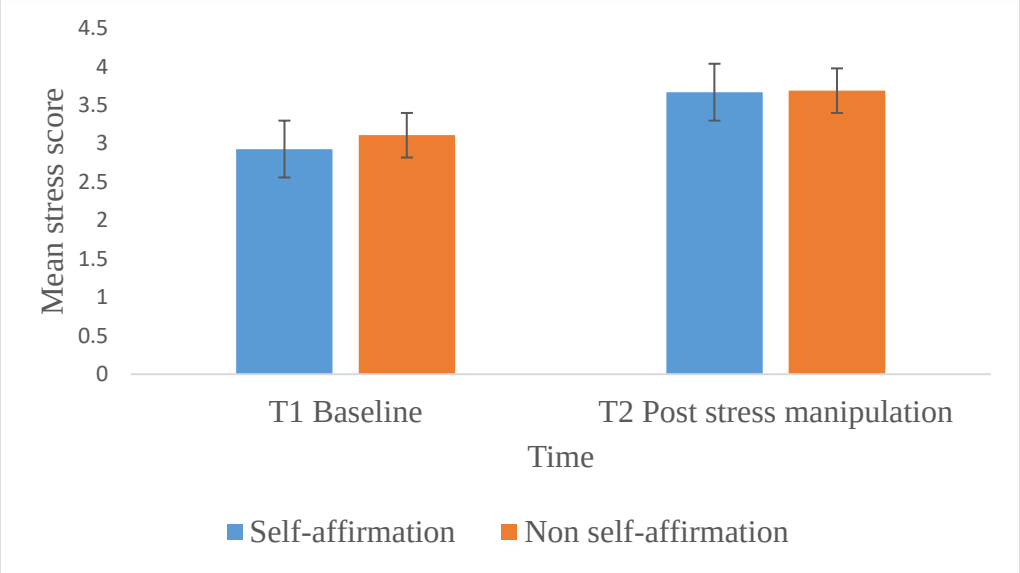

Figure 2.3. *Mean stress scores for all conditions at baseline and post stress induction*

We then also wanted to explore whether there was an effect of self-affirmation (vs. non-self-affirmation) on reported stress levels with trait anxiety as the moderator and baseline stress as the covariate. A moderation analysis was conducted using the PROCESS macro created by Preacher and Hayes (2019), with condition as the independent factor (self-affirmation, non-self-affirmation), and the change in stress after the affirmation manipulation (i.e., (T3) minus (T2)) as the dependent factor, and trait anxiety as the moderator and baseline stress as the covariate (to control for the baseline stress of the participants). We calculated a score to use in the regression model as a dependent variable by subtracting stress levels after the stress manipulation (T2) from stress levels after the self-affirmation manipulation (T3). Positive values indicated rising levels of stress, negative values indicated decreasing levels of stress, and values around zero indicated no change. The overall regression model was not significant ($F(4, 85) = 1.73$, $p = 0.14$, $R^2 = .07$). There was, however, a statistically significant interaction between condition and anxiety ($F(1, 85) = 4.37$, $p = 0.039$, $R^2 = .04$). Simple slopes analysis revealed that there was a statistically significant positive relationship between (T3) minus (T2) and trait anxiety in the non-self-affirmation condition. This means stress increased in the non-self-affirmation condition for high trait anxious people ($b = .05$, t

= 2.24, $p < .02$, 95% CI (.006, .112)). In contrast, self-affirmation prevented an increase of feelings of stress in highly trait anxious participants (b = -.01, t = -.56, p = .57, 95%CI (-.061, .034). (See Figure 2.4.)

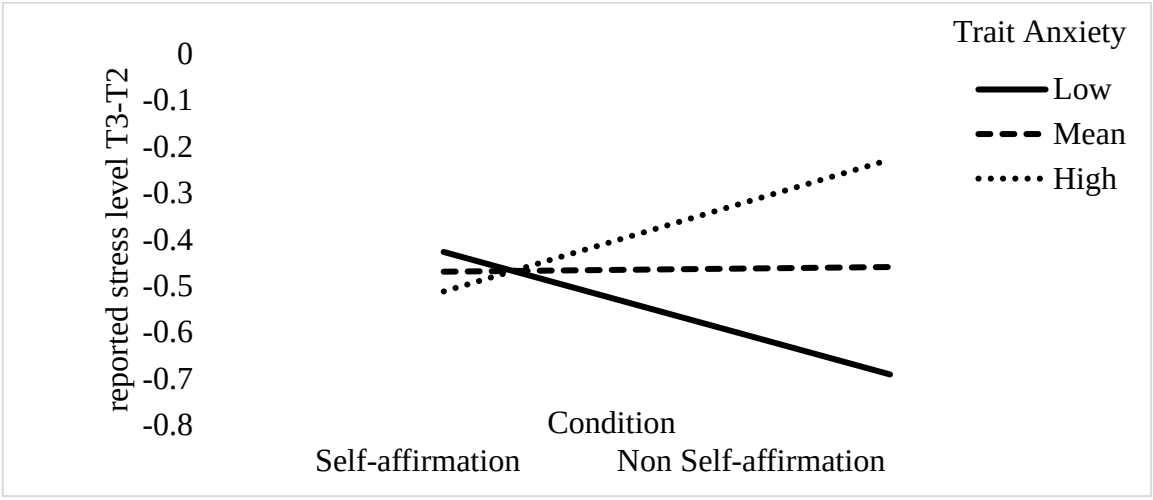

Figure 2.4. *Moderating effect of trait anxiety*

2.3.3 Exploratory data analysis

We also tested whether the importance of the stressor, motivation to express and motivation to regulate differed between conditions using two-tailed *t*-tests and there were no significant differences. There were no significant differences for the importance of the stressor between the self-affirmation condition (M = 10.08, SD = 2.53) and the non-self-affirmation condition (M = 10.15, SD = 2.47), at $t(88)$ = -.126, p = .900. Also, there were no significant differences for the motivation to express stress between the self-affirmation condition (M = 11.51, SD = 2.67) and the non-self-affirmation condition (M = 11.06, SD = 3.00), at $t(88)$ = .741, p = .461. Finally, there were no significant differences in motivation to regulate stress between the self-affirmation condition (M = 9.17, SD = 3.56) and the non-self-affirmation condition (M = 9.28, SD = 3.21), at $t(88)$ = -.155, p = .877. (See Figure 2.5.)

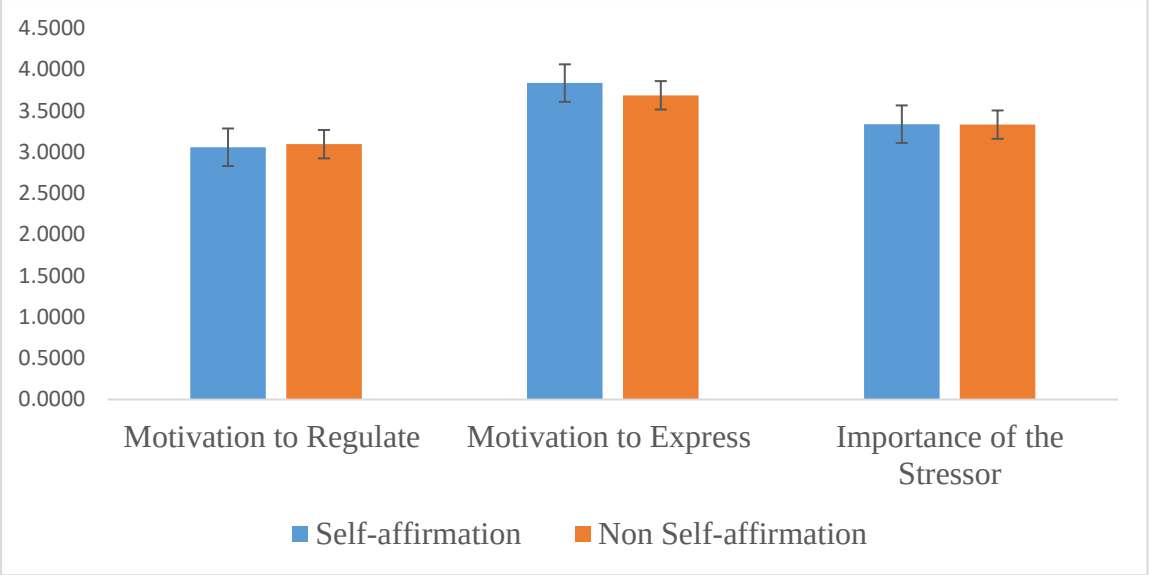

Figure 2.5. *Importance of the stressor, motivation to express, and motivation to regulate and conditions*

For exploratory purposes, we also tested the correlations between the ratings (i.e., importance of the stressor, motivation to express, and motivation to regulate) and trait anxiety in the two conditions. Participants' trait anxiety scores had different relations to the motivation to regulate in the self-affirmation and non-self-affirmation conditions, although we acknowledge that the respective interactions in moderation analyses were not significant. There was a statistically significant positive correlation between trait anxiety and motivation to regulate in the self-affirmation condition (r = 0.36, p = 0.015) (see Figure 2.6). It should be noted that even when the three data points on the left are excluded, the association remains. This correlation between trait anxiety and motivation to regulate was not significant in the non-self-affirmation condition (r = 0.05, p = 0.738). None of the other correlations reached significance (all p values > .12). Table 2.2 shows the correlations among variables.

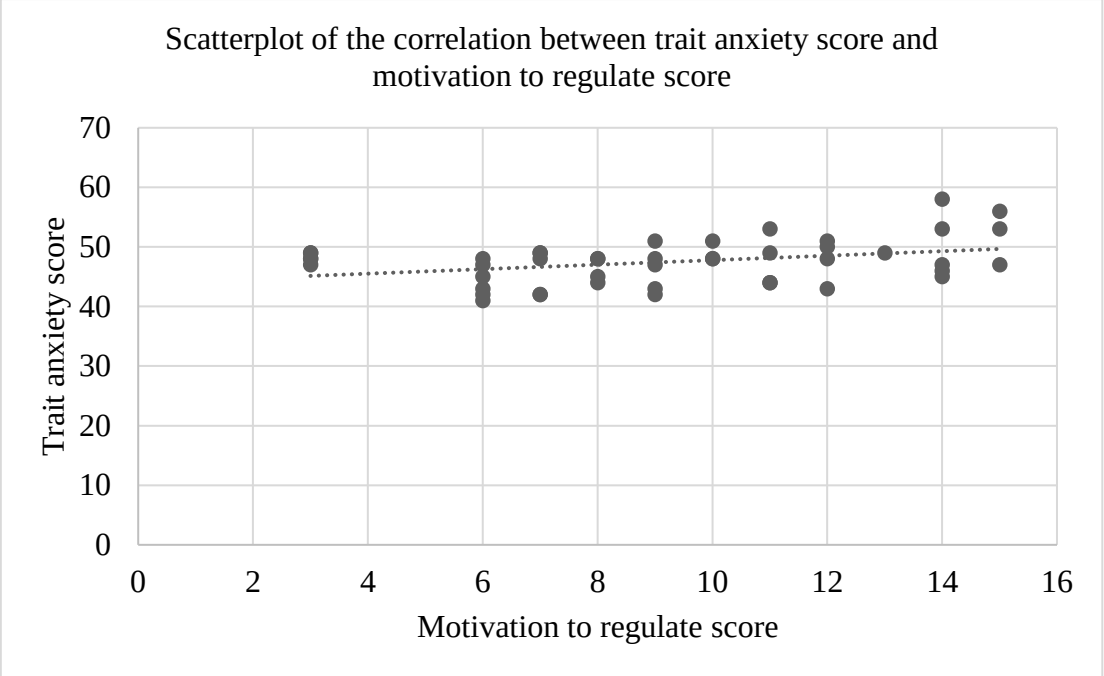

Figure 2.6. *Scatterplot showing the association between trait anxiety and motivation to regulate in the self-affirmation condition*

Table 2.2. *Correlation matrix for all main variables*

	Variables	1	2	3	4	5	6	7
1	IS	1						
2	MTR	.02	1					
3	MTE	-.04	-.07	1				
4	TA	.17	.22*	0.1	1			
5	REA	.07	.	-.23*	-.11	1		
6	SUP	-.11	.	.21*	.14	-.14	1	
7	T3–T2	.02	-.15	.06	.15	-.03	.13	1

Note. $N = 90$. *$p < .05$; **$p < .01$. IS = importance of stress; MTR = motivation to regulate; MTE = motivation to express; TA = trait anxiety; REA = reappraisal; SUP = suppression; T3–T2 = Subtracting stress levels after the self-affirmation manipulation (T3) from stress levels after the stress manipulation (T2).

2.4 Discussion

The findings of this study show that self-affirmation prevented an increase in feelings of stress in highly trait anxious participants. In contrast, feelings of stress increased for participants who were high in trait anxiety that did not self affirm. The findings are in part in line with earlier research that suggested self-affirmation lowers and reduces stress responses (Ruiter, 2011; Sherman, 2013; Sherman & Cohen, 2006). This means the results support the

idea that affirming an important part of oneself can be an indirect way of dealing with psychological challenges such as stress (Ruiter, 2011; Sherman, 2013).

The findings also tentatively suggest that self-affirmation causes people high in trait anxiety to increase their motivation to regulate their stress state. According to Figure 2.6, there is a statistically significant moderate positive correlation between trait anxiety and motivation to regulate in the self-affirmation condition, although the difference for the other condition is not significant. Therefore, it seems self-affirmation could be a useful mechanism to motivate and help individuals with trait anxiety to manage their anxiety. This is important because recent research suggests that mood disorders might be associated with maladaptive emotion regulation motivations and goals, such as desires to stay in negative moods (Tamir & Millgram, 2017).

Most importantly, the study results suggests that trait anxious participants with self-affirmation control their stress better after the stressful task than participants who do not have the option to self-affirm. Therefore, the study extends prior research and highlights that self-affirmation reduces psychological stress responses in situations perceived as stressful and could be a useful approach for addressing potential stress experienced by anxious individuals. For instance, prior research has demonstrated that expressing one's own significant values or favourable personal attributes might provide stress protection (e.g., Creswell et al., 2005; Keough & Markus, 1998). Creswell et al. (2005) discovered that when individuals were subjected to severe social evaluation by delivering an impromptu speech in front of a judgmental audience, those who had previously thought of an important personal value did not exhibit an increase in the stress hormone cortisol. Similarly, according to the findings of this study, individuals with higher confidence and self-belief were able to handle extreme situations and even control their stress under pressure. Moreover, while Creswell et al. (2005) administered self-affirmation prior to the stressor, we administered it just after the stressor

and thus this study extends existing evidence by showing that it is sufficient to undertake the self-affirmation task after the stressor is encountered.

An open question remains to why our findings are only visible in highly trait anxious participants. There are several differences between the studies, such as the timing of the self-affirmation manipulation and the way of measuring stress (Creswell used a blood pressure cuff and heart rate). An alternative explanation could be that self-affirmation only worked in the exploratory analysis for those with extreme anxiety. This may be because non-anxious individuals have a sufficient repertoire of emotional regulation skills that they can apply and thus they do not need to be instructed or informed on how to regulate their emotions; rather, they find their own way to regulate their emotions. Also, there were some inconsistencies in the analyses. Specifically, the degrees of freedom changed constantly, suggesting that the analyses were performed on different parts of the data and that the effect might not be as strong as suggested in Creswell et al. (2005).

The study did not find evidence that people lower the importance of the stressor and thus we cannot support the argument that self-affirmation may lead to trivialisation. This is in line with Critcher and Dunning's (2015) position. They suggest that self-affirmation does not result in trivialisation, but rather highlights extra significant aspects of the self and causes individuals to care less about the threatened identity. Thus, self-affirmation might protect against threats because it alters the nature of the threatened self. Future research needs to test in greater detail how it changes the perception of threats (Simon et al., 1995).

2.5 Limitations and suggestions for future research

This study investigates whether self-affirmation opportunities change an individual's experience of stress and make one desire to engage in emotion regulation. We assumed that the self-affirmation condition would exhibit a more noticeable reduction in stress compared

to the non-self-affirmation condition. Self-affirmation is expected to reduce the relevance of the stressor and make individuals focus on emotion regulation since the stressful reaction is considered less important and unfitting (Binning et al., 2021; Li, Wu, Zhang, Xu, & Zhou, 2020). This suggests that self-affirmation might help participants to feel less stress or give them a positive or good feeling as it encourages the ego (Sherman, 2013).

The major limitation of the study was the lack of a viable control condition, although we followed standard procedures in self-affirmation research (e.g., Cohen & Sherman, 2014; McQueen & Klein, 2006; van Dijk et al., 2011). However, it is unclear whether the control condition employed here might still have had an effect as the participants possibly reflected on still important values when asked to focus on the least important values, although not as much as in the experimental condition. Furthermore, the survey on values might have served as a distraction. Consequently, it is unclear whether the lack of main effect for the self-affirmation manipulation was due to a lack of power of the intervention or this aspect of the design. Future research should therefore test whether self-affirmation is indeed a practical approach to stress reduction.

The second limitation was that self-affirming action is a continuous process that takes time. Therefore, determining the impact of affirmation on negative emotions may not present reliable outcomes after a few minutes. A follow-up measure would play a critical role in determining the actual impact and benefits of self-affirmation on stress and negative emotions (Chen, Nelson, Johnson, & Fleming, 2021).

The study outcomes and limitations establish a framework for future research on self-affirmation and the mechanisms behind its effects. Future research could consider replicating the study with participants who have clinical levels of trait anxiety to provide evidence of the emotions and emotion regulation in anxiety. It could be useful to explore the effect of adding

self-affirmation manipulations to current treatments for anxiety disorders. Another potential avenue for research could be to analyse the mechanism(s) through which self-affirmation influences individuals to determine the greater precision of how and when people with trait anxiety can utilise the approach.

2.6 Conclusion

This study examined whether giving people the opportunity to self-affirm could help them remember important values and goals rather than the stress-inducing stimulus. The conclusion of the argument can be determined based on the study findings and self-affirmation theory. The findings support the hypothesis that anxious participants who made positive self-affirmations did not demonstrate stress reduction compared to those in the non-self-affirmation condition who were not asked to affirm themselves. However, overall, it appears that self-affirmation may help people with trait anxiety manage their stress. Self-affirmation prevents participants with trait anxiety from experiencing an increase in stress. Participants with trait anxiety who did not self-affirm, in contrast, reported increased stress. Overall, the study concludes that self-affirmation has an impact on stress. Future research could look into how self-affirmation can be used as a measure to help people with anxiety disorders.

Chapter 3. Putting Things in Perspective: Exploring the Effect of Goals Differing in Importance on Emotional Experience and Emotion Regulation

Abstract

The two studies reported on in this chapter drew upon goal theory to hypothesise that reminders of more important goals could be a potential strategy to attenuate stress towards less relevant stressors. Specifically, the two studies assessed whether being reminded of current and important goals lowers the relevance of the stressor and makes people want to engage in emotion regulation. In two experiments (N = 360), participants completed an insoluble anagram task that induced stress and were asked to think about current goals varying in relevance (or not to do anything in another control condition). Self-reported stress was measured at multiple time points before and after the stress and goal manipulations. Participants in all conditions exhibited a more pronounced reduction in stress after the manipulations. Therefore, it is unclear whether reminding people of important goals is more effective.

Keywords: Emotion, Emotion Regulation, Motivation, Goals

3.1 Introduction

Goals play an important role in emotion elicitation and vice versa (Nelissen, Dijker, & de Vries, 2007). For instance, according to motivational accounts of emotions, unpleasant emotions interrupt current behaviour and activate goals that permit relieving the unpleasant emotion (Buck, 1985; Frijda, 1986; Roseman, 1984). For example, in fear, the evoked goal would be to reach safety (e.g., Roseman, Wiest, & Swartz, 1994; Vogt, Koster, & De Houwer, 2017). Conversely, goal theories suggest that goals also exert a strong influence over how people appraise situations and which emotions will consequently be evoked (Kreibig, Gendolla, & Scherer, 2012). For instance, appraisals underlying emotions involve determining how important and conducive a situation is in reaching a valued goal. For example, situations that are perceived as conducive to a goal (i.e., help achieve the goal) are rated more positively than situations that are perceived to obstruct goals (see Fishbach & Converse, 2010). This study examines whether reminders of important goals allow people to put less important stressors into perspective. Thus, we test whether being reminded of something bigger and objectively more stressful may cause people to re-evaluate their initial feelings of stress.

3.1.1 Goal value and its impact on motivation

Classic theories of motivation (Atkinson, 1964; Tolman, 1955) state that the motivation to pursue a goal rises with the goal's value and with the expectation of achieving it. Therefore, goals will be pursued with more motivational strength when they are more important and/or have a higher success expectancy. For example, if an applicant applies for a job that is highly attractive (e.g., high salary) and the chances of getting this job are realistic, the motivation to apply for this job will increase over applying for a job that is not attractive (low salary) or impossible to achieve (e.g., being an opera singer without any talent and/or training). Consequently, goals scoring higher on importance and/or success expectancy will

be prioritised over less important or less feasible goals (e.g., Förster, Friedman, Butterbach, & Sassenberg, 2005; Vogt, De Houwer, & Moors, 2011). For instance, Vogt et al. (2011) examined whether the prioritisation of a goal would affect the allocation of spatial attention to stimuli relevant to multiple goals. In one experiment, they found that attention was oriented to stimuli relevant to a goal with high value (allowing participants to win 100 points in a game) when presented simultaneously with stimuli relevant to a goal with low value (allowing participants to win 10 points in the game), meaning that the less relevant goal was not attended to. Hence, people prioritise goals with higher value and success expectancy (see also Förster, Liberman, & Friedman, 2007).

Similarly, in self-control research, it has been shown that activation of self-control changes the response to lower order goals (i.e., temptations). Self-control is required because despite the importance individuals place on reaching their goals, such as health, studying, or financial aspirations, many individuals like to engage in activities that are not always compatible with achieving them (e.g., enjoying unhealthy food, overspending). This means they pursue conflicting goals (i.e., temptations) that distract them from reaching their goals and typically provoke an immediate positive affect (Sheldon & Fishbach, 2015). For example, in terms of eating, a chronic dieter's long-term goal could be to lose weight. However, if dieters are to be successful in reaching their weight-loss goals, then they must deny themselves the short-term pleasure of high-calorie foods since the temptation to eat high-calorie foods is inconsistent with the long-term goal of losing weight. Importantly, the positive effect of short-term pleasure is typically attenuated when a more important goal becomes salient, such as dieting (Fishbach & Converse, 2010). This suggests that more important goals change the affective reactions to less important goals. Therefore, the studies here examine whether more important goals will impact the stress response to less important stress-evoking events, act as an emotion regulation strategy, and attenuate negative effects.

3.1.2 Relevant similar emotion regulation strategies

There are emotion regulation strategies other than goal importance that target a change in the appraisal of the relevance of the emotion- or stress-evoking event to support emotion or stress regulation. For instance, self-distancing is a mechanism that allows individuals to process negative events in more adaptive ways (White et al., 2015). This strategy encourages people to consider a negative experience and then think about it from a self-distanced, third-person perspective (e.g., "Tooma feels overwhelmed" instead of "I feel overwhelmed"). For example, Ayduk and Kross (2010) found a negative relationship between spontaneous self-distancing (i.e., how much participants used self-distancing in daily life) and emotional reactivity. Although causation could be established, this relationship suggested that the more participants in their study adopted a self-distanced perspective while reflecting on their negative emotions, the less emotional reactivity they experienced. Self-distancing is suggested to shift the person's attention away from the concrete details of an upsetting experience, thus allowing some emotional and psychological "space" for the person to reflect in a detached way (Kross, 2009; Kross & Ayduk, 2017). This "step back" allows people to work through an experience more efficiently (Kross & Ayduk, 2017).

Using a self-immersed perspective, in contrast, in which people imagine events happening to them through their own eyes, or in which they see themselves in their experience from the perspective of an observer or "fly on the wall", are two techniques suggested to be helpful in decreasing the intensity of negative emotions (Ayduk & Kross, 2010). For example, in one study, people in the self-immersed condition were told to "immerse themselves in the situation" and think from the first-person point of view as much as possible by using the pronouns "I" and "me". In the self-distanced (control) condition, participants were asked to "focus on the situation" and approach their thoughts from a third-person perspective by using third person (he/she) pronouns and their name (Grossmann,

Sahdra, & Ciarrochi, 2016). In that experiment, participants who were asked to reflect on societal issues from a self-distanced perspective, acknowledged others' opinions, the subjective nature of the world, and contextual situational factors to a greater extent than self-immersed participants. This research aimed to extend this line of work by testing whether being reminded of important goals and considering a stressor in a wider context might also encourage people to reconsider the significance given to their stressor and re-evaluate it. This could be consistent with emotion regulation strategies and act as a sub-form of self-distancing.

3.1.3 The current research

This research was interested in seeing whether being reminded of current, important goals would lower the relevance of the stressor and make people want to engage in emotion regulation. Also, previous research has shown that emotional reactions to goal-relevant events change when more important goals change their meaning and relevance; for instance, dieters' positive reaction to high-caloric food is lowered when being reminded of their dieting goals (e.g., Fishbach et al., 2003; Papies et al., 2008). This research used a goal task that required participants to think about current, important goals, to see whether this would reduce their stress response. We conducted two studies to address this, examining whether goal importance in itself (beyond positive values as in Chapter 2) would help to regulate stress.

Both studies tested the hypothesis that highly important goals would lead to a greater reduction in stress compared to less important goals. The procedures in these two studies were very similar. In both, participants were asked to think about current goals varying in relevance to see if this would reduce their evoked stress. However, there were a few notable differences in the study designs. First, in Study 2a we used one control condition. Participants in this control condition were required to write about goals that were low in importance to assess whether the importance of a goal and not goal activation per se would reduce stress

(e.g., because it serves as distraction; cf. van Dillen, 2008). In contrast, in Study 2b we used two control conditions. One of the control conditions involved the participants writing about goals that were low in importance. The participants in the other control condition were not required to write about anything. Finally, in Study 2b we improved some of the wording of the instructions and questions. For both studies, we predicted that the important goal conditions would induce a greater reduction in stress than the control condition. It was also predicted that individuals in the high-importance condition would be more motivated to regulate their emotions than those in the low-importance condition.

Study 2a

This study aimed to test whether goals of high importance would induce a greater decrease in stress compared to less important goals. In this study, we used two conditions (high importance condition, low importance condition). The high importance condition asked participants to write about relevant goals or tasks and the low importance condition asked participants to write about mundane and unimportant activities. This was done to see whether the importance of a goal and not goal activation per se would reduce stress.

3.2 Method

3.2.1 Participants

Since no previous experiments have used goal manipulation, it was not possible to conduct sensible power calculations. Instead, we tested as many participants as we could within funding restrictions. The sample comprised 160 participants who were recruited via Prolific, an online marketplace where researchers advertise studies to registered participants. They were each paid £1.00 for completing the online study. The study advertisement was only available to people whose first language was English because we used an anagram task to induce stress. No other restrictions were applied during recruitment. The data set was

scanned for “straight lining” and “central lining”. Straight lining is a form of response where the participants mark the same answer for most of the questions in the questionnaire pattern (Hair et al., 2016). Central lining is when the participants select only the middle value for all the scale questions throughout the survey. Also, a visual check and an analysis of descriptive statistics (i.e., mean and standard deviation) were performed and none of the data were rejected. The participants were between 18 and 72 years old (M = 33.34 years, SD = 11.92 years) and the majority were female (37 males, 117 females, 2 transgenders, 2 preferred not to say, and 2 non-binary). The research was advertised in Prolific as a study “investigating cognitive abilities and attitudes”. The study was approved by the School of Psychology and Clinical Language Sciences Ethics Committee, University of Reading (2018-160-JV).

3.2.2 Materials

Stress induction

In this study, to induce stress, an insoluble anagram task was used in which participants were instructed to unscramble English words to form a single meaningful English word (taken from MacLeod, Rutherford, Campbell, Ebsworthy, & Holker, 2002). Individuals were asked to complete a practice and test phase of the (insoluble) anagram task. In line with MacLeod et al. (2002), we used the practice phase to provide negative feedback and induce stress (towards the test phase). Seven anagrams were presented in the practice phase. To induce stress, we claimed that other participants had solved them. Examples of the anagrams are OLWGFNA, TRNTHEGS, ALLRGON, and HREAFTS. To further increase the stress provoked by the task, participants were instructed not to spend a long time on any set of letters, and we presented a timer on the screen for each anagram. This manipulation was pretested in a pilot study with 40 participants in which participants’ stress levels increased from baseline (M = 2.83, SD =1.08) to post stress induction (M = 3.73, SD =1.09), $t(39)$ = 21.69, p <.001. Although performance in the test phase was irrelevant to the study, we still

presented three anagrams in the test phase to make the cover story convincing (e.g., if the participants were to discuss the study in forums).

Participants were provided with the following instructions for the practice phase:

> *In this task, you will be presented with anagrams on the screen. We would like to measure your verbal abilities with this task. We have scrambled 7 English words for you. You have to unscramble them by rearranging the letters so that they make a meaningful English word. You will have 15 seconds for each anagram. Don't spend too long on any one set of letters. Other participants similar to you were able to solve this task. We will give you feedback on your performance both after the practice and test phase. We will start with a practice phase. Start when you are ready to receive the first scrambled word. Can you solve this anagram (OLWGFNA)? Yes/No*

To enhance stress, we also included (fake) feedback to raise their stress after the practice phase (i.e., *"In comparison to other participants, you did not perform well (below the 70% level"*).

Goal manipulation

There were two conditions in this study (high importance, low importance). The high importance condition asked participants to write about relevant goals or tasks. The second condition asked participants to write about mundane and unimportant activities. These manipulations were tested in a pilot study in which 40 participants reported the high important goal to be more important (M = 6.15, SD =.74) than the mundane goal (M = 4.85, SD =1.18), $t(38) = 4.16$, $p < .001$). Participants who were in the high importance condition were told after the stress induction:

> *We are interested in learning more about your goals or tasks that you have or want to work towards currently. Many people talk about their goals or tasks, but what goals*

or tasks are people actually referring to? A goal or task that is important for one person might be a completely unimportant goal or task for someone else. We would like to know which goals or tasks are important to you currently. Below are a few examples of goals.

- *Study tasks or goals (e.g., finishing your next assignment, preparing for exams or planning for a dissertation or thesis).*
- *Work tasks or goals (e.g., managing your work emails, preparing important meetings, or preparing important work reports).*
- *Necessary chores or tasks (e.g., doing laundry, feeding pets, or grocery shopping).*

Please describe 3 to 5 goals or tasks and include as much detail as you can.

Participants in the low importance condition were told:

We are interested in learning more about mundane and unimportant activities that people engage in. Some people engage in mundane and unimportant activities that might be completely different from other people. We would like to know which mundane and unimportant activities you do currently. Below are a few examples of mundane and unimportant activities that you might do currently.

- *Home activities (e.g., taking the garbage out, washing dishes, or replacing the toilet roll on the holder).*
- *Communication activities (e.g., scrolling through boring websites, reading junk mail, or being on hold).*
- *Personal activities (e.g., walking in or around your house for irrelevant errands or waiting for a meeting or appointment).*

Please describe 3 to 5 mundane and unimportant activities and include as much detail as you can.

3.2.3 Self-report measures

State-Trait Anxiety Inventory (STAI)

The State-Trait Anxiety Inventory (STAI Form Y-2) (Spielberger et al., 1983; see Appendix B) is a 20-item scale that is used for measuring trait anxiety in adults. Participants were asked to rate statements such as "I take disappointments so keenly that I can't put them out of my mind" and "I get in a state of tension or turmoil as I think over my recent concerns and interests" on a 4-point scale (1 = *almost never*, 4 = *almost always*). An overall score between 20 and 80 is calculated by summing the score for each individual item. Higher scores represent the presence of higher levels of trait anxiety. Lower scores indicate the presence of low levels of anxiety. For negatively worded statements, the item scoring weights are reversed, so responses marked 1, 2, 3, or 4 are scored as 4, 3, 2, or 1. The items for which the scoring weights were reversed were: 1, 3, 6, 7, 10, 13, 14, 16, 19 (Spielberger et al., 1983). The Cronbach's α of the scale in this study was .95, indicating high internal consistency.

Stress scale

Stress was measured at multiple time points using a Likert scale. Participants were asked to rate how stressed they felt on a 7-point scale (1 = *not stressed at all*, 7 = *extremely stressed*). In this study, participants were asked to rate how stressed they felt at three times (at baseline, after the practice phase [stress induction], and after the goal manipulation) (see Figure 3.1).

Questionnaire

To measure participants' motivation to regulate their emotions or to maintain the emotion, we developed several items that were partially taken from other studies (e.g., Erreygers & Spooren, 2017; Gross & John, 2003; Tamir & Ford, 2012). The items used to measure motivation to regulate were "I want to let go of my feelings", "I would like to calm

down", "I want to feel more positive", "I want to feel no stress", and "I would like to stay calm". The items used to measure the maintenance of emotion were "I want to stay focused on my current emotion", "I think I can retain my feelings", "I want to feel stress", "I can maintain my stress well", and "my emotions feel fine to me". For all items responses were given on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*).

Demographic questionnaire

A demographic questionnaire was administered to collect participants' basic demographic information (age, gender, employment status, native language, and country).

3.2.4 Procedure

Overview

The study was programmed and presented using the Gorilla platform (Anwyl-Irvine et al., 2018) and all instructions were presented on the screen. All participants first rated their stress levels using a 7-point Likert scale ranging from 1 *(not at all stressed*) to 7 (*extremely stressed*) to measure their baseline stress. Following this, participants completed the practice phase of the insoluble anagram task to induce stress. Next, participants were asked to indicate their stress level again to measure their levels after the practice phase (i.e., the stress induction). Hereafter, participants were randomly allocated to the high important goal condition or low important goal condition. As a cover story, this task was presented as random new task, as described in 3.2.2. Then, as manipulation check, participants were asked to rate the importance of goals/activities on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*very much*). The question was "How important are these goals or tasks/activities to you?" After that, all subjects were then asked to report their stress levels again using the same Likert scale as before and responded to the items measuring their motivation to regulate their emotions or to stay in the emotion. Following this, participants were then given the test phase of the anagrams task. Subjects then completed the STAI and the demographic questionnaire.

Finally, participants were shown a debriefing screen explaining the true purpose of the study and thanked for their participation. Figure 3.1 outlines the key study procedures.

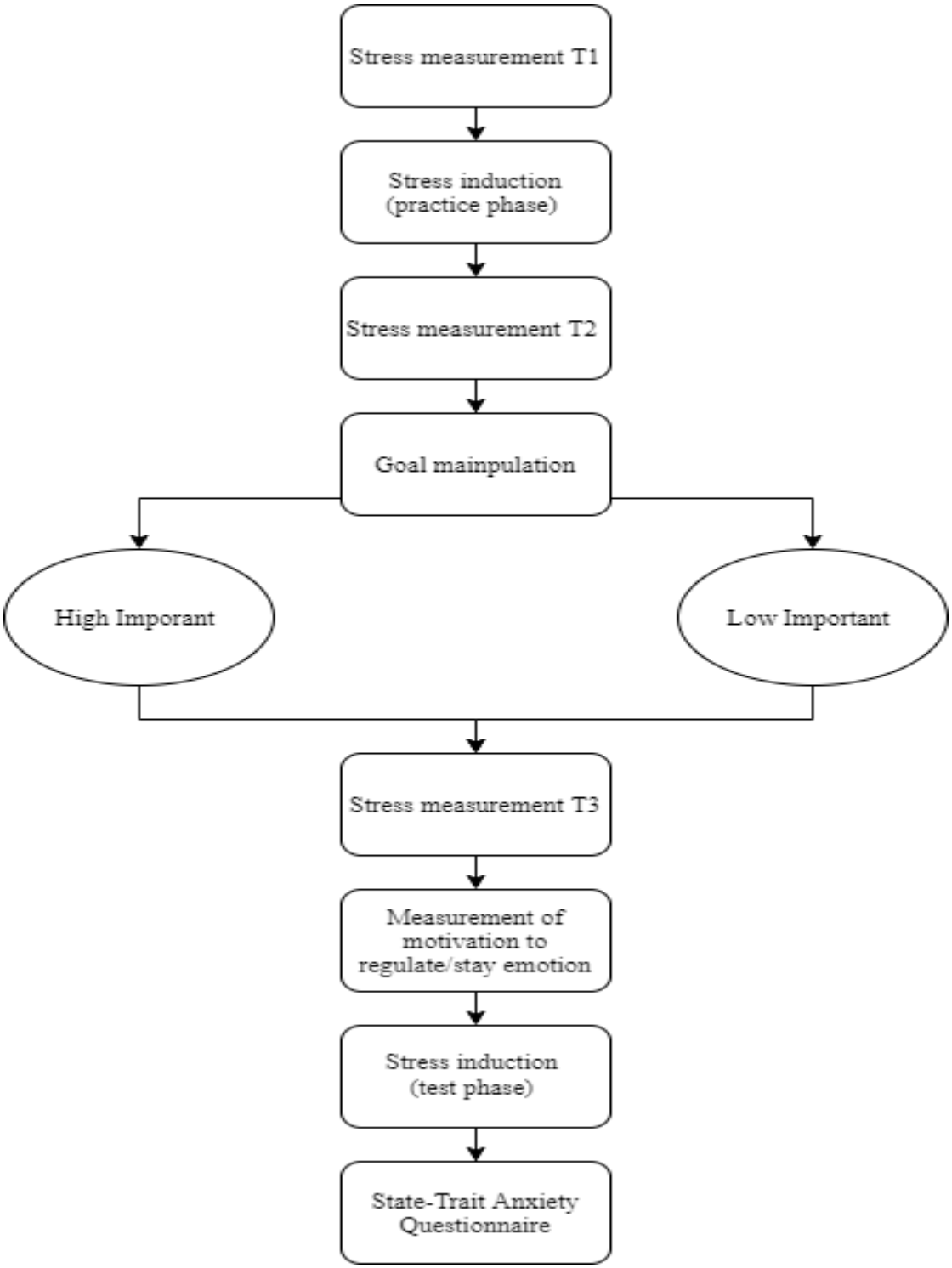

Figure 3.1. *Study procedure*

3.2.5 Results

Randomisation check

To see if random assignment to conditions was successful, independent samples *t*-tests were carried out on the main individual difference variables (e.g., age, trait anxiety). None of these tests reached significance (all *p* values > .19) with the exception of trait anxiety, which was significantly higher in the high importance condition (M = 52.35, SD = 13.39) compared to the low importance condition (M = 47.97, SD = 12.15), $t(158) = 2.16$, p = .032. We therefore control for trait anxiety in the analyses. Also, a Chi-squared test revealed no difference between the conditions in terms of gender, $\chi^2(4, N = 160) = 1.74$, $p = 0.78$.

Manipulation checks

As expected, goal importance was significantly higher in the high importance condition (M = 5.95, SD = 1.09) compared to the low importance condition (M = 3.85, SD = 1.45), $t(158) = 10.35$, $p < .001$.

Main analyses

To examine the differences between stress scores across the three time points, a repeated measures ANCOVA was conducted with time as the within participants factor (baseline, post stress induction, and post goal manipulation), condition as the between participants factor (high importance and low importance), and standardised trait anxiety as the covariate. There was an effect of time, $F(1, 157) = 21.46$, $p < .001$, partial $\eta^2 = 0.12$. We did not find the expected interaction between time and condition, $F(1, 157) = .727$, $p = .39$, partial $\eta^2 = 0.00$. There was no main effect of condition, $F(1, 157) = .053$, $p = .81$, partial $\eta^2 = 0.00$. (See Figure 3.2.)

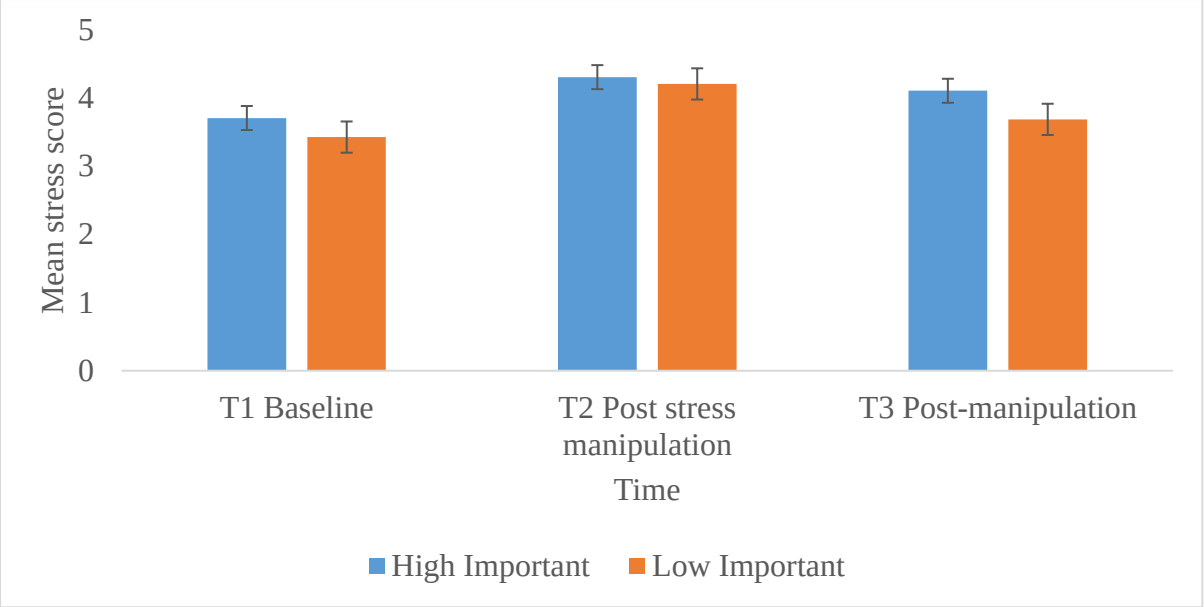

Figure 3.2. *Mean stress scores (1–7) across time for each condition*

To further understand the main effect of time and to ensure the anagram task induced stress successfully, a repeated-measures ANCOVA was conducted with time as the within participants factor (baseline, post stress induction), condition as the between participants factor (high important and low important), and standardised trait anxiety as the covariate. This analysis showed that there was a significant main effect of time, $F(1, 157) = 76.50$, $p < .001$, partial $\eta 2 = .32$. This main effect was not qualified by a significant interaction of time and condition, $F(1, 157) = 1.669$, $p = .198$, partial $\eta 2 = .011$. There was also no main effect of condition, $F(1, 157) = .413$, $p = .521$, partial $\eta 2 = .003$. Consequently, emotion induction via the anagram task was effective and the increase in participants' self-reported stress from baseline ($M = 3.57$, $SD = 1.51$) to post stress induction ($M = 4.26$, $SD = 1.58$) was not dependent upon condition.

To explore and understand the effect of the goal manipulation and time, a repeated-measures ANCOVA was conducted with time as the within participants factor (post stress induction, post goal manipulation), condition as the between participants factor (high

importance, low importance), and standardised trait anxiety as the covariate. This analysis showed that there was a significant main effect of time, $F(1, 157) = 29.82$, $p < .001$, partial $\eta^2 = .16$. There was a significant interaction between time and condition, $F(1, 157) = 6.062$, $p = .015$, partial $\eta^2 = .037$. This interaction was still significant when controlling for baseline, $F(1, 157) = 1.910$, $p = .021$, partial $\eta^2 = .034$. The difference between stress levels after the stress manipulation (T2) and stress levels after the goal manipulation (T3) was significantly higher in the low importance condition ($M = -0.52$, $SD = 1.05$) than in the high importance condition ($M = -.20$, $SD = 0.53$), $t(158) = 16.20$, $p = .015$. There was also no main effect of condition, $F(1, 157) = .083$, $p = .773$, partial $\eta^2 = .001$ (see Figure 3.3). These findings indicate that stress was reduced after goal manipulation in both conditions, with a greater reduction in stress in the low-importance condition.

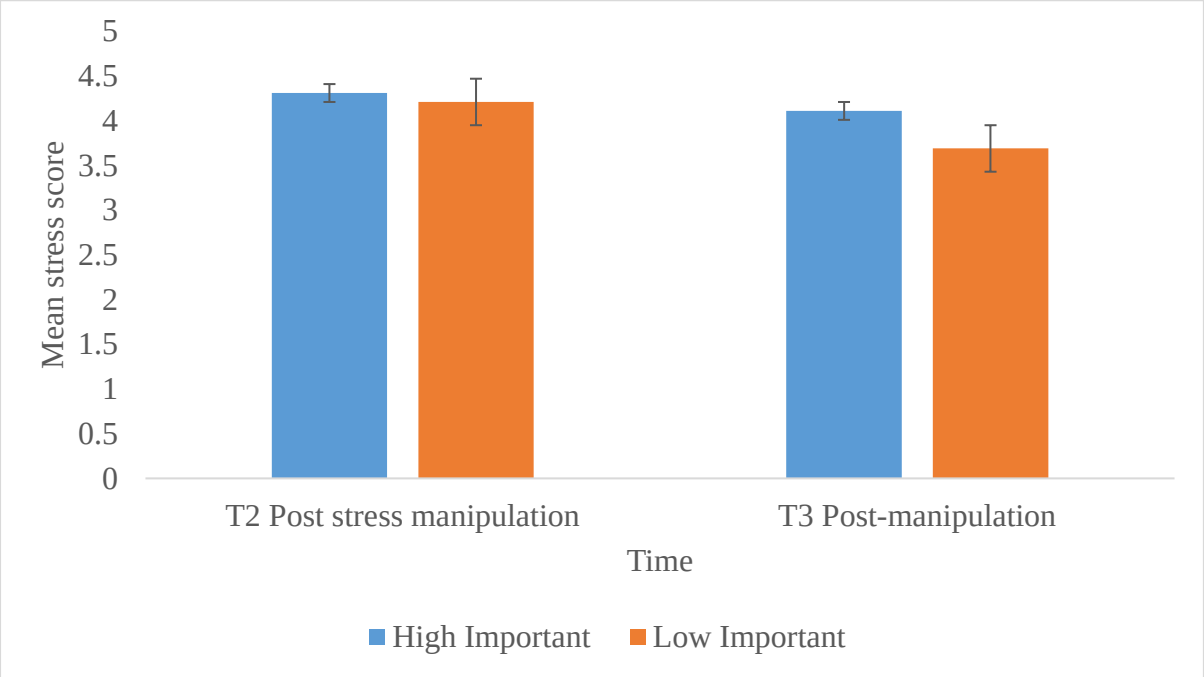

Figure 3.3. *Mean stress scores for all conditions at post stress induction and post goal manipulation*

Exploratory data analyses

We also tested whether the motivation to regulate emotion and stay in emotion differed between conditions using two-tailed *t*-tests. There were no significant differences in the motivation to regulate emotion, contrary to expectations (high importance condition: M = 26.93, SD = 5.18; low importance condition: M = 26.32, SD = 5.46, $t(158) = .727$, $p = .468$. However, the motivation to stay in emotion was significantly lower in the high importance condition (M = 16.67, SD = 5.03) compared to the low importance condition (M = 18.20, SD = 4.12), $t(158) = -2.09$, $p = .038$. (See Figure 3.4.)

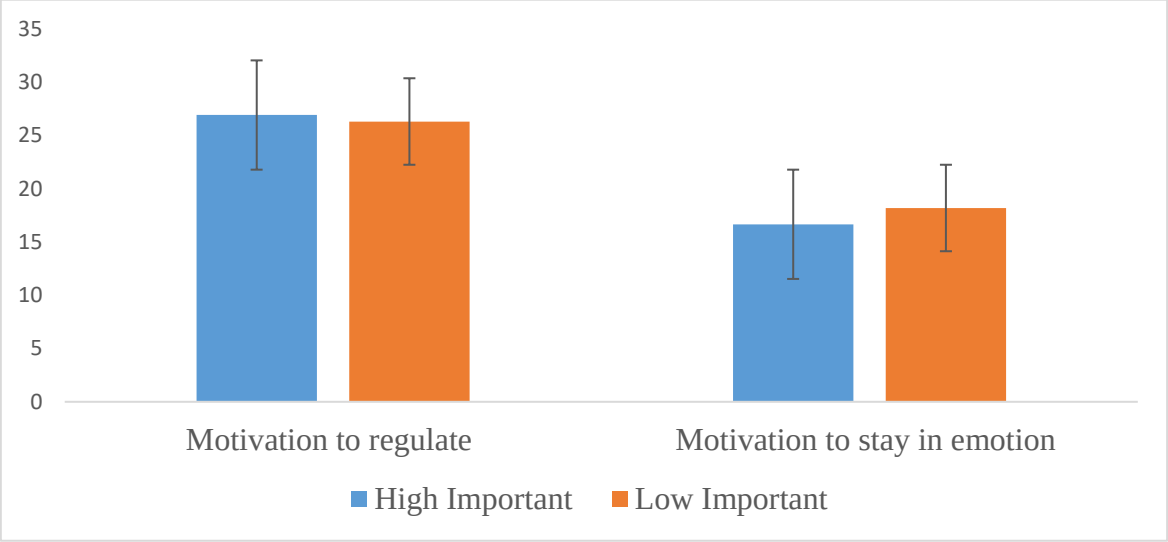

Figure 3.4. *Motivation to regulate emotion and motivation to stay in emotion and conditions*

For exploratory purposes, we also tested the effect of condition on reported stress levels, with the ratings of importance of the goal as the moderator and trait anxiety as the covariate in a moderation analysis using the PROCESS macro from Preacher, Rucker, and Hayes (2007). Condition was the independent factor (high importance, low importance), and (T3) minus (T2) was the dependent variable. We calculated this score to use in the regression model as the dependent variable by subtracting stress levels after the stress manipulation (T2) from stress levels after the goal manipulation (T3). Positive values indicated rising levels of stress, negative values indicated decreasing levels of stress, and values around zero indicated

no change. The overall regression model was significant, $F(4, 155) = 2.91$, $p = .02$, $R^2 = .06$. There was no statistically significant interaction between condition and goal importance, $F(1, 155) = 1.64$, $p = .20$, $R^2 = .009$. In addition, we explored the effect of condition on the outcome variables (motivation to regulate, motivation to stay) with the moderator (goal importance) and there was no effect of condition or the moderators or interactions (all p values > .05).

3.2.6 Discussion

This study examined whether being reminded of current goals differing in importance would lower the relevance of the stressor and make people want to engage in emotion regulation. However, different to the a priori hypothesis, the results of this experiment revealed a visible reduction in stress after goal manipulation in both conditions, not only in the high importance condition as we expected. Further analyses using various moderators did not reveal any effects of the manipulation when considering the individual difference factors.

Study 2b

Study 2b was conducted to address some of the shortcomings of Study 2a. Specifically, we used two control conditions instead of one control condition as in Study 2a. It appeared that both goal conditions were successful in reducing stress and therefore we implemented another control condition, i.e., not being required to write about anything.

Furthermore, we changed the stress questions in this study to ensure they referred unambiguously to the stressor (the insoluble anagram task) and not the goals. For example, participants were asked “How stressed do you feel about the test phase of the anagram task?” so that they would not answer with respect to any stress they might feel towards the goals. We also added additional instruments to measure participants’ tendency to regulate their emotions (Emotion Regulation Questionnaire [ERQ], Cognitive Emotion Regulation

Questionnaire [CERQ]). Moreover, we added an item to measure how worried participants were about COVID-19 to control for stress regarding the pandemic. Finally, we added more items to measure perceived goal progress, and feelings of control, stress, concern, and enjoyment regarding the goal. This was done to gain an understanding of whether these features might moderate or mediate the effects of goals (for instance, low importance goals might be better able to reduce stress because they are less stressful and more controllable).

3.3 Method

3.3.1 Participants

The sample size for this experiment was determined based on a priori power analysis using an alpha of .05, a power of .95, and an effect size of d = .22. It was estimated that the minimum sample size should be 200. We used the same data inspection as in Study 2a and there were no participants to be removed. The sample size was 200 participants recruited via Prolific as in Study 2a. The participants were between 18 and 63 years old (M = 30.16 years, SD = 10.93 years and most were female (87 males, 108 females, 3 preferred not to say, and 2 non-binary). The study advertisement specified that participation was only available to people whose first language was English given the use of anagrams in the study.

3.3.2 Materials

Stress induction

We used the same stress induction as in Study 2a.

Goal manipulation

The goal manipulation in this study was as in Study 2a but we added one more control condition in which the participants did not do anything. Thus, there were three conditions (high importance, low importance, no goal control). Also, we added more questions to measure goal progress, control, stress, concern, and enjoyment regarding the goal.

Participants were asked to rate each statement on a 7-point scale, ranging from 1 (*not at all*) to 7 (*very much*).The questions were “How much progress have you made towards these goals or tasks in the past weeks?”, “How much control do you feel over these goals or tasks?”, “How stressful do you find these goals or tasks?” , “How strongly are you concerned about doing well on these goals or tasks?” and “How much do you enjoy these goals or tasks?”

3.3.3 Self-report measures

State-Trait Anxiety Inventory (STAI)

As in Study 2a, we used the STAI. Again, it presented high internal consistency (Cronbach’s $\alpha = .94$).

Emotion Regulation Questionnaire (ERQ)

We added the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003; see Appendix A), which is a 10-item questionnaire that measures habitual use of two emotion regulation strategies: cognitive reappraisal and expressive suppression. We used this questionnaire to measure participants’ tendency to regulate their emotions. Participants were asked to rate each statement on a 7-point Likert-type scale (ranging from “strongly disagree” to “strongly agree”). The items measuring cognitive reappraisal include a prompt, such as “When I want to feel more positive emotion (such as joy or amusement)”, and a choice of response, such as “I change what I’m thinking about”. Examples of the items measuring expressive suppression include prompts such as “When I am feeling negative emotions”, and a choice of response, such as “I make sure not to express them”. The scale in this study was found to have acceptable levels of internal reliability, $\alpha = .84$ for cognitive reappraisal and $\alpha = .78$ for expressive suppression.

Cognitive Emotion Regulation Questionnaire (CERQ)

The Cognitive Emotion Regulation Questionnaire (CERQ) is a 36-item questionnaire that measures nine cognitive emotion regulation strategies: self-blame, other-blame, rumination, catastrophising, putting into perspective, positive refocusing, positive reappraisal and acceptance, and refocus on planning (Garnefski et al., 2001). In this study, only the "putting into perspective" subscale was used to understand whether perspective taking only takes place for people that use it on a regular basis. The subscale consists of four items, for example: "I think that it hasn't been too bad compared to other things" and "I think that other people go through much worse experiences". Participants were asked to rate each statement on a 5-point Likert-type scale ranging from 1 (*almost never*) to 5 (*almost always*). The scale in the study was found to have an acceptable level of internal reliability, $\alpha = .82$.

Stress scale

Stress was measured at multiple time points using a Likert scale ranging from 1 *(not at all stressed*) to 7 (*extremely stressed*), as in Study 2a. In this study, participants were first asked to rate how stressed they felt as the baseline: "How stressed do you feel right now?" Then we asked them to indicate how stressed they felt about the test phase of the anagram task after the practise phase: "How stressed do you feel about the test phase of the anagram task?" Finally, participants were asked about their stress related to the test phase of the anagram task after the goal manipulation: "How stressed do you feel about the test phase of the anagram task?" This was done to avoid them answering the question in response to the goals they had just written about as we were only interested in the stress response to the anagram task (see Figure 3.6).

Questionnaire

We used the same questionnaire as in Study 2a to measure participants' motivation to regulate their emotions or stay in emotion (the emotion-evoking event).

COVID-19 stress

As we recruited participants for the study during the COVID-19 pandemic (July 2020), we included a question to control for stress induced by the pandemic: "How worried do you feel about the COVID-19 crisis?" (1 = *not worried at all*, 7 = *extremely worried*).

Demographic questionnaire

We used the same demographic questionnaire as in Study 1 (i.e., asking about age, gender, employment status, native language, and country of origin).

3.3.4 Procedure

Overview

The procedure in Study 2b was largely the same as in Study 2a, with a few exceptions detailed here. This study was also programmed and administered using the Gorilla platform and all instructions were presented on the screen. All participants first rated their stress levels using a 7-point Likert scale ranging from 1 (*not at all stressed*) to 7 (*extremely stressed*) to measure their baseline stress. Following this, participants were required to complete the insoluble anagram task practice phase. Next, participants were asked to indicate their stress level again to measure their stress levels after the practice phase (i.e., the stress induction). Hereafter, participants were then randomly allocated to the high importance condition, the low importance condition, or the control condition. As a cover story, this task was also presented as random new task as in Study 2a. In addition, individuals were asked to respond to some items used to measure goal importance, goal progress, control over the goal, and stress, concern, and enjoyment regarding the goal. The items were "How important are these goals or tasks to you?", "How much progress have you made towards these goals or tasks in the past weeks?", "How much control do you feel over these goals or tasks?", "How stressful do you find these goals or tasks?", "How strongly are you concerned about doing well on these goals or tasks?" and "How much do you enjoy these goals or tasks?"

After that, all participants were then asked to report their stress levels again using the same Likert scale as before and to respond to items measuring their motivation to regulate their emotions or stay in the emotion. Following this, participants were given the test phase of the anagram task. Subjects then completed the STAI, ERQ, subscale of the CERQ, COVID-19 scale, and demographic questionnaire. Finally, participants were shown a debriefing screen explaining the true purpose of the study and thanked for their participation. Figure 3.5 outlines the key study procedures.

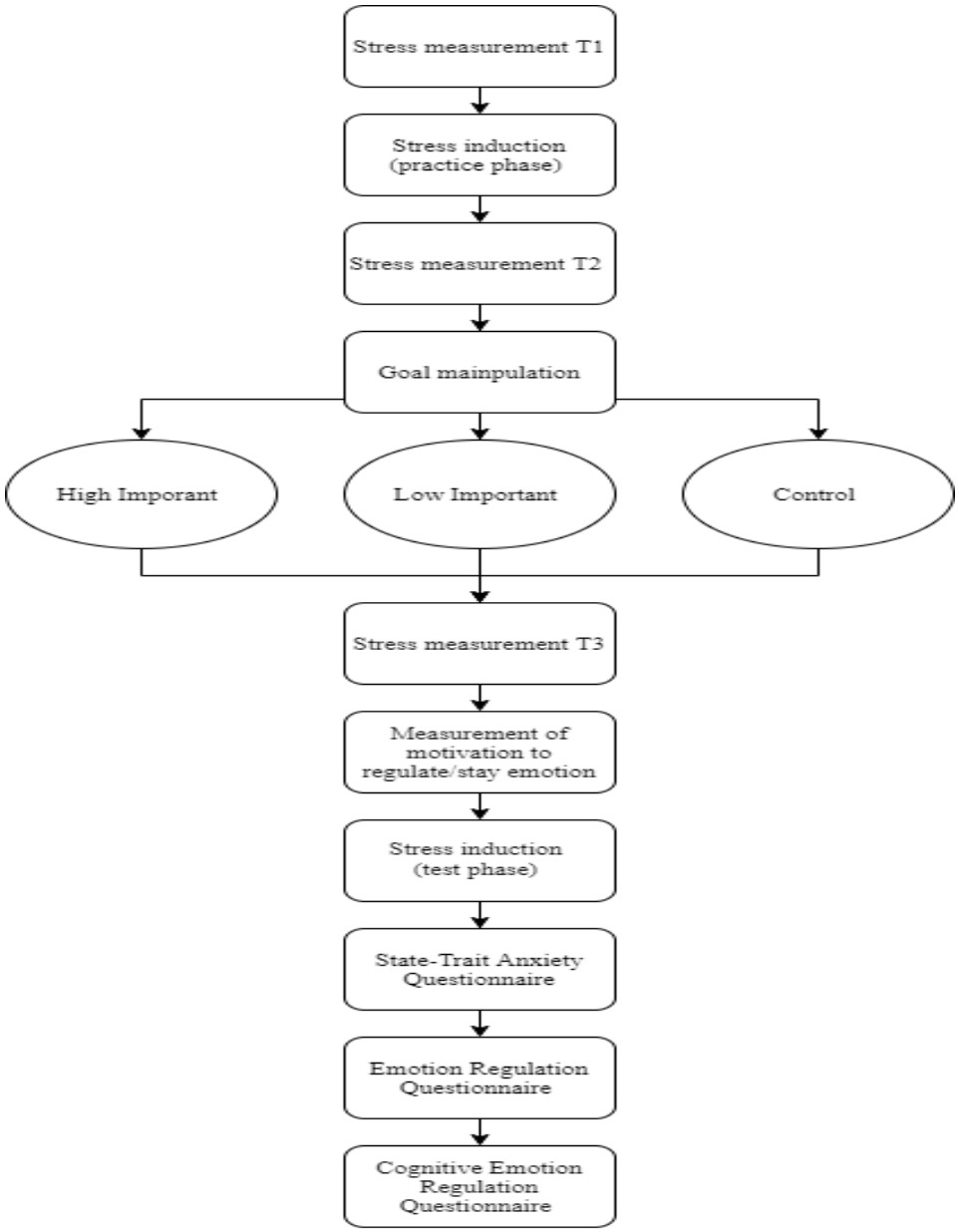

Figure 3.5. *Study 2 procedure*

3.3.5 Results

Randomisation check

To see if Randomisation to conditions was successful, a one-way ANOVA was carried out on the main individual difference variables (trait anxiety, suppression, reappraisal, putting into perspective, age). None of these *t*-tests reached significance, so it can be concluded that the conditions did not vary according to these variables and that Randomisation was successful (all *p* values >.19). Also, a Chi-squared test revealed that there was no difference between conditions in terms of gender, $\chi^2(6, N = 200) = 4.26$, $p = .64$.

Manipulation checks

As expected, the importance of the goal was rated higher in the high importance condition ($M = 6.15$, $SD = .78$) compared to the low importance condition ($M = 4.23$, $SD = 1.60$), $t(130) = 8.75$, $p < .001$. Also, goal concern was higher in the high importance condition ($M = 5.84$, $SD = 1.28$) compared to the low importance condition ($M = 3.25$, $SD = 1.64$), $t(130) = 10.07$, $p < .001$. Furthermore, goals in the high importance condition were rated as more stressful but also more enjoyable. Goal enjoyment was higher in the high importance condition ($M = 4.40$, $SD = 1.36$) compared to the low importance condition ($M = 3.37$, $SD = 1.74$), $t(130) = 3.80$, $p < .001$. Goal stressfulness was higher in the high importance condition ($M = 5.00$, $SD = 1.59$) compared to the low importance condition ($M = 2.68$, $SD = 1.56$), $t(130) = 8.44$, $p < .001$. Furthermore, there were no significant differences in goal progress or control between conditions (all *p* values > .09).

Main analyses

To examine the differences between stress scores across the three time points, a repeated measures ANOVA was conducted with time as the within participants factor (baseline, post stress induction, post goal manipulation), and condition as the between participants factor (high importance, low importance, control). This analysis showed a

significant main effect of time, $F(1, 197) = 98.46$, $p < .001$, partial $\eta^2 = 0.33$. There was no interaction between time and condition, $F(1, 197) = .029$, $p = .971$, partial $\eta^2 = .00$. There was no main effect of condition, $F(1, 197) = .844$, $p = .432$, partial $\eta^2 = .00$. (See Figure 3.6.) These results suggest that there was no statistically significant effect of goal on reported stress level across the three measures of stress.

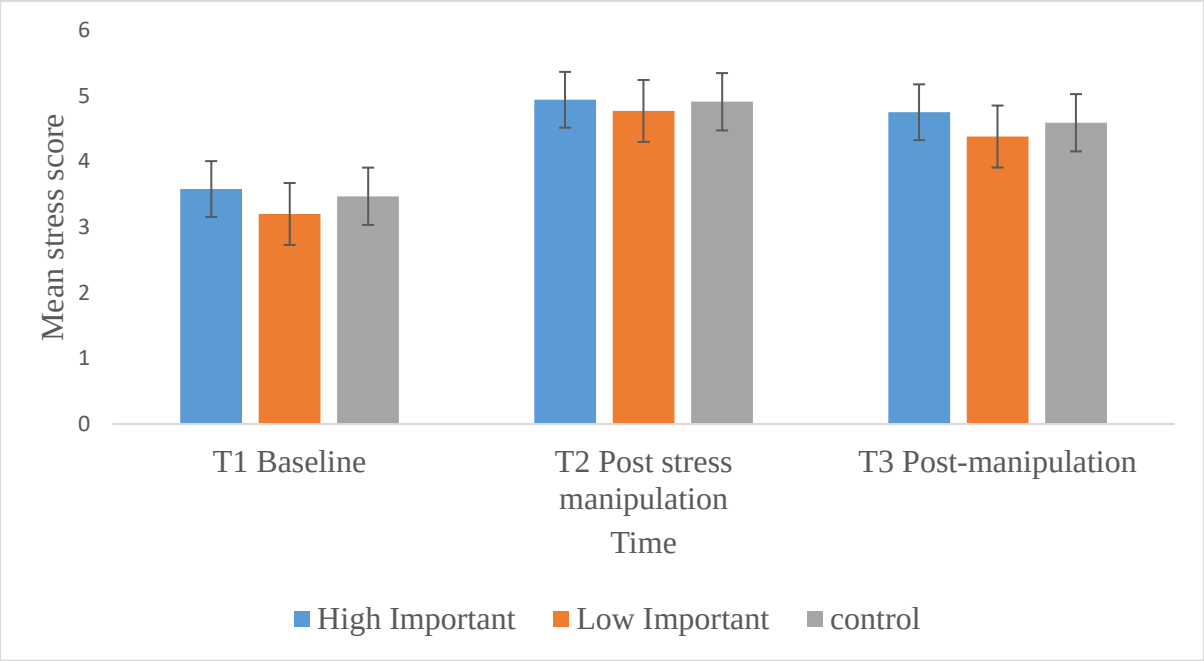

Figure 3.6. *Mean stress scores (1–7) across time for each condition*

To further understand the main effect of time and to ensure the anagram task induced stress successfully, a repeated measures ANOVA was conducted with time as the within participants factor (baseline, post stress induction) and condition as the between participants factor (high importance, low importance, control). This analysis showed that there was a significant main effect of time, $F(1, 197) = 155.210$, $p < .001$, partial $\eta^2 = .44$. This main effect was not qualified by a significant interaction of time and condition, $F(1, 197) = .273$, $p = .762$, partial $\eta^2 = .00$. There was also not a significant main effect of condition, $F(1, 197) = .695$, $p = .500$, partial $\eta^2 = 0.00$. Consequently, emotion induction via the anagram task was effective and the increase in participants' self-reported stress from baseline ($M = 3.42$, $SD =$

1.65) to post stress induction (*M* = 4.88, *SD* = 1.58) was not dependent upon condition (see Figure 3.7).

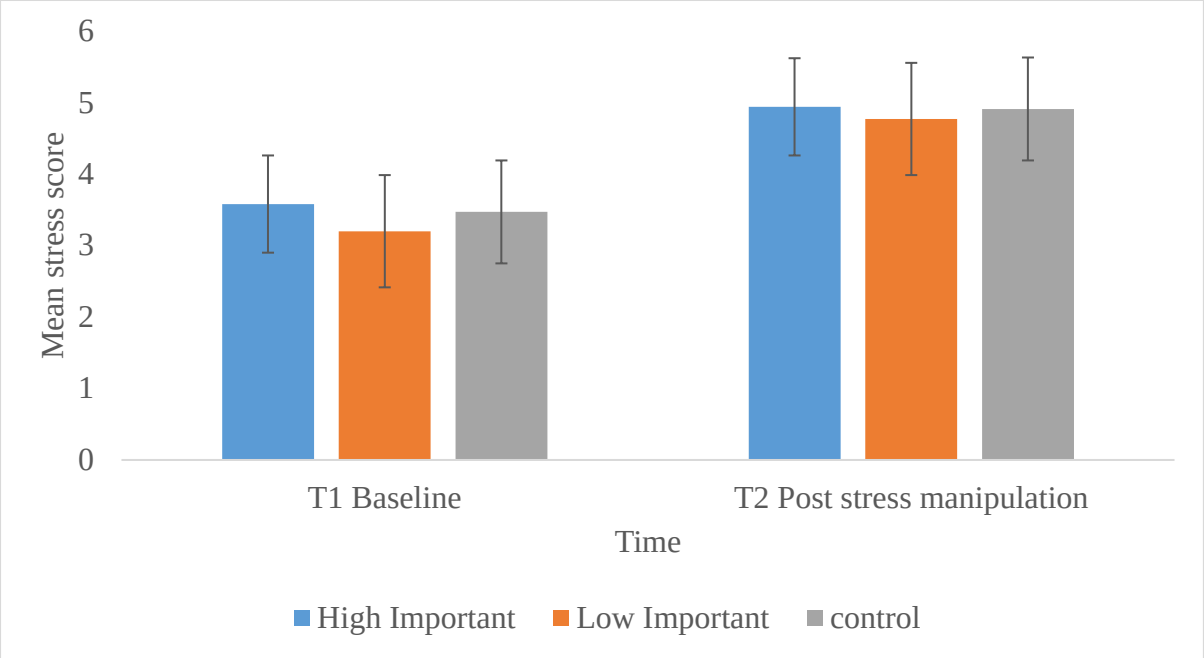

Figure 3.7. *Mean stress scores for all conditions at baseline and post stress induction*

To explore and understand the effect of goal manipulation across time, a repeated measures ANOVA was conducted with time as the within participants factor (post stress induction, post goal manipulation) and condition as the between participants factor (high importance, low importance, control). This analysis showed that there was a significant main effect of time, $F(1, 197) = 26.83$, $p < .001$, partial $\eta^2 = .12$. This main effect was not qualified by a significant interaction of time and condition, $F(1, 197) = .932$, $p = .396$, partial $\eta^2 = .00$. There was also no significant main effect of condition, $F(1, 197) = .520$, $p = .595$, partial $\eta^2 = .00$ (see Figure 3.8). These results suggest that there was no statistically significant effect of goal on reported stress level across the two measures of stress (post stress induction, post goal manipulation), meaning that in all three conditions stress was lower at T3. Participants' self-reported stress levels post stress induction across conditions (*M* = 4.87, *SD* =1.58) and post goal manipulation (*M* = 4.58, *SD* = 1.55) were comparable.

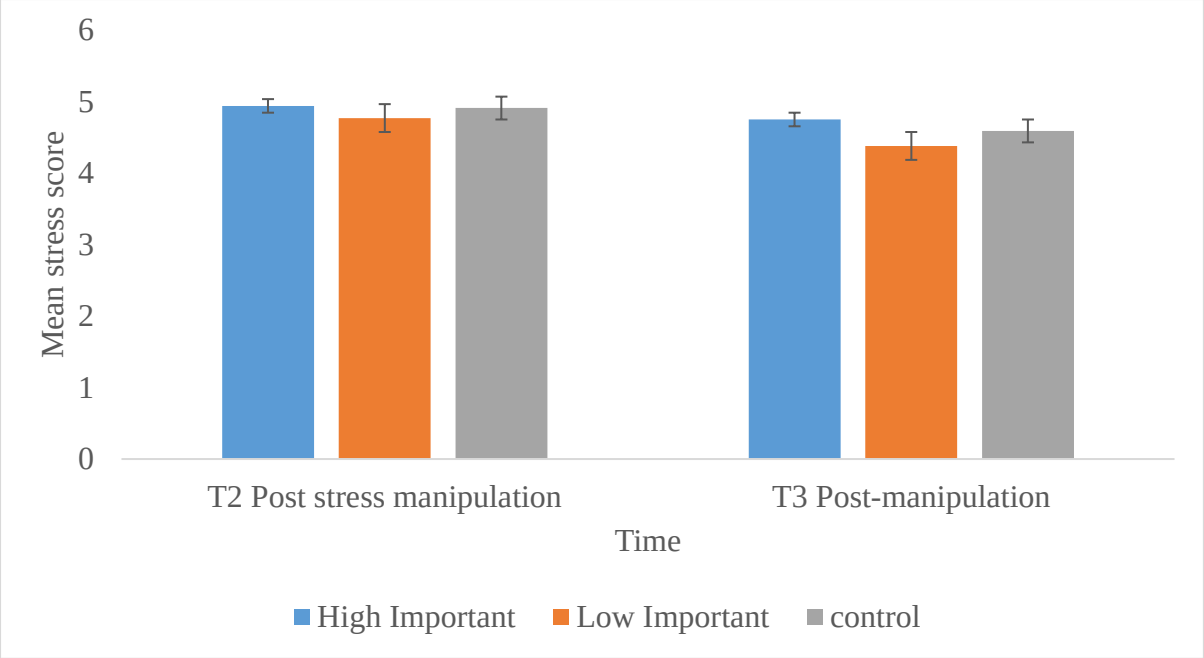

Figure 3.8. *Mean stress scores for all conditions at post stress induction and post goal manipulation*

Exploratory data analyses

We also tested whether the motivation to regulate emotion and to stay in the emotion differed between conditions using one-way ANOVA and none of these measures reached significance. Thus, the reported levels of motivation to regulate were comparable across conditions, high importance (M = 26.55, SD = 5.28), low importance (M = 27.13, SD = 5.04), and control (M = 27.23, SD = 4.77), $F(2, 197) = .361$, $p = .69$. Also, the reported levels of motivation to stay in emotion were comparable across conditions, high importance (M = 18.19, SD = 5.56), low importance (M = 17.72, SD = 5.15), control (M = 18.66, SD = 5.63), $F(2, 197) = .491$, $p = .61$. (See Figure 3.9.)

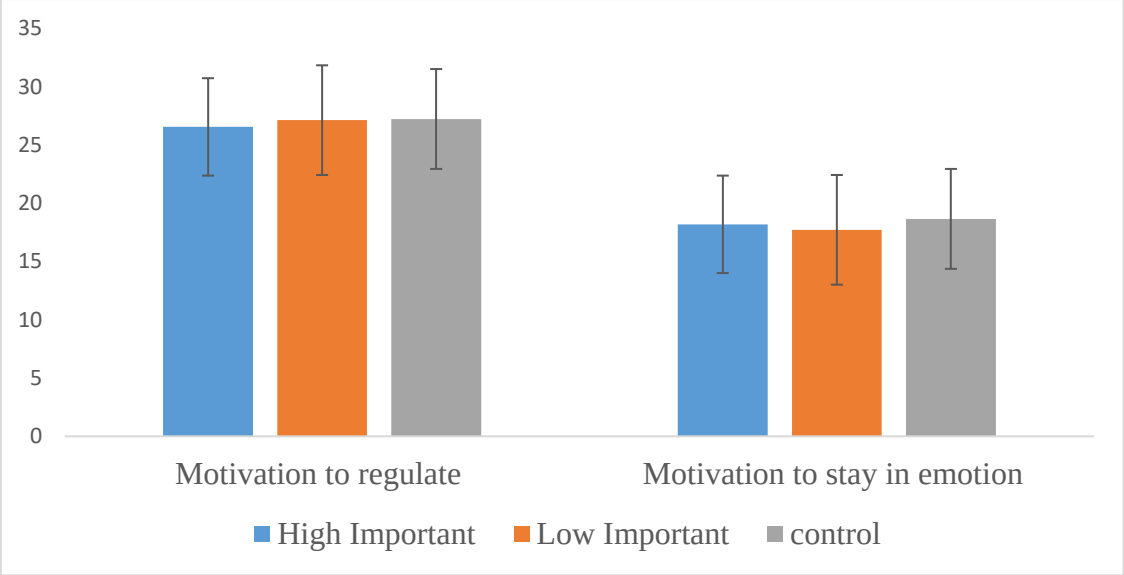

Figure 3.9. *Motivation to regulate emotion, motivation to stay in emotion, and conditions*

In addition, we explored the effect of condition on the outcome variables (T3–T2, motivation to regulate, motivation to stay) with moderators (suppression, reappraisal, trait anxiety, putting things in perspective (trait), goal importance, goal concern, goal stress, goal enjoyment, goal progress, goal control), and there was no effect of condition or the moderators, nor any significant interactions.

Finally, we checked whether COVID-19 stress differed between conditions, and it was not significant. However, there seemed to be a non-significant tendency for COVID-19 stress to be lower in the high importance condition. Indeed, the mean score of COVID-19 stress was lowest in the high importance condition (M = 4.46, SD = 1.60), compared to the low importance condition (M = 4.75, SD = 1.50), and the control condition (M = 4.85, SD = 1.75), $t(1, 04) = 19$, $p = .31$. This means that COVID-19 stress was lower, but not significantly, in the high importance condition compared to the low importance and control conditions. This result is similar to that in another preceding study in which 158 participants reported lower COVID-19 stress in the high importance condition (M = 4.58, SD = 1.49)

compared to the low importance (M = 4.92, SD = 1.58) and control conditions (M = 4.79, SD = 1.35), although not significantly, $t(2, 15) = 0.67$, $p = .36$.

3.4 General discussion

Study 2b examined whether being reminded of current goals would lower the relevance of the stressor and make people want to engage in emotion regulation. However, different to the a priori hypothesis, the results of this experiment revealed a visible reduction in stress after the goal or control manipulation in all conditions, not only in the high importance condition as expected. Further analyses using various moderators did not reveal any effects of the manipulation when considering the individual difference factors.

This finding could be explained in a variety of ways. One explanation could be that the goal manipulation was ineffective in encouraging participants to put their stressors into perspective. This could be because even the unimportant goals were still relevant to the participants and could have added stress rather than allowed for perspective taking. As a result, participants may have been prevented from considering the wider context, while also diminishing the significance of the stressor. This explanation is consistent with the idea that people pay more attention to events that are relevant to them and their goals than events that are relevant to others (Vogt et al., 2011). It is, however, contradicted by the finding that stress was lower rather than higher at T3 (the stress level after the goal manipulation). Even so, remembering a stressful or intense goal may have kept people from seeing beyond the current stressor.

Another way of interpreting the findings is that goal manipulation (perspective taking) may need to be practised or taught (cf. Schartau et al., 2009). For example, Schartau et al. (2009) asked participants to practise applying appraisal themes associated with the concept of seeing the big picture to a series of distressing training videos, either during or immediately

following each film (e.g., “Bad things happen in the world and I need to put them behind me and move on”; “There are usually some good aspects to every situation and it is important to focus on these”) while control participants viewed the same films without being instructed to rate them. Participants who practised appraisal had lower levels of self-reported negative emotional responses to a final test film that all participants were instructed to appraise when compared to controls. We did not have participants practise perspective taking in our experiments, and they only had one trial of experiencing a stressor and then thinking about goals. However, we tentatively found a (non-significant) effect of the manipulation on self-reported COVID-19, stress which was lower in the high importance condition compared to the control conditions. As a result, goal manipulation (perspective taking) may need to be practised or trained, or it may be that time is needed to show an effect (the COVID-19 stress question was later in the study).

Furthermore, perspective taking may not occur as naturally as we assumed. In these two experiments, we did not tell participants to use the goal to put the stressor into perspective. As a result, participants may not have done so. Instead, they might have handled both events as separate entities. However, this interpretation is somewhat contradicted by the first study (see Chapter 2), in which we did not instruct participants to put things into context either. However, it is possible that self-affirmation has an effect not because it puts stressors into perspective, but because it induces positive feelings and feelings of self-worth. As a result, we cannot be certain that the effect of self-affirmation is the result of perspective taking.

Another explanation for the findings could be that the stress induction was not strong enough in the two experiments, especially because it was an online study and not a laboratory study as in the first experiment (Chapter 2). This was because of the COVID-19 pandemic, which make it impossible to do experiments in the laboratory. Clearly, the results showed that

stress levels increased from baseline to the test phase and the stress induction was adopted from prior work (MacLeod et al., 2002), but it was still mild and not as high as in the first experiment.

Regarding motivation to stay in or regulate the emotional state, the findings of these two studies are not consistent. For example, in Study 2a, the participants in the high importance condition were motivated to regulate their emotions, but there were no significant differences in Study 2b. There are a few possible explanations for this finding. Since there is a difference between the two studies, one explanation could be that participants referred to the goal task in Study 2a and to the anagram task in Study 2b. Also, the studies were run at different times. Study 2a was conducted before the COVID-19 pandemic and Study 2b was run during the pandemic period (July 2020), which might have impacted participants' responses.

3.5 Limitations and suggestions for future research

There were several limitations to these studies that future work should address. First, the studies depended entirely on self-report measures to examine stress, and this may not represent a clear picture of stress reactivity. Therefore, future studies may go beyond using self-report measures, replicating the experiment by using different physiological measures, such as changes in heart rate or skin conductance levels. For instance, previous studies have examined self-reported negative affect in addition to physiological reactivity (e.g., Thayer et al., 2010). Second, participants in this research were recruited during the COVID-19 pandemic. As a result, most of them were likely under high levels of stress and this could have influenced their ability to put the stressor into perspective and consider the bigger picture. In addition, future research could vary the design, measurement methods, and sample size, and/or provide a different set of tests and questions to refine the results. For instance, researchers could further explore the conditions at different times, as well as examine

whether perspective could be an adaptive emotion regulation technique with long-term benefits, or simply a form of distraction. Third, previous research has indicated that males and females respond differently to stress, and they might engage more or less successfully with different emotion regulation strategies in comparison to each other (Nolen-Hoeksema & Aldao, 2011). The samples in these studies were mostly female, which restricts the generalisation of the findings. Therefore, these findings might not be generalisable to men.

3.6 Conclusion

The studies reported in this chapter examined the effect of goal manipulation on emotional experience and emotional regulation in different conditions. The studies were based on the hypothesis that highly important goals would induce a more visible decline in stress compared to unimportant goals. They also considered that constant reminders of the importance of the current goals could influence people differently based on their anxiety levels. However, contrary to the hypothesis, all examined conditions demonstrated a reduction in stress after goal manipulation. Hence, reminding individuals of important goals is not an effective strategy to reduce stress.

Altogether, the study findings indicate that goal manipulation is possibly a viable approach to encourage individuals to consider their stressors in different conditions, but it needs to be further developed. Stress did not decrease more for the high importance conditions as initially hypothesised because, we think, different goals were still significant to the participants, hindering them from considering the broader context and reducing the relevance of the stressors. Therefore, the assessment indicates that individuals tend to consider relevant events instead of irrelevant ones that are not aligned with their goals. The studies provide insights that could be fruitful for future research in terms of examining the topic in a broader context and provide a new direction for analysing emotion regulation strategies to minimise stress.

Chapter 4. "There Are Worse Things in Life": How Comparisons with Extreme Positive and Negative Scenarios Affect the Experience of Stress

Abstract

Stressful situations, whether minor annoyances like an upcoming exam or assignment or major life events like losing a job, have been linked to a variety of psychological and physical health problems. As a result, people try to attenuate and cope with stress. The purpose of this study was to see if making comparisons to extreme positive and negative case scenarios could reduce stress, a strategy that laymen often report using. To this end, we instructed participants (N = 197) to put an upcoming stressor (an assignment or exam) into perspective by asking them to consider the relevance of these events and comparing it to the relevance of extreme positive and negative scenarios that happen or could happen to them or their families. A control condition rated the chosen stressor by itself. The participants' stress levels before and after the manipulation were assessed in a variety of ways (i.e., Implicit Emotion Task, various emotion measures, such as the Primary Emotional Appraisal Scale), as well as their desire to regulate their emotional state and individual differences in habitual perspective taking, trait anxiety, and emotion regulation skills. Perspective taking lowered the importance of the stressor and stress in all participants in the explicit measures. In more implicit measures, only habitual perspective-takers showed reductions in stress and higher motivation to cope with the stressor. The findings suggest that perspective taking may be a useful way of reducing stress and especially assisting perspective-takers in lowering their stress levels.

Keywords: Perspective Taking, Life Events, Stress

4.1 Introduction

Stress has been linked to reduced well-being and an increased incidence of psychological disorders, such as post-traumatic stress, generalised anxiety disorder, and major depression (Compare, Zarbo, Shonin, Van Gordon, & Marconi, 2014). Controlling these extreme reactions is increasingly being recognised as an important component of well-being and resilience (Metz et al., 2013). The regulation of negative experiences can be defined as a collection of processes that influence the type of emotional response evoked, as well as the manner in which individuals experience and express these emotions (Gross, 2007).

Research has identified various strategies to control extreme reactions to negative experiences, some of them maladaptive, such as rumination or avoidance (McMahon & Naragon-Gainey, 2018), but also adaptive cognitive strategies, such as temporal distancing and perspective broadening. For example, Bruehlman-Senecal and Ayduk (2015) conducted several studies to examine the effectiveness of temporal distancing for emotion regulation. Their results indicated that people experienced less distress when they were asked to consider how they would feel about a current stressor in the distant future (e.g., 10 years from now) than in the near future (e.g., one week from now). These findings were consistent across a wide range of stressors, including less important ones (e.g., work deadlines) and important ones (e.g., loss of a spouse). The effect was also found to be independent of whether individuals reflected on unfavourable events that had occurred or were still occurring. In this paper, we were interested in seeing how comparisons with extreme positive and negative case scenarios might reduce stress. This is relevant because laymen often use reminders of worse cases as a way of putting stressors into perspective (e.g., “It could be much worse”; Garnefski et al., 2001), but it is unclear how effective this approach actually is in attenuating feelings of stress and negative emotions.

4.1.1 Perspective taking as an emotion regulation strategy

Previous research has attempted to train people to put things into perspective as a way of reducing negative emotions. For instance, a study by Schartau et al. (2009) asked participants to practise applying appraisal themes associated with the concept of seeing the big picture to a series of distressing training videos, either during or immediately following each film (e.g., "Bad things happen in the world, and I need to put them behind me and move on"; "There are usually some good aspects to every situation, and it is important to focus on these") while control participants viewed the same films without being instructed to rate them. Participants who practised appraisal had lower levels of self-reported negative emotional responses to a final test film that all participants were instructed to appraise when compared to controls. While these findings show that perspective taking reduces negative effects, it is unclear which perspective-taking strategy reduces distress. As several cognitive reappraisal strategies were being studied at the same time (e.g., Troy et al., 2018), it is impossible to assess the benefits of any single strategy on its own. We are therefore interested in studying how making comparisons to extreme positive and negative case scenarios could reduce stress.

Perspective taking has also been identified as one of the cognitive strategies for emotional regulation in the Cognitive Emotion Regulation Questionnaire (CERQ). It is defined as trying to downplay the seriousness of an event or emphasising its relativeness to other events (Garnefski et al., 2001). Therefore, in this study, we used the perspective-taking subscale of the CERQ to investigate whether perspective taking as a trait would moderate its efficacy as an emotion regulation strategy. This scale measures the general tendency to engage in perspective taking and refers to thoughts about making the event seem less important or making it seem like it is not as important as other events.

4.1.2 The study

The study aimed to investigate whether engaging in perspective taking or being reminded of the significance of life situations other than the stress-causing stimulus would reduce the stressor's relevance and increase people's desire to engage in emotion regulation. To test this idea, a manipulation comprising an instruction text and perspective scale was developed to encourage participants to think about their stressor while looking at the bigger picture. In addition, we asked participants to compare the stressor to negative or positive events to investigate whether perspective taking would influence emotion regulation differently depending on whether the events were positive or negative. Furthermore, we used both direct and indirect measures of stress to ensure that we were not only measuring demand effects. This allowed us to see if more explicit instructions for perspective taking (aside from goal importance, as discussed in Chapter 3) might help to reduce stress.

4.1.3 Overview of the study

The study was programmed and administered on the Gorilla platform (Anwyl-Irvine et al., 2018), and all instructions were displayed on the screen. To measure baseline stress, all participants rated their stress levels on a 7-point Likert scale, ranging from 1 (*not at all stressed*) to 7 (*extremely stressed*). After that, participants were required to complete a written task about an upcoming stressor in their own lives (an upcoming assignment or exam) to increase their stress levels. Participants were then asked to indicate their level of stress once more to determine their level of stress following the written task (i.e., the stress induction). This was followed by a series of questions regarding their responses to the stressor (an assignment or exam). Following this, participants were randomly assigned to one of three conditions: negative perspective, positive perspective, or control. Next, all subjects were asked to report their stress levels using the same Likert scale as previously.

Then, we used a variety of tasks to assess participants' stress, emotional, and coping responses more subtly and in more detail. First, we used more indirect measures of emotional responses by having them rate eight neutral words as an indirect emotion measurement (e.g., cup, apple, pen, hand, phone, card, chair, and rain) to see whether ratings might be more positive/ negative (cf. Schoth & Liossi, 2017). We also measured their stress under various stressors (e.g., COVID-19 pandemic-related stress) to see whether they would feel less stress after perspective taking. We assumed that participants would not display a demand effect here as it was not obvious that we expected an effect on such items. Furthermore, they responded to items on the Primary Emotional Appraisal Scale (Folkman & Lazarus, 1985) to get a more complete picture of their emotional responses. We also measured their coping response by asking them about their motivation to regulate their stress, and feelings of self-efficacy regarding their ability to address the stressor. Finally, the State-Trait Anxiety Inventory (STAI), the Emotion Regulation Questionnaire (ERQ), a subscale of the Cognitive Emotion Regulation Questionnaire (CERQ), and a demographic questionnaire were administered to each participant. At the end of the experiment, the participants were presented with a screen that explained the study's true purpose and expressed gratitude for their participation. Figure 4.1 shows how the study was operationalised.

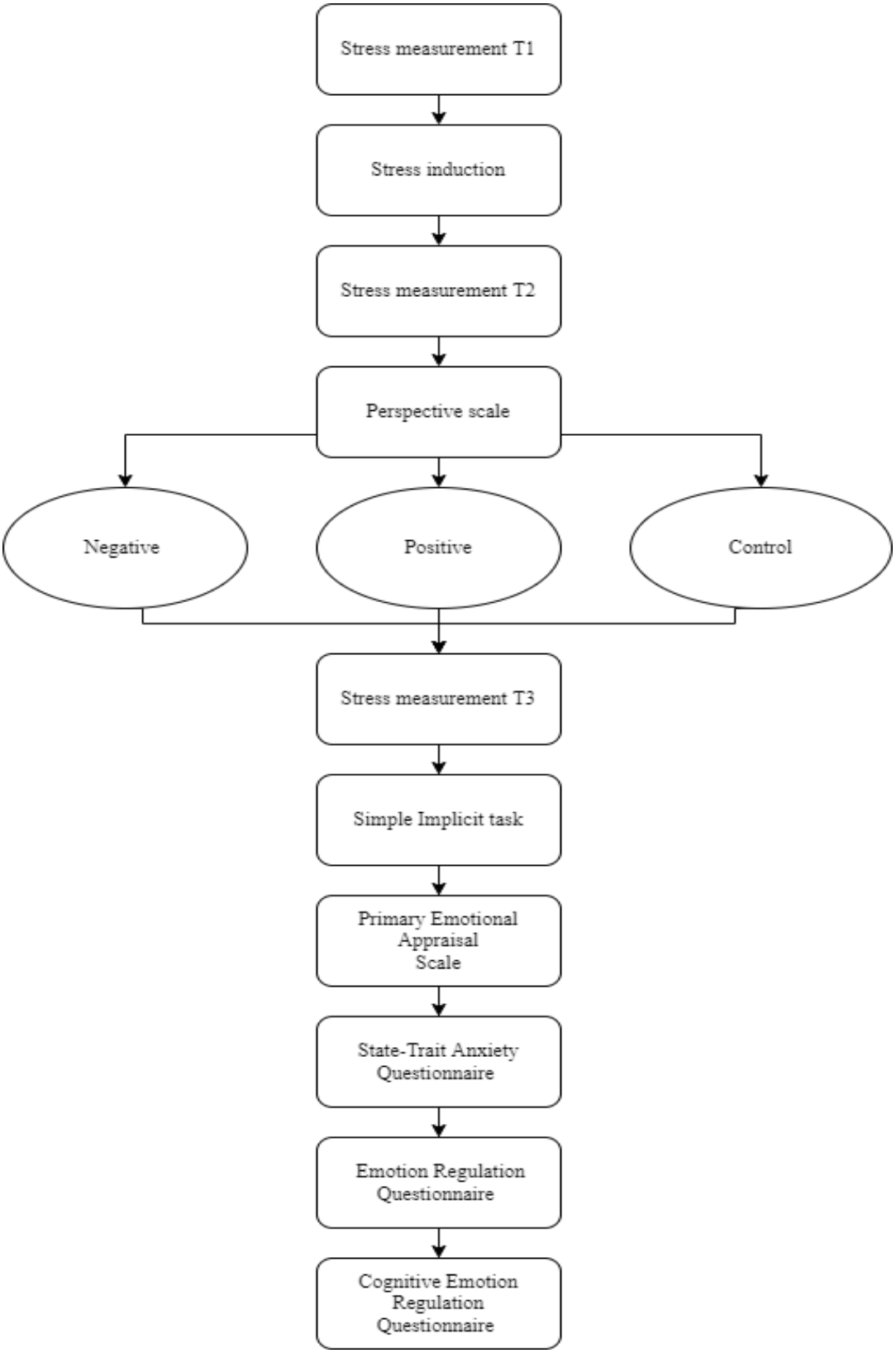

Figure 4.1. *Study procedure*

4.1.4 Predictions

It was hypothesised that those participants who compared the stressor to negative or positive events (perspective-taking conditions) would exhibit a more noticeable reduction in stress compared to the control condition, which was not instructed in perspective taking. We did not have specific predictions about whether negative or positive events would be more effective. It was also predicted that perspective taking might affect people differently depending on who used it on a regular basis and their anxiety, reappraisal, and suppression levels. For instance, putting things into perspective might only occur for those that used it regularly. The latter part of the study was exploratory in nature, with the goal of determining whether the manipulation of perspective tasking could be used to change other stress responses.

4.2 Method

4.2.1 Participants

In this main study, we tested as many participants as we could within funding limitations. The experiment was conducted on the research panel Prolific, and each participant was paid £1.40 for participation. For this study, recruitment was limited to students because we used a stress task that asked about their exams or assignments. Also, we focused specifically on the undergraduate level, as they have more exams and assignments than postgraduate students. There were no restrictions on gender, ethnicity, or any other characteristic for recruitment. The data set was scanned for straight lining and central lining. No one was excluded at this stage. Also, two independent raters (psychology students) coded the following criteria: the type of stressor (i.e., assignment or exam, dissertation or thesis, or something else), whether the reported life events in the perspective-taking manipulation were positive or negative, or not emotional at all, and how much evidence of perspective taking there was in the answers. Neither rater was familiar with the hypotheses of the study. They

recommended that nine participants should be excluded. We decided to keep them in the data to be more conservative and because excluding these participants did not change the results. In addition, a visual check of the time taken by participants to complete the survey and an analysis of descriptive statistics (means and standard deviations) were performed; three of the participants were excluded due to incomplete responses (i.e., less than 1.5%). After data examination, the final sample comprised 197 participants. They were aged between 18 and 55 years old (M = 21.28 years, SD = 4.74 years) and most were female (35 males, 153 females, 3 transgender, 3 preferred not to say, and 3 non-binary). The study was advertised in Prolific as a study on "How students deal with different events in their lives"; it was conducted during the COVID-19 period (November 2021).The study was approved by the School of Psychology and Clinical Language Sciences Ethics Committee, University of Reading (2018-160-JV).

4.2.2 Materials

Stress induction

In this experiment, we induced stress by asking participants to complete a written task about an upcoming stressor in their own lives (cf. Bruehlman-Senecal & Ayduk, 2015). Individuals were asked specifically to write about an upcoming assignment or exam that they viewed as particularly stressful, and they were told that their writing would be analysed by experts. This stress-inducing task has been pretested in a pilot study with 76 participants, in which participants' stress levels increased from baseline (M = 3.05, SD = 1.31) to post-stress induction (M = 3.89, SD = 1.37), although not significantly, t (74) =.68, p =.49. Participants were provided with the following instructions:

> *Take a few moments to think about an upcoming assignment or exam that is particularly stressful for you. Please write a short paragraph below detailing the assignment or exam, what it will involve, why it is stressful for you, and what sort of*

negative emotions you might have about it. Please note that your writing will be read and analysed by experts for subsequent behavioural analysis. Later in the study, you will be asked more questions about this assignment or exam by an expert.

Following the writing task, the participants were asked a variety of questions about their reactions to the stressor (assignment or exams): "How much distress is this assignment or exam causing you now, regardless of when it arose?", "To what extent has this assignment or exam affected your day-to-day life since it arose?", "To what extent have you dwelled on this assignment or exam since it arose?", and "How serious or severe is this assignment or exam in your opinion?" These questions were taken from Bruehlman-Senecal and Ayduk (2015), and participants' responses to these items were measured on a 5-point scale (1 = *not at all* to 5 = *a great deal*).

Perspective-taking manipulation

The manipulation, comprising an instruction text and a perspective scale, was developed in three pilot studies that were used to continuously improve the wording for clarity, but also to make the two perspective-taking conditions as similar as possible, except for the valence of the scenario. These studies showed an acceptable level of perspective taking.

There were three conditions in this main experiment. The first was the negative perspective condition, which asked participants to think about negative events that might have happened or could happen in their lives and asked them to write about them. These events were presented as much more significant than the assignment or exam that they were asked to write about before (stress induction), and then they were asked to rate the importance of the assignment or exam compared to these other experiences that might have happened or could happen in their life on a 100 mm visual analogue (perspective) scale

(VAS), ranging from 0 (*not important at all*) to 100 (*extremely important*), as shown in Figure 4.2.

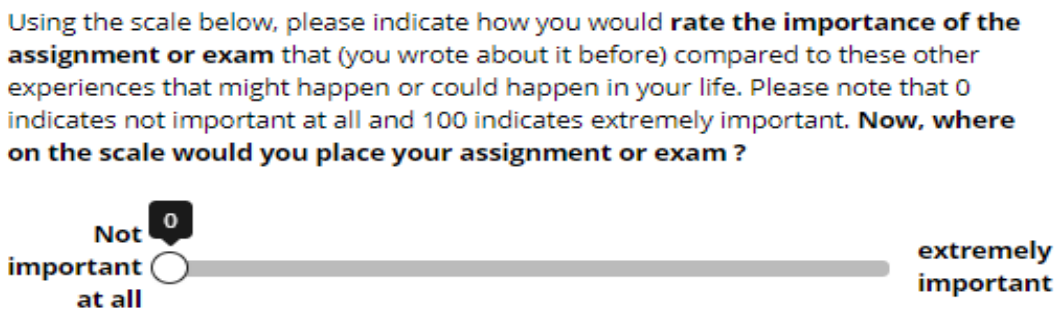

Figure 4.2. *Visual analogue scale (perspective scale)*

The second condition was the positive perspective condition, which asked participants to write about positive events that might have happened or could happen in their life that would be much more significant than the assignment or exam that they were asked to write about, and then they were asked to rate the importance of the assignment or exam compared to these other experiences that might have happened or could happen in their life on the same VAS.

The last condition was the control condition, in which participants were not asked to write about any events but were asked to rate the importance of the assignment or exam that they had previously written about. The perspective scale was the same VAS created for the study to put the stress-causing event into perspective.

Participants in the negative perspective condition were told the following:

> *Other participants in our studies have told us that in the grand scheme of things, the assignment or exam is not that significant. There are more important things in their lives than assignments or exams. For instance, when thinking about more harmful and negative things that happen or could happen to them or people in their lives, the*

assignment appears to be of little significance. Now, we would like to understand what people and/or events in your life are or would be more important than the assignment. For example, the assignment or exam is or would be irrelevant in comparison to the death or ill health of themselves or of a person close to them, e.g., the absence of people close to them in their lives and the negative feelings that would come with not having them in their lives. Similarly, losing existing financial security or being fired from a job or job demotion would be more much significant than the assignment or exam. Now, please write about a negative event that might have happened or could happen in your life that would be much more significant than the assignment. Please describe it in a few words:

_____

Using the scale, please indicate how you would rate the importance of the assignment or exam compared to this other experience that might have happened or could happen in your life. Please note that 0 indicates not important at all and 100 indicates extremely important.

Participants in the positive perspective condition were told:

Other participants in our studies have told us that in the grand scheme of things, the assignment or exam is not that significant. There are more important things in their lives than assignments or exams. For instance, when thinking about more beneficial and positive things that happen or could happen to them or the people in their lives, the assignment appears to be of little significance. Now we would like to understand what people and/or events in your life are or would be more important than the assignment. For example, the assignment or exam is or would be irrelevant in comparison to the regained or continued health of themselves or the presence and/or

regained or continued health of people close to them, e.g., the presence of people close to them in their lives and the positive feelings that come with having them in their lives. Similarly, obtaining added financial security or being offered a job or job promotion would be much more significant than the assignment or exam. Now, please write about a positive event that might have happened or could happen in your life that would be much more significant than the assignment. Please describe it in a few words:

_____

Using the scale below, please indicate how you would rate the importance of this assignment or exam compared to this other experience that might have happened or could happen in your life. Please note that 0 indicates not important at all and 100 indicates extremely important.

Participants in the control condition were told:

We would like to understand more about how you experienced the stressful assignment. Using the scale below, please indicate how you would rate the importance of this assignment or exam. Please note that 0 indicates not important at all and 100 indicates extremely important.

4.2.3 Self-report measure: Stress scale

Stress (the main dependent variable) was measured at multiple time points using a Likert scale. Participants were asked to rate how stressed they felt on a 7-point scale (1 = *not stressed at all,* and 7 = *extremely stressed*). Participants were first asked to rate how stressed they felt as a baseline: "How stressed do you feel right now?" Then we asked them to indicate how stressed they felt about the assignment or exam after the written task (stress

induction): “How stressed do you feel about the assignment or exam?” Finally, participants were asked about their stress related to the assignment or exam after the perspective-taking/scale manipulation: “How stressed do you feel about the assignment or exam?” (see Figure 4.1).

4.2.4 Additional dependent variables

Implicit emotion task

In this study, an implicit emotion task was designed as an additional measure of stress to see whether the manipulation influenced the participants’ stress responses in a more subtle way (van der Ploeg, Brosschot, Thayer, & Verkuil, 2016). The task consisted of eight neutral words (cup, apple, pen, hand, phone, card, chair, rain), taken from Warriner, Kuperman, and Brysbaert (2013) (mean valence rating of 5.05, SD 1.65, scale from 1 (*happy*) to 9 (*unhappy*), mean arousal rating of 2.67, SD 1.83). Participants were asked to rate these words using a 7-point scale ranging from 1 (*very positive*) to 7 (*very negative*). We used this scale as an implicit measure of their feelings. For example, if participants rate the words more positively, it could indicate that they felt better, but if participants showed a decrease in their positive emotions, they might rate the words more negatively (van der Ploeg et al., 2016). To simplify the analysis, we averaged the ratings of all the words. This was justified by a Cronbach’s alpha of .73.

Primary Emotional Appraisal Scale

The Primary Emotional Appraisal Scale (Folkman & Lazarus, 1985) measures 15 emotions, grouped into 4 categories: (1) threat: fearful, worried, anxious; (2) challenge: hopeful, confident, eager; (3) harm: angry, sad, disappointed, disgusted, guilty; (4) benefit: exhilarated, relived, pleased, happy. In this study, participants were asked about their emotions in the current situation (about the assignment or exam) and responded on a 5-point Likert-type scale from 1 (*I don’t feel emotion*) to 5 (*high level of emotion*). Examples of the

items included “How fearful do you feel about the assignment or exam?” and “How relieved do you feel about the assignment or exam?” We used this scale to see whether the perspective-taking manipulation changed wider stress and emotional responses. Items were presented in random order. The scale in the study was found to have an acceptable level of internal reliability, $\alpha = .69$.

General stress response

Additional questions were used as extra measures to see if the perspective-taking manipulation transferred to other stress responses. This would allow us to see an effect of the manipulation that could be interpreted less likely as demand effect. A 7-point scale (1 = *not worried at all*, and 7 = *extremely worried*) was created to measure how worried participants were about the COVID-19 pandemic, the restrictions, and how they perceived their academic study experience during the COVID-19 pandemic. The questions were: “How worried do you feel about the COVID-19 pandemic?”, “How stressed do you feel about the restrictions due to the pandemic?” and “How do you perceive your academic study experience during the COVID-19 pandemic?” We also measured how worried participants were about their financial situation, social life, and friendships or relationships in general. The questions were: “How worried do you feel about your financial situation in general?”, “How worried do you feel about your social life in general?”, and “How worried do you feel about your friendships or relationships in general?” All responses ranged from 1 (*not worried at all*) to 7 (*extremely worried*). To simplify the analysis, we averaged all items. This was justified by a Cronbach’s alpha of .75.

Stress and coping response to stressor

To measure participants’ stress related to the assignment or exam again, motivation to regulate their stress, and self-efficacy, we created several questions. We used these questions

to measure (again) the effect of perspective taking on the stressor. The question used to measure how worried participants were about the assignment or exam was "How worried do you feel about the assignment or exam that you just wrote about?" (1 = *not worried at all*; 7 = *extremely worried*). The questions used to measure motivation to address the stressor were "How motivated do you feel to work for the assignment or exam?" and "How prepared do you feel for the assignment or exam?" The item used to measure self-efficacy was "Please rate how confident you are that you can complete the assignment or exam successfully". All responses were given on a 7-point scale ranging from 1 (*not at all*) to 7 (*very much*). To simplify the analyses, we averaged several variables, called "coping response to stressor", and the Cronbach's alpha was .73. The items that were averaged were: "How motivated do you feel to work on the assignment or exam?"; "How prepared do you feel for the assignment or exam?"; "How confident do you feel that you will be able to complete the assignment or exam successfully?"

Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003; see Appendix A) is a 10-item questionnaire that measures two emotion regulation strategies: cognitive reappraisal and expressive suppression. We used this questionnaire to measure participants' tendency to regulate their emotions. Participants were asked to rate each statement on a 7-point Likert-type scale (ranging from "strongly disagree" to "strongly agree"). The items measuring cognitive reappraisal included prompts such as "When I want to feel more positive emotions (such as joy or amusement)" and options such as "I change what I'm thinking about". The items measuring expressive suppression included prompts such as "When I am feeling negative emotions" and options such as "I make sure not to express them". The scale in the study was found to have acceptable levels of internal reliability, $\alpha = .85$ for cognitive reappraisal and $\alpha = .77$ for expressive suppression.

Cognitive Emotion Regulation Questionnaire (CERQ)

The Cognitive Emotion Regulation Questionnaire (CERQ) is a 36-item questionnaire that measures the cognitive emotional regulation strategies a person uses in response to a stressful life event. It comprises nine scales, each with four items and conceptually different: self-blame, other-blame, rumination, catastrophizing, putting into perspective, positive refocusing, positive reappraisal, acceptance, refocus on planning (Garnefski et al., 2001). On the items measured using a Likert-type scale (from 1 = *almost never* to 5 = *almost always*), the higher the score, the greater the use of the coping strategy in question. In this study, only the "putting into perspective" scale was used to understand whether perspective taking only takes place for people who use it on a regular basis. The items were: "I think that it hasn't been too bad compared to other things"; "I think that all could have been much worse"; "I tell myself that there are worse things in life"; 2I think that other people go through much worse experiences". The scale was found to have a good level of internal reliability, $\alpha = .82$.

State-Trait Anxiety Inventory (STAI)

The State-Trait Anxiety Inventory (STAI Form Y-2; Spielberger et al., 1983; see Appendix B) is a 20-item scale that is used for measuring trait anxiety in adults. Participants were asked to rate statements such as "I take disappointments so keenly that I can't put them out of my mind" and "I get in a state of tension or turmoil as I think over my recent concerns and interests" on a 4-point scale (1 = *almost never*, and 4 = *almost always*). An overall score between 20 and 80 was calculated. Higher scores represent the presence of high levels of anxiety; lower scores indicate the presence of low levels of anxiety. The Cronbach's alpha was .93.

Demographic questionnaire

A demographic questionnaire was administered to collect participants' basic demographic information, including age, gender, grade level, year of course, and level of

engagement with the course. The questions were: “What is your gender?”, “What is your age?”, and “How engaged are you with your course?” (responses given on a 7-point scale ranging from 1 = *not at all* to 7 = *very much*), “What year of your course are you currently in?”, and “What grade level are you currently working at?”

4.3 Results

4.3.1 Randomisation check

To see if Randomisation to conditions was successful, a one-way ANOVA was carried out on the main individual difference variables (trait anxiety, suppression, reappraisal, putting into perspective, grade level, year of course, level of engagement with the course, age). None reached significance, so it can be concluded that the conditions did not vary according to these variables and that Randomisation was successful (all p values > .22). Also, a Chi-squared test revealed that there was no difference between conditions in terms of gender, $\chi^2(8, N = 197) = 4.51$, $p = .80$. Table 4.1 shows the mean differences between conditions.

Table 4.1. *Descriptive statistics for all main variables by condition*

	Condition					
	Negative perspective N = 65		*Positive perspective N = 65*		*Control N = 67*	
	M	*SD*	*M*	*SD*	*M*	*SD*
Age	20.78	4.00	21.09	3.22	21.49	6.34
Trait anxiety	52.12	11.64	51.44	10.72	52.07	11.14
Suppression	16.69	4.31	15.53	5.37	16.07	4.81
Reappraisal	27.80	6.11	26.36	6.37	27.05	6.26
Putting into perspective (CERQ)	13.83	3.38	14.03	3.22	14.79	3.47

4.3.2 Manipulation checks

We examined whether the scale response (the importance given to an assignment or exam in comparison to other experiences) differed between conditions. We found a main effect of condition, $F(2, 194) = 46.74$, $p < .001$, partial $\eta^2 = .32$. The results showed that the importance given to assignment or exam was lower in the negative perspective condition ($M = 27.95$, $SD = 25.21$) compared to the positive perspective condition ($M = 47.08$, $SD = 25.84$) and control condition ($M = 69.00$, $SD = 22.08$). There was a statistically significant difference between the negative perspective and control conditions, $p < .001$, and the positive perspective and control conditions, $p < .001$. There was also a statistically significant difference between the negative perspective and positive perspective condition, $p < .001$.

4.3.3 Main analyses

To examine the differences between stress scores across the three time points, a repeated measures ANCOVA was conducted with time as the within participants factor (baseline, post stress induction, post perspective-taking manipulation), condition as the between participants factor (negative perspective taking, positive perspective taking, control) and scale response as the covariate. Since the scale response (the importance given to an assignment or exam in comparison to other experiences) differed between the positive and negative conditions, we controlled for this. The analysis showed a significant main effect of time, $F(2, 194) = 27.62$, $p < .001$, partial $\eta^2 = .12$. There was a significant interaction between time and condition, $F(2, 194) = 18.36$, $p < .001$, partial $\eta^2 = .15$. There was no main effect of condition, $F(2, 194) = .793$, $p = .454$, partial $\eta^2 = .00$. (See Figure 4.3.)

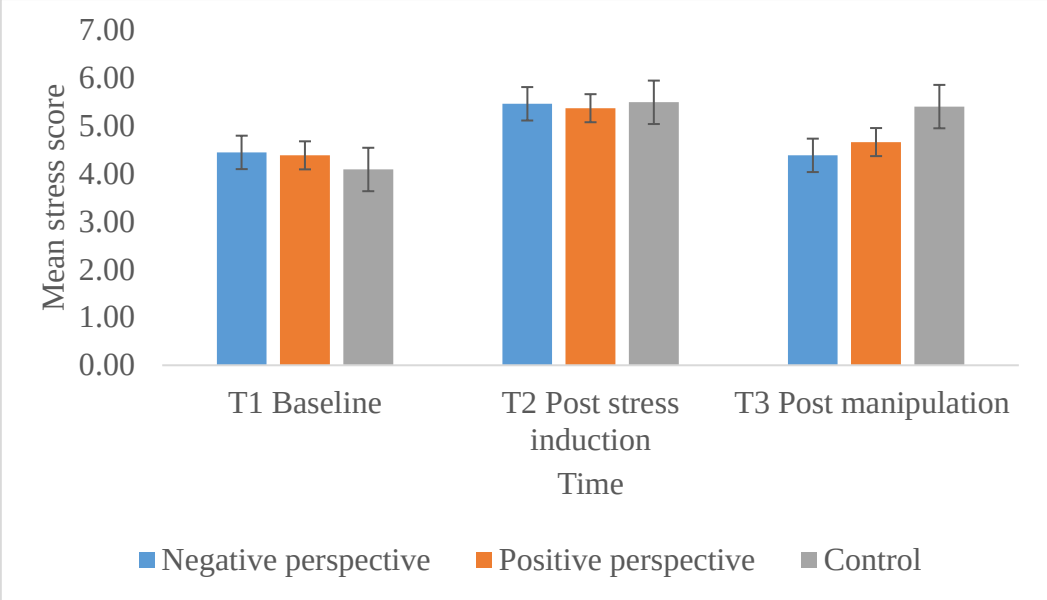

Figure 4.3. *Mean stress scores (1–7) across time for each condition*

To further understand the interaction and to ensure the written task induced stress successfully, a repeated measures (ANOVA) was conducted with time as the within participants factor (baseline, post stress induction), and condition as the between participants factor (negative perspective taking, positive perspective taking, control). This analysis showed that there was a significant main effect of time, $F(2, 194) = 140.43$, $p < .001$, partial $\eta^2 = .42$. As expected, this main effect was not qualified by a significant interaction of time and condition, $F(2, 194) = 1.99$, $p = .13$, partial $\eta^2 = .02$. The main effect of condition was not significant, $F(2, 194) = .31$, $p = .72$, partial $\eta^2 = .00$. Consequently, the stress induction via the written task was effective and the increase in participants' self-reported stress from baseline ($M = 4.30$, $SD = 1.56$) to post stress induction ($M = 5.44$, $SD = 1.09$) was not dependent upon condition.

To explore and understand the effect of the perspective-taking manipulation across time, a repeated-measures ANOVA was conducted with time as the within participants factor (post stress induction, post perspective-taking manipulation), and condition as the between participants factor (negative perspective taking, positive perspective taking, control). This

analysis showed a significant main effect of time, $F(2, 194) = 85.94$, $p < .001$, partial $\eta^2 = .30$. There was a significant interaction between time and condition, $F(2, 194) = 18.40$, $p < .001$, partial $\eta^2 = .15$. A pairwise post-hoc comparisons test revealed that there was a statistically significant difference between the negative perspective and control conditions, $p < .02$, and the difference between the positive perspective and control condition approached significance, $p = .07$. There was no statistically significant difference between the negative perspective and positive perspective conditions, $p = 1.00$. The means indicated that self-reported stress increased from baseline ($M = 4.30$, $SE = .11$) to post stress manipulation ($M = 5.44$, $SE = .08$), and reduced from post stress to post perspective-taking manipulation ($M = 4.79$, $SE = .09$). There was also a main effect of condition, $F(2, 194) = 4.29$, $p = .015$, partial $\eta^2 = .04$. (See Figure 4.4.) These results suggest that there was a statistically significant effect of perspective taking on reported stress levels across the two measures of stress, meaning that in both perspective conditions stress was lowered after the perspective-taking manipulation (although only the difference between the positive and control conditions approached significance).

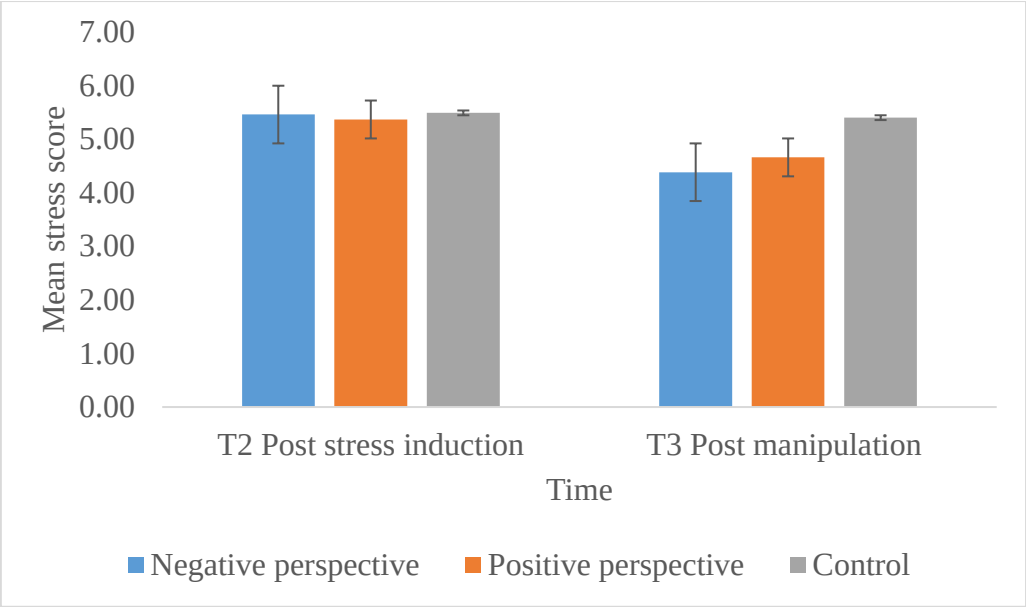

Figure 4.4. *Mean stress scores for all conditions at post stress induction and post perspective-taking manipulation*

4.3.4 Further analysis

We also checked whether the other outcome variables (general stress response, implicit emotion words, coping response to stressor) differed between conditions, and none of these measures reached significance (all *p* values > .54). Table 4.2 shows the differences in means between conditions.

Table 4.2. *Means and standard deviations for all main variables by condition*

	Condition					
	Negative perspective		*Positive perspective*		*Control*	
	M	*SD*	*M*	*SD*	*M*	*SD*
Implicit emotion words	26.93	6.73	28.07	5.62	27.52	5.04
General stress response	26.29	6.67	25.84	7.46	26.86	6.36
Coping response to stressor	11.41	3.95	11.47	3.88	10.92	3.55

Primary Emotional Appraisal Scale

Furthermore, we checked whether the emotions as measured with the Primary Emotional Appraisal Scale differed between conditions. To remind the reader, these emotions covered and were averaged across four groups: challenge, harm, benefit, and threat. There were no statistically significant differences between conditions in terms of challenge, harm, or benefit emotions: challenge emotions (compound of hopeful, confident, eager), main effect of condition, $F(2, 194) = 1.45$, $p = .23$; harm emotions (compound of angry, sad, disappointed, disgusted, guilty), $F(2, 194) = .50$, $p = .60$; benefit emotions (compound of exhilarated, relived, pleased, happy), $F(2, 194) = 1.17$, $p = .31$. There was a statistically significant difference between conditions only in threat emotions, $F(2, 194) = 3.85$, $p = .02$. The results showed that threat emotions (a compound of worried, fearful, and anxious) were statistically significantly lower in the two perspective conditions; negative perspective ($M = 10.36$, $SD = 2.70$) and positive perspective ($M = 10.83$, $SD = 2.78$) compared to the control condition ($M = 11.61$, $SD = 2.30$). There was a statistically significant difference between the

negative perspective and control condition, $p = .02$. There was no statistically significant difference between the negative perspective and positive perspective conditions, $p = .93$, or between the positive perspective and control conditions, $p = .25$.

Worrying about the assignment or exam (stressor)

Similarity, we tested whether the manipulation affected worrying about the assignment or exam (as asked later in the experiment). We found a statistically significant difference between conditions: main effect of condition, $F(2, 194) = 6.96$, $p = .001$, partial $\eta^2 = .06$. The results showed that worrying about the assignment or exam was statistically significantly lower in the two perspective conditions; negative perspective ($M = 4.46$, $SD = 1.40$) and positive perspective ($M = 4.72$, $SD = 1.52$) compared to the control condition ($M = 5.34$, $SD = 1.25$). Pairwise post-hoc comparisons tests revealed that there was a statistically significant difference between the negative perspective and control conditions, $p = .001$ and the positive perspective and control conditions, $p = .035$. There was no statistically significant difference between the negative perspective and positive perspective conditions, $p = .861$.

4.3.5 Moderation analyses

We explored the effect of condition on the various stress variables with different moderators in a moderation analysis using the PROCESS macro from Preacher et al. (2007), with condition as an independent factor (negative perspective taking, positive perspective taking, control). This was done to see how different stress variables would be affected by different moderators.

Effect of condition on T3–T2, with scale response (importance) as the moderator

Initially, we investigated the effect of condition on T3–T2, subtracting stress levels after the perspective-taking manipulation (T3) from stress levels after the stress manipulation

(T2), with scale response (the importance given to an assignment or exam in comparison to other experiences) as the moderator. The overall regression model was significant, $F(3, 184) = 24.78$, $p < .001$, $R^2 = .28$. There was an interaction between condition and scale response that approached significance, $F(1, 184) = 3.57$, $p = .06$, $R^2 = .01$. Simple slopes analysis showed that there was a statistically significant positive relationship between T3–T2 and scale response in all conditions. In the negative perspective condition, $b = .02$, $t = 5.20$, $p < .001$, 95% CI [.012, .027], in the positive perspective condition, $b = .01$, $t = 5.35$, $p < .001$, 95% CI [.009, .019], in the control condition, $b = .00$, $t = 2.05$, $p = .04$, 95% CI [.000, .017]. This means stress is raised in all conditions. Most importantly, we tested whether habitual perspective taking moderated responses on the various dependent variables (DVs).

Effect of condition on various dependent variables (DVs), with putting things in perspective (trait) as the moderator

We investigated the effect of condition with putting things in perspective (trait) as the moderator on all DVs. This would allow us to see whether "experienced" perspective-takers showed a greater decrease in stress after the perspective-taking manipulation on the various measures. Most importantly, we did not find any significant interaction with other DVs. Otherwise, there were significant interactions, as shown in Table 4.3.

We explored the effect of condition on challenging emotions (hopeful, confident, eager) with putting things in perspective (trait) as the moderator. The overall regression model was significant, $F(3, 184) = 2.96$, $p = .03$, $R^2 = .04$. There was an interaction between condition and putting things in perspective, $F(1, 184) = 2.86$, $p = .09$, $R^2 = .01$. Simple slopes analysis revealed that there was a positive relationship between challenging emotions and putting things in perspective in all conditions: in the negative perspective condition, $b = .24$, $t = 2.85$, $p < .001$, 95% CI [.076, .419], in the positive perspective condition, $b = .13$, $t = 2.33$, $p = .02$, 95% CI [.020, .243], and in the control condition, $b = .01$, $t = .16$, $p = .86$, 95% CI [-

.163, .194]. This means that challenging emotions increased in all perspective-taking conditions for participants high in habitual perspective taking.

For exploratory purposes, we also considered the effect of condition on general stress response (i.e., how worried participants were on average about the COVID-19 pandemic, the restrictions, and how they perceived their academic study experience during the COVID-19 pandemic) with putting things in perspective (trait) as the moderator in a moderation analysis using the PROCESS macro from Preacher et al. (2007), taking condition (negative perspective taking, positive perspective taking, control) as the independent variable, and general stress response as the dependent variable. The overall regression model was not significant, $F(3,184) = 2.16$, $p = .09$, $R^2 = .03$. There was a statistically significant interaction between condition and putting things in perspective, $F(1, 184) = 5.85$, $p = .01$, $R^2 = .03$. Simple slopes analysis revealed that there was a statistically significant negative relationship between general stress response and putting things in perspective in the negative perspective condition, $b = -.52$, $t = -2.26$, $p = .02$, 95% CI [-.988, -.068] and a non-significant relationship between general stress response and putting things in perspective in the positive perspective and control conditions: in the positive perspective condition, $b = -.08$, $t = -.54$, $p = .58$, 95% CI [-.381, .215], and in the control condition, $b = .36$, $t = 1.49$, $p = .13$, 95% CI [-.163, .843]. This means that stress decreased in the negative perspective condition for high perspective-taking people.

Likewise, we explored the effect of condition on worrying about the assignment or exam with putting things in perspective (trait) as the moderator, taking condition (negative perspective taking, positive perspective taking, control) as the independent variable. The overall regression model was significant, $F(3, 184) = 7.16$, $p < .001$, $R^2 = .10$. There was a statistically significant interaction between condition and putting things in perspective, $F(1, 184) = 5.35$, $p = .02$, $R^2 = .02$. Simple slopes analysis showed that there was a negative

relationship between worrying about the assignment or exam and putting things in perspective in the negative perspective-taking condition, b = -.11, t = -2.46, p = .01, 95% CI [-.214, -.023], in the positive perspective condition, b = -.03, t = -.97, p = .33, 95% CI [-.092, .031], and in the control condition, b = .05, t = 1.14, p = .25, 95% CI [-.041, .157]. This means that worrying about the assignment or exam decreased in the negative perspective condition for high perspective-taking people.

We further explored the effect of condition on stressor coping response with putting things in perspective (trait) as the moderator. There was interaction between condition and putting things in perspective (approaching significant) on stressor coping response, $F(1, 184) = 2.94$, p = .08, R^2 = .01. Simple slopes analysis revealed that there was a positive relationship between habitual perspective taking and coping response to the stressor in both perspective-taking conditions: in the negative perspective condition, b =.42, t = 3.23, p = .00, 95% CI [.165, .684], in the positive perspective condition, b = .24, t = 2.89, p = .00, 95% CI [.078, .414]. Importantly, the relationship between coping response to the stressor and habitual perspective taking was not significant in the control condition, b = .06, t = .49, p = .61, 95% CI [-.202, .338].

Finally, we also explored the effect of condition on threat emotions, harm emotions, and worrying about the assignment or exam with reappraisal (trait) as the moderator. There was a negative relationship in all conditions (see Appendix C).

Table 4.3. *Effect of condition on various dependent variables, with putting things in perspective (trait) as the moderator*

Dependent variable	*Moderator*	*Interaction between condition and moderator*	*Slopes analysis*
Challenging emotions (hopeful, confident, eager)	Putting things in perspective	$F(1, 184) = 2.86$, $p = .09$, $R^2 = .01$	Negative perspective condition, $b = .24$, $t = 2.85$, $p < .01$, 95% CI [.076, .419] Positive perspective condition, $b = .13$, $t = 2.33$, $p = .02$, 95% CI [.020, .243] Control condition, $b = .01$, $t = .16$, $p = .86$, 95% CI [-.163, .194]
General stress response	Putting things in perspective	$F(1, 184) = 5.85$, $p = .01$, $R^2 = .03$.	Negative perspective condition, $b = -.52$, $t = -2.26$, $p = .02$, 95% CI [-.988, -.068] Positive perspective condition, $b = -.08$, $t = -.54$, $p = .58$, 95% CI [-.381, .215] Control condition, $b = .36$, $t = 1.49$, $p = .13$, 95% CI [-.163, .843]
Worrying about the assignment or exam	Putting things in perspective	$F(1, 184) = 5.35$, $p = .02$, $R^2 = .02$.	Negative perspective condition, $b = -.11$, $t = -2.46$, $p = .01$, 95% CI [-.214, -.023] Positive perspective condition, $b = -.03$, $t = -.97$, $p = .33$, 95% CI [-.092, .031] Control condition, $b = .05$, $t = 1.14$, $p = .25$, 95% CI [-.041, .157]
Coping response to stressor	Putting things in perspective	$F(1, 184) = 2.94$, $p = .08$, $R^2 = .01$.	Negative perspective condition, $b = .42$, $t = 3.23$, $p < .001$, 95% CI [.165, .684] Positive perspective condition, $b = .24$, $t = 2.89$, $p < .001$, 95% CI [.078, .414] Control condition, $b = .06$, $t = .49$, $p = .61$, 95% CI [-.202, .338]

4.4 General discussion

The aim of this study was to examine whether engaging in perspective taking or being reminded of the significance of life situations other than the stress-causing stimulus would reduce the stressor's relevance and increase people's desire to engage in emotion regulation. The results indicate a strong effect of the manipulation (perspective taking) and that it could help in reducing stress. In addition, further analyses with different moderators found that the habitual nature of perspective taking showed effects, suggesting that being asked to put things in perspective helped habitual perspective-takers lower their stress levels.

This finding could be explained in a variety of ways. It is possible that the effect of perspective taking (the stress level after the manipulation at T3) is a demand effect (cf. Zizzo, 2010). In this experiment, participants could try to figure out what the goal of the manipulation was (instruction text) and report feeling less stressed.

However, the findings suggest that the effect of perspective-taking strategies for individuals high in perspective taking is not due to a demand effect as we used a variety of more indirect measures, such as COVID-19 stress and a later question on their worrying about the assignment or exam. We found that individuals with a high level of perspective taking had lower levels of COVID-19 stress and experienced less exam- or assignment-related stress. This suggests that participants who are used to perspective taking will be more able to apply it successfully and feel less stressed and more motivated to address the stressor.

The findings provide converging evidence that perspective taking plays a causal role in reducing stress for people who regularly apply perspective taking in their everyday lives. These findings are in line with previous research. High temporal distancers rated their coping resources more favourably, had fewer intense negative emotions, and ruminated less than low temporal distancers under a variety of stressors in Bruehlman-Senecal, Ayduk, & John's

(2016) study. It turns out that a perspective-broadening strategy may be an effective way of controlling negative emotions for a specific group of people. Ultimately, when looking at positive measures, such as coping responses to stressors or challenging emotions, it appears to help perspective-takers lower their levels of stress. According to our findings, people with a high level of perspective taking had higher levels of hopeful, confident, and eager emotions and were more motivated to regulate their stress.

4.5 Limitations and suggestions for future research

There are several limitations that should be addressed in future research. First, it should be noted that the study sample was not gender balanced, comprising mostly female participants, which limits the generalisability of the findings. Previous research has found that people differ in their tendency to adopt a broader perspective on negative experiences (Bruehlman-Senecal et al., 2016). As a result, these findings may not be generalisable to men.

Second, because we used a relatively young Prolific sample, additional research is needed to investigate whether these findings apply to a broader range of people. It seems reasonable to expect that the emotional impacts of viewing stressors in a broader context will differ depending on whether one is near the beginning or end of the lifespan. For example, someone in their early twenties may look forward to life with great joy and hope, whereas someone in their seventies or eighties may be worried or sad about getting older. Furthermore, future research may replicate the study with more psychologically vulnerable individuals, such as those prone to anxiety and depression, as well as those suffering from severe stress.

One more limitation could be that the self-report measurement was ineffective for measuring participance stress and obtaining a clear overview of stress responses. Thus, future studies should include more objective physiological measures, such as heart rate or skin

conductance rates, in addition to self-reported measures. Several studies have looked at self-reported negative affect as well as physiological reactivity (Streamer et al., 2017) and objective measures would assist in understanding the nature of the mechanisms underlying perspective taking.

4.6 Conclusion

The study investigated whether engaging in perspective taking or being reminded of the importance of life situations other than the stress-causing stimulus would reduce the stressor's relevance and increase people's desire to engage in emotion regulation. The concluding argument, based on the study findings, is that engaging in perspective taking and considering the bigger picture attenuates stress. The study findings support the hypothesis that participants with high perspective taking exhibit a form of stress reduction compared to those with low perspective taking. As a result, for participants with high perspective-taking skills, perspective taking prevents a rise in stress. Future research could investigate how perspective-taking strategies can be used as an official measure to help people with psychological disorders.

Chapter 5. Conclusion

5.1 General discussion

The overall aim of the three papers in this thesis was to understand how reminders of goals and values might change emotional experiences. Specifically, the papers were looking to see if perspective taking, through reminders of other stressful situations, would help people control their stress and reduce its negative effects.

The research conducted in this thesis aimed to address the gaps in the existing literature by improving knowledge and understanding of: 1) whether self-affirmation reduces the relevance of a stress-evoking event and makes people want to engage in emotion regulation (Chapter 2); 2) the effect of goals differing in importance on emotional experience and emotion regulation (Chapter 3); 3) whether providing more explicit instructions for perspective taking helps to regulate stress (Chapter 4). An overview of the key focus of each empirical chapter is provided in Table 5.1

This chapter presents an overview of the main findings from each of the papers in turn, and then provides a discussion of the research, the theoretical and practical implications of the research findings, the limitations, future research directions, and conclusions.

Table 5.1. *Summary overview of empirical chapters in this thesis*

	Stress induction	Perspective-taking measure	Aim	Findings
Chapter 2	Modified Trier Social Stress Test (TSST)	Self-affirmation manipulation. (Affirm the most important and least important values)	Investigate whether giving people a chance to self-affirm or being reminded of the importance of things other than the stress-causing stimulus, changes how they feel about stress and makes them more likely to want to control their emotions.	Self-affirmation prevented a rise in feelings of stress in highly anxious participants.
Chapter 3	An insoluble anagram	Reminders of goal varying in importance. (Write about current goals of varying importance)	Assess whether being reminded of current and important goals lowers the relevance of the stressor and makes people want to engage in emotion regulation.	Stress went down after all manipulations (i.e., in all conditions), not just in the high-importance condition as expected.
Chapter 4	Writing about an upcoming stressor (e.g., an assignment or exam)	A persuasive text instruction text and a perspective-taking scale. (Put the stressor into perspective by comparing it to extreme positive and negative case scenarios)	Investigate whether more explicit instructions for perspective taking influence emotion regulation differently depending on whether the events are positive or negative.	The manipulation (perspective taking) had an effect on the stress levels of people who did it regularly (habitual perspective-takers).

5.2. Summary of findings

5.2.1 Study 1 (Chapter 2): Self-affirmation prevents an increase in feelings of stress in trait anxiety

In Study 1, we investigated whether giving people the opportunity to self-affirm, that is, being reminded of the importance of values other than the stress-causing stimulus, altered their experience of stress and made them want to engage in emotion regulation because the stress was perceived as less important and inappropriate. We induced stress by asking participants to take part in a public interview (modified Trier Social Stress Task). We used a self-affirmation paradigm in which participants in the experimental condition were asked to affirm their most important value after the stress induction, whereas participants in the control condition affirmed their least important value. We found that self-affirmation prevented a rise in stress levels in highly anxious participants. Also, the results suggested that self-affirmation encouraged anxious participants to be motivated to regulate their stress. Hence, for anxious individuals, self-affirmation could be a beneficial in dealing with stress.

5.2.2 Study 2 (Chapter 3): Putting things in perspective: Exploring the effect of goals differing in importance on emotional experience and emotion regulation

In Study 2, we investigated whether reminding people of current, important goals would reduce the stressor's relevance and make them want to engage in emotion regulation. We induced stress by asking participants to complete an insoluble anagram task. For this purpose, we developed a paradigm that required participants to think about current goals varying in relevance to see if this reduced their evoked stress, and we conducted two studies to address this. Contrary to the hypotheses, in both experiments in Chapter 3, we found a visible reduction in stress after goal or control manipulation in all conditions, not just the high-importance condition, as the hypotheses suggested. As a result, it appears that reminding people of important goals can help them feel less stressed.

5.2.3 Study 3 (Chapter 4): "There are worse things in life": How comparisons with extreme positive and negative case scenarios affect the experience of stress

In Study 3, we examined whether perspective taking would influence emotion regulation differently depending on whether the events were positive or negative. We induced stress by asking participants to complete a written task about an upcoming stressor in their own lives. In this experiment, we created a perspective-taking paradigm consisting of an instruction text and a perspective scale to ask participants to compare the stressor to either negative or positive events. The essential findings of the study were that perspective taking had a significant effect, leading to a reduction in stress. On more subtle measures of stress and adaptive coping, habitual perspective-takers showed effects, suggesting that being asked to put things in perspective helped them lower their stress levels.

The following sections discuss the theoretical implications of the findings.

5.3 Discussion of research findings

The first study (Chapter 2) intended to test the theory of self-affirmation. In particular, the study investigated whether giving people the opportunity to self-affirm, that is, being reminded of the importance of values other than the stress-causing stimulus, would alter their experience of stress. The study established that self-affirmation can prevent a rise in stress levels in highly anxious people, encouraging them to regulate their stress. Thus, the study makes an important contribution to knowledge concerning self-affirmation and shows empirical evidence that self-affirmation is indeed an effective way to reduce stress and seems to be an additional technique for emotional regulation. Previous studies have established that affirming one's own significant values or positive personal characteristics can protect against stress (e.g., Creswell et al., 2005; Keough & Markus, 1998). Creswell et al. (2005) found that when people were put under intense social evaluation by having to give an impromptu speech in front of a judgemental audience, those who had reflected on an important personal value

no longer displayed an elevation in the stress hormone cortisol. In this study also, individuals with higher confidence and self-belief were able to handle extreme situations and even control their stress under pressure.

However, we only found the effect of self-affirmation for highly anxious individuals. It is possible that only highly anxious individuals needed emotional regulation in that situation, whereas low anxious people were less stressed and could apply other strategies. Similar to our investigation, O'Brien (2017) investigated the effects of self-affirmation on socially anxious people. The findings revealed that self-affirmed individuals experienced reduced discomfort, anxiety, and distress across a variety of social behaviours and this was more significant than at baseline and for non-affirmed people.

Study 1 not only contributes to knowledge concerning self-affirmation but also suggests the possibility that self-affirmation leads to trivialisation. This is contrary to the argument made by Critcher and Dunning (2015) that self-affirmation does not lead to trivialisation but makes additional important parts of the self salient and causes people to care less about the threatened identity. We think that self-affirmation acts as a protection against threats because it changes the nature of the self being threatened, and it is adaptive because it encourages trivialisation of threats (Simon et al., 1995). This means a threat is perceived as less important.

Study 2 (chapter 3) revealed a visible reduction in stress after the goal or control manipulation in all conditions, not only in the high-importance condition as expected. This finding could be explained in a number of ways. It may be that goal manipulation (perspective taking) needs to be practised or taught (cf. Schartau et al., 2009). For instance, Schartau et al. (2009) asked participants to practise applying appraisal themes associated with the concept of seeing the big picture to a series of distressing training videos, either during or

immediately following each film (e.g., “Bad things happen in the world, and I need to put them behind me and move on”; “There are usually some good aspects to every situation, and it is important to focus on these”), while control participants viewed the same films without being instructed to rate them. Participants who practised appraisal had lower levels of self-reported negative emotional responses to a final test film that all participants were instructed to appraise when compared to controls. In our experiments, we did not have participants practise perspective taking, and they only had one trial of experiencing a stressor and then thinking about goals. This finding was also consistent with the (non-significant) effect on COVID-19 stress, which was lower in the high-importance condition compared to the control conditions. As a result, goal manipulation (perspective taking) may need to be practised or trained or could need time to show its effect (the COVID-19 stress question was later in the study).

Another explanation could be that perspective taking may not occur as naturally as we thought. We did not tell the participants in these two experiments to use the goal to put the stressor into perspective. As a result, participants may instead have considered both events as separate concepts. This interpretation, however, is partially supported by the first study (see Chapter 2), in which participants were also not instructed to put things into perspective. However, self-affirmation is more likely to have an effect because it generates pleasant feelings of self-worth rather than because it reduces stressors. As a result, we cannot be sure that putting things in perspective has the effect of self-affirmation.

Finally, Study 3 (Chapter 4) revealed that perspective taking had an effect on stress levels for habitual perspective-takers, suggesting that being asked to put things into perspective helped them lower their stress levels. These results are consistent with earlier research. Under a variety of stresses, Bruehlman-Senecal et al. (2016), who used a different method of perspective-broadening technique (temporal distancing), discovered that high

temporal distancers rated their coping resources more favourably, had fewer severe negative emotions, and ruminated less than low temporal distancers. It turns out that for a small group of people, a perspective-broadening technique may be an effective way of reducing unpleasant emotions. Furthermore, the effect of perspective taking could be a demand effect; participants might try to understand the aim of the manipulation (instruction text) and report feeling less stressed. Thus, unlike in Studies 1 and 2 (Chapters 2 and 3), the participants did not know about the perspective-taking manipulations (self-affirmation and goal importance).

The overall findings of the research have several implications. First, apart from self-affirmation (Chapter 2), the third study (Chapter 4) makes an important contribution to the concept of perspective taking as a technique to deal with life stressors. Unlike self-affirmation, perspective taking requires a person to make decisions after weighing an issue from all perspectives, thereby attaining a mutually beneficial solution. This study emphasises the role of perspective taking as an effective social-cognitive process for regulating both positive and negative emotions. It also affirms that perspective taking plays a crucial role as a strategy for emotion regulation. Moreover, it helps habitual perspective-takers lower their stress levels. Hence, the study is important in substantiating the role of perspective taking as an effective social-cognitive process that is likely to benefit people in their daily social interactions since the preceptive-taking strategy appears to be a useful way of reducing stress. Our manipulation checks across Study 1 and Study 2 demonstrated that the perspective-taking conditions were relatively successful at reducing stress. Across both studies, the mean of ranged from 3.2 to 4.66, where 1 = not stressed at all and 7 = extremely stressed. These results suggest that perspective taking may serve as a stress management strategy that is both broadly effective and easy to enact. It is, however, important to note potential issues with the veracity of perspective-taking conditions. While the study used a simple and easy-to-enact strategy, previous studies have emphasised the meaning and relevance of goal-related events

(Fishbach et al., 2003; Papies et al., 2008). In conclusion, perspective taking is easy to accomplish and helps people deal with stress, although professionals will need to guide their clients to attain the best results.

Second, self-affirmation has practical implications. As the first study revealed, self-affirmation has the potential to prevent a rise in stress levels in highly anxious people. The practical implication is that therapists and counsellors can use self-affirmation in the treatment of people with stress and anxiety disorders. According to O'Brien (2017), socially anxious clients choose to understand that avoiding feared activities is likely to worsen social anxiety with time, while increasing engagement will reduce social anxiety over time. In clinical therapy, it is also important for practitioners to consider the psychoeducational description of the condition, such as social anxiety, as the therapy progresses. Thus, self-affirmation may prove to be a reliable strategy in the treatment of highly anxious patients.

5.4 Limitations and future research

Studies 1–3 include summaries of each study's limitations and future research. This section thus focuses on several limitations and future research regarding the research as a whole. First, it would be worthwhile investigating the effects of multiple goals and values (e.g., by using different goal tasks). As argued in Study 2, the goals may have a significant impact on perspective taking. In addition, it might be interesting to use goal tasks that provide clearer indicators of a participant's importance in relation to goals. Moreover, one of the main limitations of Studies 2 and 3 is that all participants were recruited during the COVID-19 pandemic, so the experiences of the participants in these two studies may differ from those of other participants who took part in Study 1. Therefore, further evidence should be gathered to explore generalisability.

It is also important to acknowledge that the design and sample size of the research might have influenced the results (e.g., using self-report measures, low statistical power), and therefore it is highly likely that different researchers would arrive at different conclusions when varying the design and sample. In this regard, it is worth noting that the sample primarily comprised females. As a result, it is unclear whether this limits the generalisability of the findings. Finally, further research should be conducted to determine the generalisability of the findings with regard to various types of stress. Stress has a variety of lengths, from short-term, lasting minutes to hours, to chronic, lasting several hours every day for weeks or months (Dhabhar, 2014). This research assessed only short-term stress reactions. Thus, future research might study the long-term effects of perspective taking on how people think about an upcoming stressful situation. This could be accomplished by gathering follow-up data or conducting longitudinal research.

5.5 Conclusions

Stressful events in people's daily lives are the most common cause of mental health issues. Only a minority of those affected use techniques to help them control their extreme reactions to stressful events. Understanding certain techniques, such as emotion regulation strategies and self-distancing (i.e., mental distancing from a stressor), is critical to put stress into perspective and reducing its negative impact.

This thesis has provided a unique perspective on the effects of values and goals on emotion and emotion regulation. More specifically, the study was designed to explore whether "putting things in perspective", that is, being reminded of something more important, would change the stressful experience and/or cause people to want to regulate their stress. The thesis has also assessed the impact of individual differences on putting things into perspective, for instance people with high trait anxiety. The studies reported in this thesis show that perspective taking affects the experience of stress and can be a useful way of

helping people with psychological disorders. This suggests further research is required to investigate this in greater depth and with referred clinical samples.

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Appendix A. Emotion Regulation Questionnaire (ERQ)

Directions: We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale.

1	2	3	4	5	6	7
Strongly disagree			Neutral			Strongly agree

1. When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.
2. When I want to feel more positive emotion (such as joy or amusement), I keep my emotions to myself.
3. When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.
4. When I'm feeling positive emotions, I'm careful not to express them.
5. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.
6. When I'm faced with a stressful situation, I control my emotions by not expressing them.
7. When I want to feel more positive emotion, I change the way I'm thinking about the situation.

8. When I want to feel more positive emotion, I control my emotions by changing the way I think about the situation I'm in.

9. When I am feeling negative emotions, I make sure not to express them.

10. When I want to feel less negative emotion, I change the way I'm thinking about the situation.

Scoring Instructions

- Do not change the item order, as items 1 and 3 at the beginning of the questionnaire define the terms "positive emotion" and "negative emotion".
- Sum items on the two subscales according to the key below.

Items	No. Items	Subscale	Possible Range
1, 3, 5, 6, 8, 10	6	Cognitive Reappraisal	6–42
2, 4, 6, 9	4	Expressive Suppression	4–28

Appendix B. State-Trait Anxiety Inventory *(STAI Form-Y)*

Name: _____ Date: _____

DIRECTIONS: A number of statements people have used to describe themselves are given below. Read each statement and then write the number in the blank at the end of the statement that indicates how you generally feel. There is no right or wrong answer. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

1 = Almost never 2 = Sometimes 3 = Often 4 = Almost always

1.	I feel pleasant	1 2 3 4
2.	I feel nervous and restless	1 2 3 4
3.	I feel satisfied with myself	1 2 3 4
4.	I wish I could be as happy as others seem to be	1 2 3 4
5.	I feel like a failure	1 2 3 4
6.	I feel rested	1 2 3 4
7.	I am “calm, cool, and collected”	1 2 3 4
8.	I feel that difficulties are piling up so that I cannot overcome them	1 2 3 4
9.	I worry too much over something that really doesn’t matter	1 2 3 4
10.	I am happy	1 2 3 4
11.	I have disturbing thoughts	1 2 3 4
12.	I lack self-confidence	1 2 3 4
13.	I feel secure	1 2 3 4
14.	I make decisions easily	1 2 3 4
15.	I feel inadequate	1 2 3 4
16.	I am content	1 2 3 4
17.	Some unimportant thoughts run through my mind and bother me	1 2 3 4
18.	I take disappointments so keenly that I can’t put them out of my mind	1 2 3 4
19.	I am a steady person	1 2 3 4
20.	I get in a state of tension or turmoil as I think over my recent concerns and interests	1 2 3 4

Appendix C. Moderation Analysis

Effect of condition on threat emotions, with reappraisal (trait) as the moderator

We also explored the effect of condition on threat emotions (fearful, worried, anxious) with reappraisal (trait) as the moderator in a moderation analysis. The overall regression model was significant, $F(3, 184) = 11.56$, $p = .00$, $R^2 = .15$. There was a significant interaction between condition and reappraisal, $F(1, 184) = 3.63$, $p = .05$, $R^2 = .01$. Simple slopes analysis showed that there was a statistically significant negative relationship between threat emotions and reappraisal in both perspective conditions: in the negative perspective condition, $b = -.20$, $t = -4.39$, $p = .00$, 95% CI [-.292, -.111], in the positive perspective condition, $b = -.13$, $t = -4.64$, $p = .00$, 95% CI [-.189, -.076].

Effect of condition on harm emotions with reappraisal (trait) as the moderator

We further investigated the effect of condition on harm emotions (angry, sad, disappointed, disgusted, guilty) with reappraisal as the moderator. The overall regression model was significant, $F(3, 184) = 11.56$, $p = .00$, $R^2 = .12$. There was a significant interaction between condition and reappraisal, $F(1, 184) = 4.99$, $p = .02$, $R^2 = .02$. Simple slopes analysis showed that there was a statistically significant negative relationship between harm emotions and reappraisal in both perspective conditions: in the negative perspective condition, $b = -.40$, $t = -4.66$, $p = .00$, 95% CI [-.580, -.235], in the positive perspective condition, $b = -.25$, $t = -4.66$, $p = .00$, 95% CI [-.362, -.146].

Effect of condition on worrying about the assignment or exam with reappraisal (trait) as the moderator

A moderation analysis was conducted to investigate the effect of condition on worrying about the assignment or exam with reappraisal as the moderator. The overall regression model was significant, $F(3, 184) = 12.48$, $p = .00$, $R^2 = .16$. There was a

significant interaction between condition and reappraisal, $F(1, 184) = 4.27$, $p = .04$, $R^2 = .01$. Simple slopes analysis showed that there was a statistically significant negative relationship between worrying about the assignment or exam and reappraisal in both perspective conditions: in the negative perspective condition, $b = -.10$, $t = -4.19$, $p = .00$, 95% CI [-.154, -.055], in the positive perspective condition, $b = -.06$, $t = -4.11$, $p = .00$, 95% CI [-.095, -.033].