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# How do people choose how to regulate their own and other people's emotions?

Meghann Rose Matthews

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Faculty of Science
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**Declaration and Note on Inclusion of Published Work**

I, the author, confirm that the Thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not been previously been presented for an award at this, or any other, university.

The research presented in Chapter 2 has been accepted for publication and made available online at *Cognition and Emotion*:

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**Thesis Abstract**

Emotion regulation refers to the things that people do to influence their own or other people's emotions. Emotion regulation is thought to be a multi-stage process that involves: (i) identifying the need to regulate emotions, (ii) choosing whether and how to do this from the strategies available, (iii) implementing the chosen strategy, and finally (iv) monitoring the outcomes of regulation. Most research on emotion regulation focuses on the implementation stage; however, research increasingly considers what strategies people choose to regulate their emotions - broadly termed 'emotion regulation choice'. The research presented in this thesis investigates a number of important, but yet, unanswered questions about how people choose to regulate their own and other people's emotions.

Chapter 2 presents a systematic review that identifies and organises the factors that might influence whether and how people choose to regulate their own emotions. Meta-analysis is then used to estimate the impact that each factor has on intentions to regulate and emotion regulation choice. The thesis then considers interpersonal emotion regulation. More specifically, Chapter 4 examines whether people choose to regulate other people's emotions (i.e., interpersonal emotion regulation choice) in a similar way to how they choose to regulate their own emotions (i.e., intrapersonal emotion regulation choice). Chapter 5 then presents a series of studies that examine potential explanations for the difference identified between intrapersonal and interpersonal emotion regulation choice. Together, the research both contributes to and furthers current understanding of how people choose to regulate their own and other people's emotions, and as discussed in Chapter 6, provides a basis for future research to further investigate intrapersonal and interpersonal emotion regulation choice.

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# Chapter 1: Contemporary Approaches to Emotion Regulation

## 1.1. Emotions and their Functions

Daily life is filled with situations that can result in people experiencing a host of different emotions, such as feeling happy when meeting up with a friend, frustrated when stuck in traffic, or anxious when waiting for an interview. Emotions have been conceptualised in several different ways (Gross & Barrett, 2011), including basic emotion approaches (e.g., Ekman, 1992), appraisal approaches (e.g., Lazarus, 1991), and psychological (e.g., Russell, 2003) and social construction approaches (e.g., Harre, 1986). However, while different approaches to understanding emotions each have a different focus and emphasis, there are a number of typical features of emotions that are believed to be common across the different approaches.

According to the 'Modal Model of Emotion' (Barrett et al., 2007; Gross, 1998a), emotions are generated through a series of steps in a situation – attention – appraisal – response sequence. Namely, this sequence begins with an external or internal situation that is attended to and appraised (either consciously or unconsciously) in terms of what it means in relation to an individual's current goals. This, in turn, results in the changes in the subjective experience (i.e., the internal representation of the emotion which is typically referred to as the 'feeling'), physiological responses (i.e., autonomic and neuroendocrine system responses that prepare to support anticipated and actual behavioural responses) and behavioural responses (i.e., changes in the activity of the muscles and the body). It is these changes in the different response systems that are thought to characterise emotions (Gross, 2015a; Mauss et al., 2005). To illustrate this, consider the example above of an individual feeling anxious while waiting for an interview; this emotion can arise from the interviewee appraising the situation as being meaningful and significant in relation to their current goal of career progression and can result in them feeling nervous, having trembling hands and an increased heart rate. In

short, emotions are an integral and arguably inevitable part of day-to-day life and can help to provide meaning to individuals experiences (Kemp & Kopp, 2011; Trampe et al., 2015).

Another common feature of emotions across the different approaches is that emotions have been thought to play an important role in adaptation as they help to address problems related to physical and social survival (Keltner & Gross, 1999). For example, it has been suggested that emotions can motivate action with minimal conscious awareness (Frijda, 1986; Tooby & Cosmides, 2008). Emotions can help to prepare the body for action by simultaneously activating and deactivating different bodily systems, which in turn allows for a coordinated response to the situation (Levenson, 1999). For example, the emotion of fear can result in the body preparing to flee by reducing temporarily unnecessary processes such as digestion and increasing blood flow to the lower half of the body (LaBar, 2016). Additionally, emotions can influence an individual's thoughts and help them to make decisions (Lerner et al., 2015) and enhance memory of events (Kensinger, 2009). Therefore, there are a number of intrapersonal functions of emotions that can help an individual to navigate their surroundings.

Emotions also have interpersonal and social functions. For example, the communication of emotions through facial expressions can lead the perceiver to respond in certain ways, for instance, those who observe fearful expressions are more likely to engage in avoidance-related behaviours (Marsh et al., 2005). Furthermore, specific emotions can elicit emotional responses in others that complement the emotional display, such as distress inducing sympathy in others (Eisenberg et al., 1989), and anger inducing fear in others (Lelieveld et al., 2012). Therefore, emotions allow people to understand others, form and maintain social relationships, and allow others to understand us in return (Lerner et al., 2015; Levenson, 1999).

That being said, despite emotions often seeming helpful, the emotions that are experienced are not always appropriate for the situation they occur in and can lead people to act in unhelpful ways. For example, if the interviewee were to become extremely anxious to the point where they froze and/or wanted to leave, this would not help them to achieve their overall goal of career progression. In this sense, emotions can sometimes be a hindrance rather than a help and interfere with goal achievement (Gross et al., 2011; Vujović et al., 2014). Emotions can be inappropriate when they are of the wrong intensity, duration, frequency or type for the current situation (Gross & Jazaieri, 2014). In situations such as this, people often try and control their emotions. For example, the anxious interviewee may try to feel less nervous by thinking about something unrelated to the upcoming interview, such as what they will make for dinner or by trying to change the way they view the experience by thinking about the possible positive outcomes of the interview instead. These attempts at controlling emotions reflect the process of "emotion regulation", which takes place when an individual manages their emotions based on their goals (Gross et al., 2011) and it is thought that daily life is inundated with these attempts (Tamir, 2016).

### 1.2. Emotion Regulation

Broadly speaking, emotion regulation refers to the things that people do to influence their own or another person's emotions (McRae & Gross, 2020). This includes attempts to regulate which emotion is being experienced, when it is experienced, how the emotion is experienced, and how the emotions are expressed (Gross, 1998b). Emotion regulation involves several processes, including monitoring, evaluating and modifying different aspects of emotional experience, such as the initiation, duration, magnitude, intensity and frequency of emotions (McRae, 2013; Thompson, 1994). The regulation of emotions can occur for both positive and negative emotions and can occur in different directions. For example, people may want to feel less of an emotion (i.e., down-regulate their emotions), to feel more of an

emotion (i.e., up-regulate their emotions) or to maintain the current emotional experience (Gross & Thompson, 2007). Furthermore, the process of emotion regulation can occur either effortfully in which an individual actively attempts to regulate their emotions (also termed 'explicit' emotion regulation), or it can occur automatically, in which an individual is unaware that they are regulating their emotions (also termed 'implicit' emotion regulation, Koole et al., 2015). The remainder of the current chapter reviews what is known about how people regulate their own emotions (i.e., intrapersonal emotion regulation). Chapter 3 reviews what is known about how people control other people's emotions (i.e., interpersonal emotion regulation).

It has been suggested that the ability to regulate emotions is one of the most critical human capacities (Gross, 2007). Research has found that being able to regulate emotions is associated with numerous outcomes including psychological wellbeing and health (e.g., Aldao et al., 2010), work performance (e.g., Goodwin et al., 2009) and creating and maintaining social relationships (e.g., Gross & John, 2003), thus highlighting the importance of regulating emotions.

### 1.2.1. Motives for Emotion Regulation

There are a number of different reasons why people regulate their emotions. For example, Tamir (2016) distinguishes between hedonic and instrumental motives, and then between more specific motives within these broader categories. Namely, hedonic motives for regulating emotions relate to the idea that people are intrinsically motivated to maximise pleasure and minimise pain. Regulating for hedonic reasons can allow hedonic balance to be achieved, either through *prohedonic motives* in which people aim to increase immediate pleasure or to decrease immediate pain or through *contrahedonic motives* in which people aim to decrease immediate pleasure or increase immediate pain. However, people also regulate their emotions for other reasons beyond the experience of immediate pleasure or

pain. Regulating for these alternative reasons can be broadly referred to as instrumental motives, and Tamir (2016) identified four types of instrumental motives: performance motives, epistemic motives, social motives and eudaimonic motives. *Performance motives* refer to the motivation to succeed on a task, such as preferring to experience anger when it will help to achieve the goal of a task (e.g., confrontation, Tamir et al., 2008). *Epistemic motives* refer to the motivation to obtain desirable information about the world (i.e., world-focused epistemic motives) or the self (i.e., self-focused epistemic motives). For example, people may prefer to experience emotions that are consistent with their view of themselves, such as being more motivated to experience unpleasant emotions if they believe they do not deserve to feel good (e.g., Wood et al., 2009). *Social motives* refer to the idea that people may be motivated to experience emotions to attain particular social benefits, such as forming and maintaining social relationships. For instance, people may try to experience anger as this might help to manage social impressions and improve their image and social status (e.g., Tiedens, 2001). Finally, *eudaimonic motives* refer to the motivation to experience emotions that foster autonomy and provide meaning. For example, people may watch sad films or listen to sad music as they find them meaningful (e.g., Oliver & Raney, 2011).

Research has suggested that an individual's motives for regulating emotions can influence different aspects of emotion regulation. For example, Tamir and colleagues (2020) highlighted that an individual's motives for regulating can influence two aspects of emotion regulation: (i) what a person wants to feel, (i.e., their desired emotional end-state) which can be referred to as *emotion goal setting*, and (ii) how a person regulates their emotions (i.e., the strategies they select and/or implement), which can be referred to as *emotion goal striving*. For example, English and colleagues (2017) found that when driven by social motives, participants are more likely to use the strategy of suppression, whereas when they are driven by hedonic motives, they are more likely to use the strategies of distraction and reappraisal.

Therefore, motives can influence different aspects of emotion regulation, and importantly, may be associated with the strategies that people choose to regulate their emotions, which is related to the work presented in this thesis.

### 1.2.2. Emotion Regulation Strategies

Once motivated to regulate emotions, people can use a host of different strategies to try and control their emotions. It is thought that the development of some emotion regulation strategies, such as attentional deployment and self-soothing begins in early childhood and becomes more sophisticated and diverse through the development of cognitive, sociocognitive and motor and language skills (Garon et al., 2008), while other strategies are afforded by tools and artefacts in the environment (Koole & Veenstra, 2015); for example, people may buy themselves something to improve their mood (Kemp & Kopp, 2011) or they may have a hot shower when they feel lonely (Bargh & Shalev, 2012). Arguably, there may be no limit to the number and type of activities that could be considered to regulate emotions (Gross, 2015a).

To structure the vast array of potential regulation strategies, a number of taxonomies have been proposed which provide a framework for understanding the similarities and distinctions between different strategies. For example, Parkinson and Totterdell (1999) identified 162 distinct strategies and organised them based on several features. Namely, strategies were organised based on: (i) whether they were implemented behaviourally (i.e., involve doing something) or cognitively (i.e., involve thinking about something), and (ii) whether they involved engaging with, or disengaging from and avoiding the emotion/emotional situation. Strategies that involved engaging with the emotion involved the individual attending to or working on the problem or emotion (e.g., reappraisal), whereas strategies that involve avoiding the emotion involved the individual redirecting attention or action away from the problem or the emotion (e.g., distraction). That being said, many

strategies may involve a mixture of both cognition and behaviour, such as the use of relaxation or mindfulness recordings, and certain strategies may be implemented either cognitively or behaviourally. For example, the strategy of distraction can be used cognitively in which an individual may think about what they are going to cook for dinner, or it can be used behaviourally where an individual may watch television to distract themselves instead.

One of the most influential models of emotion regulation is Gross' (1998a) 'process model' which has more recently been updated to become the 'extended process model' (Gross, 2015b). These models suggest that emotion regulation can occur at different points in the emotion generative process, which reflects the modal model of emotion previously mentioned (situation – attention – appraisal – response). The process model of emotion regulation suggests that emotion regulation strategies can be organised into two broad categories depending on when they are used in the emotion-generative process: (i) 'antecedent-focused' strategies that are employed before the full emotional response is underway (i.e., during the situation, attention or appraisal stages of the modal model of emotion), or (ii) 'response-focused' strategies that are adopted once the emotional response is already being experienced (i.e., during the response stage of the modal model of emotion). These two broad categories are then further subdivided into five families of strategies. Specifically, antecedent-focused strategies include (i) 'situation selection' in which the individual selects to either enter or avoid situations depending on their anticipated emotional outcome; (ii) 'situation modification' where the emotional situation that is being encountered is directly altered; (iii) 'attentional deployment' where individuals direct their attention within a situation to influence their emotional state; and (iv) 'cognitive change' where the emotional salience of a situation is changed by thinking about the situation in a different way. In terms of response-focused strategies, (Gross, 1998b) identified 'response modulation' as a family of strategies in which aspects of the emotional response, such as behavioural or

physiological components, are directly altered, such as through the use of deep-breathing techniques or by attempting to suppress emotion expressive behaviour (e.g., trying to smile instead of frown when annoyed). This framework demonstrates the importance of timing in emotion regulation, and how this might determine which strategies are used to control emotions.

In short, there are a wealth of different strategies that can be used to regulate emotions, and while different frameworks emphasise different aspects of strategies, the frameworks can complement one another. For example - as will be described in further detail in Section 1.4 – Sheppes and Gross (2011) drew on the idea of engagement and disengagement strategies as described by Parkinson and Totterdell (1999) and Gross' (1998a) process model which emphasises the temporal aspect of emotion regulation, in an attempt to explain the consequences of implementing different regulation strategies. Sheppes and Gross' (2011) theoretical framework has been used to understand what influences the strategies that people choose to regulate their emotions (i.e., emotion regulation choice), which is the topic central to the research presented in this thesis.

### 1.3. The Stages of Emotion Regulation

Contemporary perspectives posit that emotion regulation is a multi-stage process, with stages that both precede and follow the implementation of the strategies used to control emotions (e.g., Bonanno & Burton, 2013; Gross, 2015b; Webb, Schweiger Gallo, et al., 2012). For example, according to the action control perspective of emotion regulation (Webb, Schweiger Gallo, et al., 2012), emotion regulation comprises three stages: (i) the identification (of the need to regulate), (ii) selection (of whether to regulate and of an appropriate strategy to do so), and (iii) implementation (of the selected strategy).

During the *identification stage*, the person identifies whether they need to regulate their emotions. This involves the person (i) determining how they want to feel (i.e., their

desired emotional state), (ii) monitoring their current state in relation to their desired emotional state, and (iii) determining that the discrepancy between their current and desired emotional state needs acting upon. The process of determining a desired emotional state (which can also be thought of as *emotion goal setting*, Tamir et al., 2020), can be influenced by a person's higher-order motives (e.g., hedonic or instrumental motives as outlined in Section 1.2.1). For instance, in the case of the anxious interviewee, they may want to feel calm as they believe that this will help them to perform their best during their interview, and therefore the activation of the emotion goal to remain calm may have been driven by higher-order performance motives. Determining a desired emotional state may also be influenced by an individual's beliefs about whether emotions are controllable (e.g., Tamir, John, et al., 2007), demographic factors such as age and gender (e.g., Scheibe et al., 2013; Timmers et al., 1998), personality traits (e.g., Heimpel et al., 2002; Tamir, 2009) or culture (e.g., Miyamoto et al., 2014).

Once the desired emotional state has been determined, the person then monitors how they currently feel against how they want to feel. Successful monitoring of emotions is related to an individual's emotional intelligence, which has been defined as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990). Through monitoring their emotions, if a discrepancy is detected between the current and desired emotional states, the need to regulate is identified. For instance, the discrepancy between the interviewee wanting to feel calm, but feeling themselves starting to become anxious while waiting for the interview can lead to the need to regulate being identified. It is important to note that, according to the action control perspective on emotion regulation, the identification stage does not involve a choice, rather it reflects whether there is a potential need to regulate

emotions that the person could then choose whether or not to address during the second stage – the selection stage – of emotion regulation.

The *selection stage* of emotion regulation is activated if a discrepancy is detected and the need to regulate is identified. During this stage, the individual can make two regulatory decisions: (i) whether they want and/or are able to regulate their emotions and, if so, (ii) how to regulate from the regulation strategies that are available to them. Webb and colleagues suggested that the initial decision of *whether* to regulate could be influenced by several factors, including whether an individual believes that their emotions can actually be regulated and that it would be effective to do so (e.g., Tamir, John, et al., 2007), that an individual believes they are capable of regulating their emotions (i.e., self-efficacy, Bandura, 1977), and also how long the emotion is believed to last for (i.e., affective forecasting, Wilson & Gilbert, 2005). For example, if the emotion is believed a short-lived, an individual may decide not to try and regulate and instead just let this fleeting emotion flow freely, whereas if they believe that the emotion will be longer-lasting or may be quite an intense emotion, an individual may decide to try and regulate these emotions.

If the individual decides to regulate their emotions, they then also choose *how* they are going to do so from the different strategies that are available to them. As outlined in Section 1.2.2, there are a whole host of strategies that a person can select from to regulate their emotions, and as suggested by the process model, this strategy chosen may depend on the point in the emotion generation process that they regulate (Gross, 1998b). Furthermore, an individual's motives – which as previously highlighted can influence an individual's desired emotional state – may also influence the strategy an individual chooses to attempt to reach their desired emotional state (Tamir et al., 2020). For example, Millgram and colleagues (2019) found that the emotion regulation goal of increasing emotional intensity led to participants being more likely to use rumination compared to distraction, which was used

more frequently when people had the goal of decreasing emotional intensity. Additionally, other contextual factors have also been found to be associated with what strategies people choose, for example, Sheppes and colleagues (2011) found that the emotional intensity of the situation influences the strategy that people chose to regulate their emotions, with distraction being selected more frequently in response to high-intensity situations compared to reappraisal which was selected more frequently in response to low-intensity situations. It is the selection stage of emotion regulation that is central to the work presented in the thesis.

If the decision to regulate has been made and a strategy has been selected, the *implementation stage* is triggered during which the person attempts to put the strategy that they have selected into action. That said, as research into the behaviour-intention gap has highlighted (e.g., Sheeran, 2002; Sheeran & Webb, 2016), just because a strategy has been selected, this does not automatically mean that it will be implemented. For a chosen strategy to be implemented, Webb and colleagues (2012) suggest that people need to (i) identify and seize the opportunity to regulate their emotions, and (ii) have the necessary resources required to implement the strategy. It is possible that when it comes to using certain strategies to regulate emotions, there may be a "critical moment" that must be seized for the regulation attempt to be successful. For example, previous research has suggested reappraisal is more effective before a full emotional-response is underway (e.g., Sheppes & Meiran, 2008), thus this strategy would have to be implemented earlier in the emotion-generation process (as outlined in Chapter 1) than a response-focused strategy such as suppression. Furthermore, different strategies require different resources to implement. For example, distraction requires fewer cognitive resources than reappraisal (e.g., Strauss et al., 2016), so for a strategy to be successfully implemented, this can depend on the individual's availability of resources. Challenges may arise if a person (i) misses the "critical moment" to implement a particular strategy, and/or (ii) does not have the resources available to implement the selected strategy.

People do not only have one chance to attempt to regulate their emotions. Instead, emotion regulation is thought to be an iterative process (Gross, 2015b) as people monitor the progress and success of their emotion regulation attempt, which can essentially restart the process of emotion regulation. The *monitoring stage* of emotion regulation has been suggested by other models (e.g., Gross, 2015b) and involves keeping track of any discrepancies between the ongoing regulation attempt and any changing contextual demands. These changes can occur both externally or internally, such as changes in perceived intensity or controllability of a situation (Bonanno & Burton, 2013; Gross, 2015b). Monitoring is typically most salient after the implementation stage when the chosen strategy has been implemented and an individual can assess whether their regulation attempt has been successful or not, and how to proceed, which essentially restarts the emotion regulation process. That being said, monitoring also occurs concurrently with the other stages of the emotion regulation process, which allows any changes in circumstances to be identified and the emotion regulation attempt to be updated accordingly (Ford & Gross, 2018).

Depending on the outcome of the monitoring, the individual can then decide whether to (i) continue using the current strategy, (ii) switch to another strategy, or (iii) stop regulation. For instance, a person may choose to maintain their current strategy if there is still a discrepancy between their current and desired emotional state, but they believe that the current strategy is either currently effective or will be effective at regulating emotions with continued use. However, if there is still a discrepancy between the current and desired emotional state but if the previously implemented strategy is not effective, a person may choose to switch to a different strategy. For example, in high-intensity situations, people may choose to switch from distraction to use reappraisal instead (Birk & Bonanno, 2016). The regulation attempt may be stopped if the regulation attempt has been successful (i.e., there is no longer a discrepancy detected between the current and desired emotional state), or if there

have been numerous regulation attempts that have all be unsuccessful, and/or the other strategies available to try are not anticipated to be successful.

Similar to the other stages, monitoring has also been suggested to be influenced by an individual's beliefs. For example, it is thought that if people believe that emotions are not malleable and cannot be controlled, they may be less likely to persevere in trying to regulate their emotions (Ford & Gross, 2018). As people vary in their persistence to pursue other goals, this may influence the extent to which they monitor their emotion regulation attempt (Eldesouky & Gross, 2019). Difficulties may occur if an individual does not believe that they can control their emotions, and/or are not sensitive to potential changes in the context which might result in the emotion regulation process being updated (Pruessner et al., 2020).

Finally, it bears noting that the conceptualisation of the identification stage and the selection stage varies between different models. As outlined above, the action control perspective of emotion regulation (Webb, Schweiger Gallo, et al., 2012) posits that no regulatory decisions are made during the identification stage. Instead, Webb and colleagues suggest that the selection stage involves both the decision of whether to regulate the emotion that has been identified during the identification stage and also which strategy to use to try and do so. In contrast, the extended process model of emotion regulation (Gross, 2015b) refers to the selection stage as solely concerning the decision of what general strategy to use to regulate emotion and suggests that the decision of whether to regulate is made during the identification stage. The present thesis defines the selection stage in line with the action control perspective and is thought to involve both the decision of whether to regulate and which strategy to choose to do so (Webb, Schweiger Gallo, et al., 2012). That being said, even though both of these decisions are viewed as aspects of the selection stage, they are considered distinct, and the conclusions drawn throughout this thesis will refer specifically to either whether or how people choose to regulate their emotions.

### 1.4. Research to Date on Emotion Regulation

To date, research on emotion regulation has largely focused on the implementation stage of emotion regulation, with numerous studies examining what strategies people use to regulate their emotions and how effective these are (e.g., Webb, Miles & Sheeran, 2012). For instance, one question that has been repeatedly studied is whether different emotion regulation strategies can be considered to have 'adaptive' or 'maladaptive' consequences (Birk & Bonanno, 2013). For example, a considerable body of evidence suggests that reappraisal (in which people think about the situation differently) is a generally adaptive strategy and associated with factors such as resilience, whereas strategies such as suppression and rumination are considered to be maladaptive and associated with psychopathology (e.g., Aldao et al., 2010; Bonanno & Burton, 2013; Gross & Levenson, 1997). However, it is overly simplistic to conclude that strategies are inherently adaptive or maladaptive; rather, the effectiveness and potential consequences of different strategies is determined partly by the situations in which the strategies are deployed (Bonanno & Burton, 2013). For example, reappraisal, which as stated above, is usually viewed as an adaptive strategy, has been found to be less effective in some situations, particularly those high in intensity (Sheppes & Meiran, 2007, 2008). Similarly, rumination, which is usually viewed as maladaptive has been found to be valuable in certain situations (e.g., Altamirano et al., 2010). Additionally, the findings from a meta-analysis conducted by Webb, Miles and Sheeran (2012) suggested that it was important to distinguish between suppression of the experience versus expression of emotion, as suppression of the expression of emotion generally proved effective, whereas suppressing the experience of emotion and thoughts of the emotion eliciting event were generally not effective. Taken together, these findings have resulted in the broader conclusion that the effectiveness and potential consequences of employing different strategies are not absolute,

and rather that they depend upon the context in which they are used (Levy-Gigi & Shamay-Tsoory, 2017).

This conclusion illustrates the importance of being able to flexibly choose between different strategies in different contexts – something which is thought to be associated with psychological health and well-being (Bonanno & Burton, 2013; Bonanno et al., 2004; Cheng, 2001; Haines et al., 2016; Kashdan & Rottenberg, 2010; Troy et al., 2013). Taken together with the extensive number of emotion regulation strategies available, it is crucial to understand how people choose between different regulatory options in a given situation. This question largely addresses the selection stage of emotion regulation and forms the basis of this thesis.

### 1.5. Emotion Regulation Choice

Research into the selection stage of emotion regulation has started to increase over recent years, with a number of studies examining questions such as how people choose to regulate their emotions from the different strategies that are available to them. This area of research has been termed "emotion regulation choice" (hereafter termed ERC)[1], which is defined as how people choose to regulate their emotions from the different regulation strategies available to them in different contexts, when emotion regulation is required and there is more than one regulatory choice active (Sheppes, 2020; Sheppes et al., 2011, 2014). An important aspect of this definition – and something central to the work presented in this

[1] The term ERC has largely been used to refer to research examining the selection stage of emotion regulation. However, Sheppes (2020) recently highlighted that it is not only the selection stage that involves making regulatory decisions and that important choices are also made in other stages of emotion regulation, such as the monitoring stage. Therefore, Sheppes (2020) suggested that more definitional precision could be used that explicitly highlights the stage being examined (e.g., "regulatory selection choice", "regulatory monitoring choice"). That being said, as one of the aims of this thesis was to review the research conducted to date looking at how people choose to regulate their emotions (Chapter 2) and as a wealth of the research included in the review referred to this as "emotion regulation choice", to stay consistent with the literature, this is the term that is used throughout this thesis.

thesis – is that people make conscious and active regulatory choices. That is, although the selection of strategies can be influenced by factors outside people's conscious awareness (e.g., as a result of habits or cues in the environment), ERC explicitly concerns the *choices* that people make about how to regulate their emotions.

To examine ERC, Sheppes and colleagues (2011) devised the 'ERC task' in which participants are asked to choose between two different regulation strategies varying in their level of engagement with the emotional information, in response to negative emotion-eliciting images. More specifically, in this task, participants are first taught the difference between the regulation strategies of distraction and reappraisal, and how to use them to control their emotions. Namely, for *distraction* participants are asked to think about something emotionally neutral (e.g., completing an everyday task, such as brushing their teeth), and for *reappraisal* they are asked the change the meaning of the negative image, but without saying that it is it a scene from a film. Participants are then exposed to negative images that vary in emotional intensity (i.e., low- vs. high-intensity images) and are asked to choose between the strategies that they were previously taught to control their emotions in response to the images. Participants first complete a series of practice trials and then a series of test trials. On each trial, participants first see a negative image (500ms) and are then asked to choose between distraction and reappraisal to regulate their emotional response to this image. Then, following a preparation period, the participants see the emotional image again (5000ms) and are asked to put their chosen strategy into action. Finally, the image is removed from the screen and participants rate how they feel.

Sheppes and colleagues (2011) found that that the emotional intensity of the images influenced which strategy participants chose to regulate their emotions. Specifically, they found that participants chose distraction more frequently in response to high-intensity images, and reappraisal more frequently in response to low-intensity images. It is thought that this

pattern of findings is due to participants making a trade-off between the short- and long-term costs and benefits associated with using the different strategies in contexts of varying intensity (Sheppes & Gross, 2011). More specifically, drawing on aspects of Parkinson and Totterdell's (1999) and Gross' (1998b) frameworks (Section 1.2.2), Sheppes and Gross (2011) posit that due to limited cognitive capacity, there is competition for resources between emotion generation and emotion regulation processes at an early attentional selection stage and a late semantic meaning stage. At the early attentional selection stage, emotional information competes for attention and to pass through a filtering mechanism where the emotional information goes on to be processed more thoroughly. Regulating emotions at this stage involves disengaging from the emotional situation - such as by using the strategy of distraction - which stops the emotional information from capturing selective attention and being processed any further. If emotional information passes through the early filtering mechanism to the late semantic meaning stage, the emotional information is processed and elaborated on (i.e., made sense of). Regulating emotions at this stage involves using a strategy that involves engaging with the emotional information, such as reappraisal.

Sheppes and Gross suggest that the underlying mechanisms of implementing an early disengagement strategy, such as distraction, and a later engagement strategy, such as reappraisal, result in a differential trade-off between affective, cognitive, and motivational costs and benefits. For example, there are both affective and cognitive benefits of using an early disengagement strategy. Namely, more intense emotions can be regulated successfully as the strategy is deployed earlier in the emotion generation process before the emotion is fully generated (Sheppes & Meiran, 2007) and fewer cognitive resources are required to distract from an emotional situation as the neutral thoughts generated are not in conflict with the emotional information that has been processed – this is not the case when using reappraisal (Sheppes & Meiran, 2008). However, there are motivational costs associated with

disengaging from emotional information in terms of long-term adaptation as the emotional situation is not attended to and processed, something that is thought to be necessary in order to adapt (Wilson & Gilbert, 2008). In terms of using a later engagement strategy such as reappraisal, it is emotionally costly as the strategy is employed later in the emotion generation process and therefore the full emotion is likely to be underway, and it is cognitively costly as the reappraisals generated directly conflict with the emotional information and, but it is motivationally beneficial as the emotional information has been attended to, processed and changed.

Despite research into ERC arguably still being in its infancy, interest is growing steadily. Since Sheppes and colleagues (2011) devised the ERC task, the basic pattern of findings regarding the effect of intensity has been replicated numerous times. For example, an increased preference for reappraisal in response to low-intensity emotional stimuli and distraction in response to high-intensity emotional stimuli has been replicated across different populations (e.g., Hay et al., 2015; Sauer et al., 2016; Scheibe et al., 2015) and also in response to varying stimuli, such as aversive sounds (Feldman & Freitas, 2021), feedback on performance (Shafir, Guarino, et al., 2016), and emotional vignettes (Suri et al., 2018). Research has started to not only examine how people choose between different strategies to regulate their emotions but also how people choose to use a particular strategy. For example, Vishkin and colleagues (2020) looked at which specific reappraisal tactics (e.g., whether to reappraise by trying to accept that nothing could be done or trying to tell themselves that things will turn out better than expected) people choose to use. Furthermore, as previously outlined, people do not only choose *how* to regulate their emotions, people also choose *whether* to regulate their emotions (Webb, Schweiger Gallo et al., 2012). In short, it is important to understand whether and how people choose to regulate their emotions, yet there are still a number of outstanding questions – some of which will be addressed in this thesis.

# Chapter 2: Identifying the Determinants of Emotion Regulation Choice - A Systematic Review with Meta-Analysis


## Abstract

Day-to-day life is inundated with attempts to control emotions and a wealth of research has examined what strategies people use and how effective these strategies are. However, until more recently, research has often neglected more basic questions such as whether and how people choose to regulate their emotions (i.e., emotion regulation choice, ERC). In an effort to identify what is currently know and what is still yet to be explored, this chapter systematically reviewed studies that examined potential determinants of whether and how people choose to regulate their emotions. Eighteen determinants were identified across 219 studies and were categorised as being affective, cognitive, motivational, individual or social-cultural in nature. Where there were sufficient primary studies, meta-analysis was used to quantify the size of the associations between potential determinants and measures of whether and how people choose to regulate their emotions. Based on the findings, Chapter 2 suggests that people's decisions about whether and how to regulate their emotions are determined by factors relating to the individual doing the regulating, the emotion that is being regulated, and both the immediate situation and the broader social context in which the regulation is taking place. Limitations of the current study are highlighted, alongside possible future directions.

## 2.1. Introduction

Being able to flexibly choose between different strategies depending on the context in which the emotion regulation attempt is occurring, is thought to be an important and necessary aspect of healthy adaptation (Sheppes, 2014). However, despite the importance of understanding whether and how people choose to regulate their emotions, and the growth of research and interest in the field (Sheppes, 2020), to date, there has not been a comprehensive and systematic review of the research examining whether and how people choose to regulate their emotions. Therefore, to address this, Chapter 2 reviews and organises the empirical evidence to identify what determines whether and how people choose to regulate their emotions.

As highlighted in Chapter 1, there has been increasing interest in the selection stage of emotion regulation over recent years, with a number of studies examining how people choose to regulate their emotions from the different strategies available to them (i.e., ERC). To do so, the ERC task (see Section 1.5) is typically used and resultingly, a number of factors have been suggested to influence ERC. For example, across a series of studies, Sheppes and colleagues (2014) found that *affective*, *cognitive* and *motivational* factors influence which strategies participants chose to regulate their emotions. For example, when given the choice between the regulation strategies of distraction and reappraisal, participants chose reappraisal more frequently: (i) in emotional situations that were lower in intensity (i.e., an affective factor, Study 1), (ii) when the effort of generating reappraisals for situations was lowered by providing participants with concrete examples of how to reappraise the situation (i.e., a cognitive factor, Study 2), and (iii) when participants thought that they would be encountering the emotional situation again and therefore needed to adapt (i.e., a motivational factor, Study 3). A recent narrative review conducted by Sheppes (2020) provided further support for these factors as key determinants of ERC, and other factors that had not

previously been considered in Sheppes et al's (2014) framework were also identified. Namely, *individual* (e.g., self-esteem, Shafir et al., 2016), *social* (e.g., ideological belief systems, Pliskin et al., 2018), and *cultural* (e.g., Mehta et al., 2017) factors.

That said, while Sheppes (2020) provides a useful starting point for the current review, there are a number of limitations that need to be taken into consideration. More specifically, the review was not conducted systematically, and the focus was largely on studies that had used variations of the ERC task. However, ERC has also been measured in different ways. For example, it has been suggested that how a person wants to feel influences whether and how they regulate their emotions (Millgram et al., 2020). Research that has explored this idea has typically looked at what stimuli people would like to engage with (e.g., angry music) before playing a game or completing a task to achieve a goal (e.g., Tamir & Ford, 2009, 2012a, 2012b; Tamir et al., 2008). Consequently, it is possible that there are other ways to measure ERC and, in turn, other factors associated with ERC may have not been identified and examined in Sheppes (2020) review. Therefore, while previous work such as Sheppes et al. (2014) and Sheppes' (2020) review is valuable in identifying broad categories of factors that influence ERC thus providing a foundation for the current review, the current review aimed to further current understanding of intrapersonal ERC findings by (i) systematically reviewing the evidence to date and, where appropriate, (ii) estimating the strength of the evidence using meta-analysis. The findings from the meta-analysis were also then applied in order to propose a framework for understanding how people choose to regulate their emotions.

As outlined in Chapter 1, the selection stage involves not only the decision of which strategy to use but also whether to regulate (Webb, Schweiger Gallo et al., 2012). As emotion regulation is a goal-directed and motivated process (Tamir et al., 2020), the decision of whether to regulate represents the goal or intention (where intentions reflect self-instructions

to perform particular behaviours or to obtain certain outcomes, Triandis, 1980), while the term ERC has typically been used to refer to decisions about how to regulate (e.g., Sheppes, 2020; Sheppes et al., 2011, 2014) and therefore represents the means by which the person decides to strive for that goal or achieve the intended outcome (cf. goal systems theory, Kruglanski et al., 2015). Furthermore, as monitoring the outcomes of the regulation attempt (e.g., whether the chosen strategy is having the desired effect) can restart the cycle of emotion regulation (e.g., prompt people to consider whether to continue regulating and, if so, how), studies which examine the monitoring stage of emotion regulation (e.g., Dorman-Ilan et al., 2020) can also help to understand whether and how people choose to regulate their emotions.

### 2.1.1. The Present Research

Despite the importance of understanding whether and how people choose to regulate their emotions, as outlined in Chapter 1, it is currently unclear what influences the various regulatory decisions. For example, when do people choose to savour good news versus return to the task at hand? If they do decide to change how they feel, how do they choose between different regulation strategies? In an effort to answer these questions, Chapter 2 aimed to (i) identify and organise the potential determinants of (a) intentions to regulate and (b) ERC, and (ii) estimate the strength of the relationships between these potential determinants and intentions to regulate and ERC.

To do so, the evidence on the potential determinants of these regulatory decisions in adult samples was systematically reviewed. This evidence was then used to identify potential determinants (i.e., a bottom-up, empirical approach to identifying potential determinants) that were then organised in an extended version of Sheppes and colleagues' (2014) conceptual framework (i.e., a top-down approach to categorising the nature of the potential determinants). Where there were sufficient studies ($k \geq 5$), meta-analysis was used to quantify

the size of the relationships between the potential determinants and the various measures of intentions to regulate and ERC that have been used in empirical studies to date.

## 2.2. Method

### 2.2.1. Information Sources and Search Strategy

Three methods were used to identify studies that could help to understand intentions to regulate and ERC. First, Web of Science, Scopus, and PsycInfo were searched using combinations of the search terms emotion / affect / regulation / control / self-regulation AND choice / action control / process model. The searches were conducted in August 2020 and the same terms were also entered into ProQuest to identify unpublished studies, such as theses. Second, the reference lists of the articles selected for inclusion from the database searches were inspected for additional studies that may be suitable (i.e., an ancestry approach). Third, papers that had cited the articles included were inspected (as identified through Publish or Perish software; Harzing, 2007). Only studies written in the English language were included.

### 2.2.2. Eligibility Criteria

To be included in the review, the studies had to manipulate and/or measure a factor that may influence (i) intentions to regulate emotions or (ii) which emotion regulation strategy (or strategies) people select in a situation. Studies that measured the frequency with which people use – rather than choose – a regulation strategy, what strategies they typically use, or what strategies they have used to regulate their emotions in a particular situation, were excluded as it cannot be determined whether the *use* of a strategy reflected a conscious, active choice, rather than a more automatic response (Sheppes, 2020).[2] In addition, to ensure that

[2] This meant that studies using the Emotion Regulation Questionnaire (Gross & John, 2003), the Emotion Regulation Profile – Revised (Nelis et al., 2011), or experience sampling methods (e.g., English et al., 2017) were typically excluded because they assess which strategies were used or are typically used in different situations. Although a number of studies have referred to the ERP-R as a measure of ERC (e.g., Ortner et al., 2017, 2018), this measure asks participants to identify how they would typically respond to situations. Therefore, people are likely to report what they have previously used in these situations, rather than what they would necessarily choose to do.

responses reflected intentions to regulate emotions, if participants were not explicitly asked to choose whether and/or how to regulate their emotions, then it had to be clear that the procedure was *more likely than not* to make an emotion salient that required regulation. For example, numerous studies have asked participants to choose between different stimuli (e.g., music or film clips) following either a mood induction (e.g., Taylor & Friedman, 2015) or their current mood being made salient (e.g., Bolt, 2016). Although these studies did not explicitly make participants aware that the choices that they were being asked to make were intended to regulate their emotions it seemed more likely than not that the participant's choices likely reflected efforts to regulate those emotions, as the choice immediately followed a procedure that rendered their emotions salient.[3]

Finally, the study had to focus on how the participants chose to regulate their own emotions (i.e., *intra*personal ERC) as opposed to how they would choose to help someone else to regulate their emotions (i.e., *inter*personal ERC). To be included in the meta-analysis, the authors needed to report or provide sufficient information for effect size *r* to be calculated. No restrictions were placed on the design of the study and studies with both correlational and experimental designs were considered for inclusion. Due to evidence that there are developmental changes in emotion regulation (e.g., Zimmermann & Iwanski, 2014), the only restriction was that the sample comprised adults, defined as those aged over 18.

### 2.2.3. Study Selection

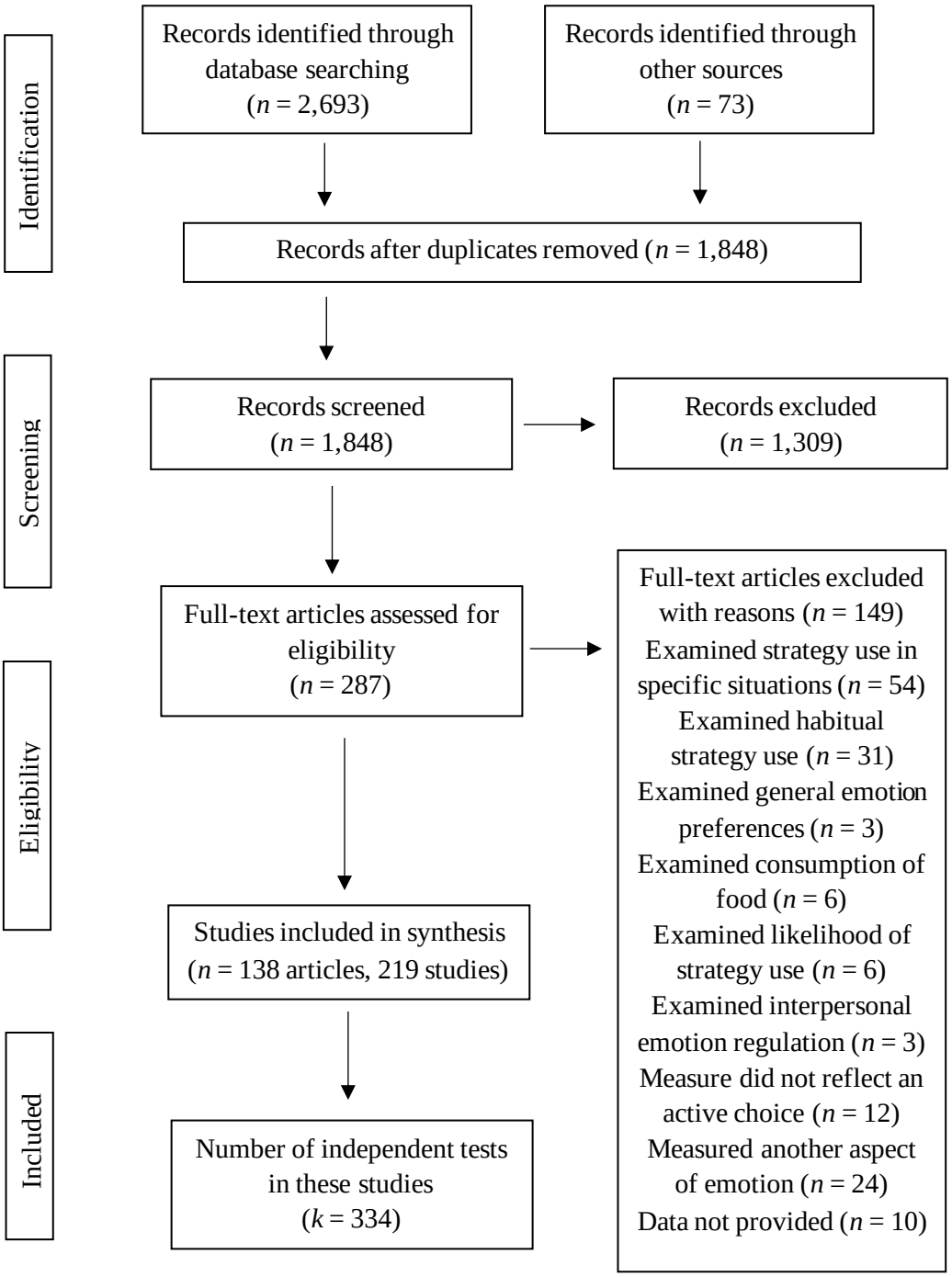
Studies were selected for inclusion via a two-step process. The first step involved screening the titles and abstracts of the articles identified during the search to identify potentially relevant studies. The second step involved reviewing the full texts of potentially relevant articles against the eligibility criteria. Both myself and another researcher

[3] Similarly, studies which focused on the consumption of food and/or drink were excluded as it could not be determined whether what the participants were eating and/or the amount that they consumed reflected a choice that was intended to regulate emotions and/or whether the emotions induced regulated participants food intake.

independently assessed whether the studies were eligible for inclusion. There was good agreement between the two raters, $\kappa = .70$, 95% CI [.62, .79], $p < .001$ and disagreements were resolved by discussion. In total, 219 studies were deemed suitable for inclusion. The flow of studies through each phase of the review is presented in Figure 2.1 and Table 2.1 provides an overview of their key characteristics.

**Figure 2.1**

*Flow of Information through Each Stage of Review*



### 2.2.4. Data Extraction

To start data extraction, how intentions to regulate and ERC were measured in each of the primary studies were coded. Participants' intentions to regulate their emotions were typically measured by assessing participants' motivation to repair their mood (e.g., Wood et al., 2009) or by giving participants the choice between passively viewing stimuli or engaging with a regulation strategy (e.g., Benita et al., 2019; Mehta et al., 2017). As people choose how to regulate their emotions both between and within different strategies, ERC was typically measured in one of four ways: (i) measures in which participants chose between various strategies made available to them to regulate their emotions (e.g., between distraction and reappraisal, Sheppes et al., 2011); (ii) measures in which participants explicitly chose between stimuli likely to induce different emotions (e.g., video clips, newspaper articles, video games, Kappes & Schikowski, 2013); (iii) measures that reflect the amount of time that participants spent viewing various stimuli (e.g., images or video clips of varying valence, Sands et al., 2016) in an effort to regulate their emotions; and (iv) measures in which participants rated which stimuli (e.g., video games) they would prefer to engage with or which specific emotions they would ideally experience in a particular situation (e.g., Tamir, 2005; Tsai et al., 2007). The first measure of ERC reflects how people choose to regulate their emotions *between* different strategies, whereas the other measures reflect choices *within* a regulation strategy. For example, measuring the type of stimuli that participants choose – or prefer – to engage with reflects how people choose to implement situation selection, and measuring the amount of time that participants choose to spend viewing various stimuli reflects how people choose to modify the situation to regulate their emotions.

The nature of the potential determinant of ERC examined in each of the primary studies was also coded using an extended version of Sheppes and colleagues (2014) conceptual framework, which was in line with Sheppes (2020) findings. Specifically, the potential determinants were categorised as either affective (i.e., relating to the emotion being

regulated), cognitive (i.e., relating to cognitive aspects associated with regulating emotions), or motivational (i.e., relating to the reasons people regulate their emotions). This framework was also extended to include individual/dispositional determinants (i.e., relating to the individual who is doing the regulating) and social-cultural determinants (i.e., relating to the broader context in which the emotion regulation attempt is taking place). Within these broader categories, further distinctions were made between external and internal variants of affective, cognitive, and motivational determinants and between trait- and state-like variants of individual/dispositional determinants. Whether the factors were classed as external versus internal, or trait-like versus state-like depended on whether the respective factor was measured or manipulated. For example, affective, cognitive, and/or motivational factors that were manipulated (e.g., Josephson and colleagues (1996) who exposed participants to sad film clips in an effort to make them feel sad) were considered external, whereas affective, cognitive, and/or motivational factors that were measured (e.g., Bolt (2016) who measured the valence of participants emotions) were considered internal. Similarly, individual differences that were measured using self-report measures (e.g., neuroticism) were considered trait-like variants and individual differences that were manipulated (e.g., sleep deprivation) were considered state-like variants. It is also worth noting that some factors have been both measured and manipulated across different studies, such as control beliefs (Kappes & Schikowski, 2013; Tahlier et al., 2013).

I extracted the relevant information from the studies and approximately 10% of the studies were independently coded by another researcher. To assess inter-rater reliability, Cohen's kappa was computed, and reliability was found to be very good across the measures (mean $\kappa = 0.82$, range = 0.57-1.00).

### 2.2.5. Meta-Analytic Strategy

Effect size *r* (Cohen, 1992) was used to represent the strength of the relationship between the identified factors and the measures of ERC in each of the primary studies. Where possible, the effect size was calculated by converting the means and *SD*s for the measure of intentions to regulate and/or ERC for two conditions that differed on the factor that could potentially influence ERC using an online effect size calculator (Lenhard & Lenhard, 2016). However, if the mean and *SD* were not reported, then the available metric (e.g., the *F* ratio, *t* ratio, chi-square) was converted to effect size *r* or, for studies where the factor of interest was measured rather than manipulated, the effect size was based on the reported correlation between the factor and the measure of ERC. When effect sizes could not be computed based on information in the report, the authors were contacted by email, and asked to provide the additional information within 4-6 weeks where possible If the authors did not respond, then the data was not included in the relevant meta-analysis. Where studies examined multiple factors that might be associated with ERC, the individual effect sizes were calculated and included in the relevant analyses. In cases where multiple effect sizes reflected the relationship between the same factor and ERC in a single study (e.g., Petersen, 2012), an average effect size was calculated. In line with Funder and Ozer's (2019) guidelines, effect sizes around 0.05 were considered to be very small, 0.10 were considered to be small, 0.20 were considered to be medium, 0.30 were considered to be large and 0.40 or greater were considered to be very large.

If sufficient primary studies examined the relationship between a particular factor and a measure of intentions to regulate or ERC, then random-effects meta-analysis was used to determine the magnitude of the relationship between the identified factor and measure. Meta-analytic computations were calculated using Meta-Essentials (Suurmond et al., 2017), which automatically applies Fisher's *r*-to-*z* transformation (Fisher, 1921), as Pearson's *r* is not

normally distributed. Random effects models were used because the studies were likely to be "different from one another in ways too complex to be captured by a few simple study characteristics" (Cooper, 1986, p. 526). While it has been suggested that just 2 primary studies are sufficient for meta-analyses to be conducted (Valentine et al., 2010), to ensure that estimates are robust and are not biased by low statistical power, sample-weighted average effect-sizes were only computed when at least 5 studies examined the relationship. Heterogeneity was assessed using the *Q* statistic (Cochran, 1954) and potential publication bias was assessed using Egger's regressions (Egger et al., 1997). Additionally, as the *Q* statistic only identifies the statistical significance (or not) of the heterogeneity and not the extent of heterogeneity, the $I^2$ statistic was also used. The $I^2$ statistic can be interpreted as the percentage of total variability in a set of effect sizes due to between-study variability as opposed to sampling error within individual studies, thus reflecting the extent of heterogeneity (Huedo-Medina et al., 2006). If evidence of publication bias was highlighted, then Duval and Tweedie's (2000) trim and fill technique was applied and the estimated effect sizes were adjusted accordingly. Adjusted effect sizes are denoted using $r_{+\,adj}$ and funnel plots for each of the relationships can be found in Appendix A.

The relationships between the factors identified and emotion regulation choice may be influenced by the method used to investigate the relation, including the nature of the sample or the method used. I therefore planned a series of moderator analyses. For example, I planned to examine whether the nature of the sample moderated the relationships by examining: (1) whether the sample was comprised of a student population, clinical population, wider community or was mixed across these categories, (2) the percentage of females in the sample, and/or (3) the age of the sample. Additionally, I also planned to consider methodological moderators, such as the design of the study (experimental or correlational) and the year in which the study was published. However, there were a

relatively small number of studies available for the moderator analyses to be conducted. Therefore, due to concerns regarding power, subgroup or moderator analyses were not conducted.

**Table 2.1**

*Overview of the Key Characteristics of Studies Included in the Review*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Aharon (2018) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.39 | 44 |
| Aharon (2018) | 1 | Mental health | Individual | ERC 2 | 0.34 | 44 |
| Alkoby et al. (2019) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.73 | 85 |
| Alkoby et al. (2019) | 1 | Mindfulness training programme | Individual | ERC 2 | 0.06 | 85 |
| Alkoby et al. (2019) | 1 | Nature of emotional event | Affective | ERC 2 | 0.07 | 85 |
| Arens & Stangier (2020) | 1 | Mental health | Individual | ERC 3 | 0.37 | 100 |
| Arens & Stangier (2020) | 1 | Personal preference for emotions | Individual | ERC 3 | 0.27 | 102 |
| Arens & Stangier (2020) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.2 | 101 |
| Bae et al. (2016) | 2 | Level of arousal | Affective | ERC 1 | 0.43 | 56 |
| Bae et al. (2019) | 2 | Level of arousal | Affective | ERC 3 | 0.8 | 97 |
| Bailey (2017) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.13 | 531 |
| Bailey & Ivory (2018) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.18 | 126 |
| Bench & Lench (2019) | 1 | Level of arousal | Affective | ERC 3 | 0.09 | 51 |
| Bench & Lench (2019) | 2 | Desire for novelty | Individual | ERC 3 | 0.21 | 150 |
| Bench & Lench (2019) | 2 | Level of arousal | Affective | ERC 3 | 0.09 | 150 |
| Bench & Lench (2019) | 3 | Valence of the focal emotion | Affective | ERC 3 | 0.21 | 140 |
| Benita et al. (2019) | 4 | Autonomy supportive vs. controlling context | Social-Cultural | ERC 1 | 0.22 | 88 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Birk & Bonanno (2016) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.71 | 90 |
| Birk & Bonanno (2016) | 1 | Level of arousal | Affective | ERC 2 | 0.84 | 90 |
| Birk & Bonanno (2016) | 1 | Valence of the focal emotion | Affective | ERC 2 | 0.84 | 77 |
| Birk & Bonanno (2016) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.12 | 95 |
| Birk & Bonanno (2016) | 2 | Level of arousal | Affective | ERC 2 | 0.12 | 95 |
| Birk & Bonanno (2016) | 2 | Valence of the focal emotion | Affective | ERC 2 | 0.07 | 92 |
| Biswas et al. (1994) | 1 | Gender | Individual | ERC 3 | 0.31 | 64 |
| Bolt (2016) | 1 | Anticipation of an upcoming task | Motivational | ERC 3 | 0.15 | 310 |
| Bolt (2016) | 1 | Reasons for listening to music | Individual | ERC 3 | 0.08 | 310 |
| Bolt (2016) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.15 | 310 |
| Bowman & Tamborini (2015) | 1 | Level of arousal | Affective | ERC 3 | 0.78 | 64 |
| Bresin & Robinson (2015) | 1 | Agreeableness | Individual | ERC 4 | 0.09 | 77 |
| Bresin & Robinson (2015) | 1 | Gender | Individual | ERC 4 | 0.1 | 77 |
| Bresin & Robinson (2015) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.08 | 77 |
| Bresin & Robinson (2015) | 2 | Agreeableness | Individual | ERC 4 | 0.1 | 120 |
| Bresin & Robinson (2015) | 2 | Gender | Individual | ERC 4 | 0.07 | 120 |
| Bresin & Robinson (2015) | 2 | Valence of the focal emotion | Affective | ERC 4 | 0.08 | 120 |
| Bryant & Zillmann (1984) | 1 | Level of arousal | Affective | ERC 4 | 0.5 | 120 |
| Campbell (2020) | 1 | Sleep deprivation | Individual | ERC 3 | 0.11 | 52 |
| Charles et al. (2003) | 2 | Age | Individual | ERC 4 | 0.24 | 64 |
| Charles et al. (2003) | 2 | Valence of the focal emotion | Affective | ERC 4 | 0.61 | 64 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Chen et al. (2007) | 1 | Ruminative tendencies | Individual | ERC 4 | 0.35 | 252 |
| Chen et al. (2007) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.2 | 252 |
| Christ & Medoff (1984) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.32 | 84 |
| Cohen & Andrade (2004) | 1 | Anticipation of an upcoming task | Motivational | ERC 3 | 0.21 | 117 |
| Cohen & Andrade (2004) | 2 | Anticipation of an upcoming task | Motivational | ERC 3 | 0.23 | 129 |
| Cohen & Andrade (2004) | 4 | Anticipation of an upcoming task | Motivational | ERC 3 | 0.16 | 126 |
| Cohrdes et al. (2017) | 2 | Age | Individual | ERC 4 | 0.11 | 222 |
| Cohrdes et al. (2017) | 2 | Valence of the focal emotion | Affective | ERC 4 | 0.06 | 222 |
| Cohrdes et al. (2017) | 3 | Age | Individual | ERC 4 | 0.26 | 149 |
| Cohrdes et al. (2017) | 3 | Anticipation of an upcoming task | Motivational | ERC 4 | 0.14 | 149 |
| Coleman & Williams (2013) | 2 | Social identity | Individual | ERC 3 | 0.3 | 103 |
| Cortes et al. (2019) | 2 | Agreeableness | Individual | ERC 1 | 0.24 | 92 |
| Cortes et al. (2019) | 2 | Self-esteem | Individual | ERC 1 | 0.08 | 92 |
| de los Santos & Nabi (2019) | 1 | Specific emotions | Affective | ERC 3 | 0.43 | 452 |
| DeMarco & Friedman (2018) | 1 | Nature of emotional event | Affective | ERC 3 | 0.27 | 179 |
| DeMarco et al. (2015) | 1 | Intensity of the emotion | Affective | ERC 3 | 0.33 | 174 |
| DeMarco et al. (2015) | 1 | Nature of emotional event | Affective | ERC 3 | 0.27 | 174 |
| DeMarco et al. (2015) | 2 | Nature of emotional event | Affective | ERC 3 | 0.26 | 68 |
| Dorman-Ilan et al. (2020) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.59 | 28 |
| Doukas et al. (2020) | 1 | Level of arousal | Affective | ERC 2 | 0.08 | 60 |
| Drolet et al. (2011) | 1 | Age | Individual | ERC 5 | 0.23 | 91 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Erber et al. (1996) | 1 | Anticipation of an upcoming task | Motivational | ERC 5 | 0.35 | 64 |
| Erber et al. (1996) | 1 | Gender | Individual | ERC 5 | 0.23 | 64 |
| Erber et al. (1996) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.05 | 64 |
| Erber et al. (1996) | 2 | Anticipation of an upcoming task | Motivational | ERC 5 | 0.27 | 72 |
| Erber et al. (1996) | 2 | Gender | Individual | ERC 5 | 0.33 | 72 |
| Erber et al. (1996) | 2 | Valence of the focal emotion | Affective | ERC 5 | 0.36 | 72 |
| Erber et al. (1996) | 3 | Anticipation of an upcoming task | Motivational | ERC 4 | 0.38 | 60 |
| Feldman & Freitas (2021) | 1 | Intensity (of previous trial) | Social-Cultural | ERC 2 | 0.32 | 48 |
| Feldman & Freitas (2021) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.34 | 48 |
| Feldman & Freitas (2021) | 2 | Intensity (of previous trial) | Social-Cultural | ERC 2 | 0.18 | 63 |
| Feldman & Freitas (2021) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.18 | 63 |
| Fenigstein (1979) | 1 | Gender | Individual | ERC 3 | 0.34 | 87 |
| Fenigstein (1979) | 2 | Valence of the focal emotion | Affective | ERC 3 | 0.25 | 64 |
| Floerke et al. (2017) | 1 | Affective forecasting ability | Individual | ERC 3 | 0.15 | 53 |
| Floerke et al. (2017) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.04 | 53 |
| Floerke et al. (2017) | 2 | Affective forecasting ability | Individual | ERC 3 | 0.16 | 104 |
| Floerke et al. (2017) | 2 | Age | Individual | ERC 3 | 0.08 | 95 |
| Floerke et al. (2017) | 2 | Valence of the focal emotion | Affective | ERC 3 | 0.45 | 95 |
| Friedman et al. (2012) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.37 | 129 |
| Friedman et al. (2012) | 2 | Valence of the focal emotion | Affective | ERC 5 | 0.34 | 35 |
| Friedman et al. (2012) | 3 | Valence of the focal emotion | Affective | ERC 5 | 0.44 | 93 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Gendolla (2012) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.45 | 32 |
| Gessner (2015) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.81 | 92 |
| Grant (2018) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.03 | 301 |
| Greenwood (2010) | 1 | Gender | Individual | ERC 5 | 0.14 | 140 |
| Greenwood (2010) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.31 | 140 |
| Greenwood (2010) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.16 | 140 |
| Hackenbracht & Tamir (2010) | 1 | Goal (of upcoming task) | Motivational | ERC 5 | 0.65 | 76 |
| Hackenbracht & Tamir (2010) | 1 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.24 | 76 |
| Hackenbracht & Tamir (2010) | 2 | Goal (of upcoming task) | Motivational | ERC 5 | 0.31 | 57 |
| Hannan & Orcutt (2020) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.62 | 83 |
| Hannan & Orcutt (2020) | 1 | Mental health | Individual | ERC 2 | 0.2 | 83 |
| Harmon-Jones et al. (2011) | 2 | Attitudes towards emotions | Individual | ERC 5 | 0.28 | 202 |
| Harmon-Jones et al. (2011) | 5 | Attitudes towards emotions | Individual | ERC 5 | 0.36 | 97 |
| Harmon-Jones et al. (2018) | 1 | Specific emotions | Affective | ERC 5 | 0.22 | 155 |
| Harmon-Jones et al. (2018) | 2 | Specific emotions | Affective | ERC 5 | 0.2 | 251 |
| Hay et al. (2015) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.66 | 51 |
| Hay et al. (2015) | 1 | Mental health | Individual | ERC 2 | 0.04 | 51 |
| Hay et al. (2015) | 1 | Valence of the focal emotion | Affective | ERC 2 | 0.18 | 51 |
| Heimpel et al. (2002) | 3 | Self-esteem | Individual | ERC 3 | 0.25 | 116 |
| Hershfield & Alter (2019) | 3a | Valence of the focal emotion | Affective | ERC 3 | 0.14 | 294 |
| Hershfield & Alter (2019) | 3b | Valence of the focal emotion | Affective | ERC 5 | 0.18 | 127 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Hu et al. (2020) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.58 | 95 |
| Hu et al. (2020) | 2 | Valence of the focal emotion | Affective | ERC 5 | 0.27 | 155 |
| Isaacowitz et al. (2015) | 1 | Age | Individual | ERC 4 | 0.11 | 69 |
| Isaacowitz et al. (2015) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.32 | 69 |
| Isaacowitz et al. (2015) | 2 | Age | Individual | ERC 4 | 0.03 | 62 |
| Isaacowitz et al. (2015) | 2 | Valence of the focal emotion | Affective | ERC 4 | 0.47 | 62 |
| Isaacowitz et al. (2018) | 1 | Goal (regulate vs. view) | Motivational | ERC 3 | 0.12 | 150 |
| Isaacowitz et al. (2018) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.37 | 150 |
| Johnson & Knobloch-Westerwick (2014) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.17 | 168 |
| Johnson & Knobloch-Westerwick (2016) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.14 | 174 |
| Johnson & Knobloch-Westerwick (2016) | 2 | Group identification | Individual | ERC 4 | 0.08 | 152 |
| Johnson & Knobloch-Westerwick (2016) | 2 | Valence of the focal emotion | Affective | ERC 4 | 0.1 | 152 |
| Josephson et al. (1996) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.27 | 106 |
| Kappes & Schikowski (2013) | 1 | Control beliefs | Individual | ERC 3 | 0.21 | 84 |
| Kemp & Kopp (2011) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.36 | 96 |
| Kim (2013) | 1 | Gender | Individual | ERC 3 | 0.24 | 226 |
| Kim (2013) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.15 | 226 |
| Kim & Oliver (2011) | 1 | Gender | Individual | ERC 5 | 0.05 | 152 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Kim & Oliver (2011) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.09 | 152 |
| Knobloch (2003) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.2 | 64 |
| Knobloch & Zillmann (2002) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.21 | 116 |
| Knobloch-Westerwick (2007) | 1 | Gender | Individual | ERC 3 | 0.14 | 79 |
| Knobloch-Westerwick & Alter (2006) | 1 | Gender | Individual | ERC 4 | 0.24 | 86 |
| Livingstone & Isaacowitz (2015) | 1 | Age | Individual | ERC 4 | 0.07 | 146 |
| Livingstone & Isaacowitz (2015) | 1 | Goal (to view the image or regulate) | Motivational | ERC 4 | 0.1 | 146 |
| Livingstone & Isaacowitz (2015) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.32 | 146 |
| Livingstone & Isaacowitz (2018) | 1 | Age | Individual | ERC 4 | 0.24 | 181 |
| Livingstone & Isaacowitz (2019) | 1 | Age | Individual | ERC 3 | 0.15 | 225 |
| Livingstone & Isaacowitz (2019) | 1 | Level of arousal | Affective | ERC 3 | 0.16 | 227 |
| Livingstone & Isaacowitz (2019) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.44 | 226 |
| López López & Ruiz de Maya (2012) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.07 | 147 |
| López López & Ruiz de Maya (2012) | 2 | Valence of the focal emotion | Affective | ERC 5 | 0.13 | 160 |
| Luzon (2018) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.32 | 40 |
| Luzon (2018) | 1 | Valence of the focal emotion | Affective | ERC 2 | 0.27 | 40 |
| Ma et al. (2018) | 3 | Culture | Social-Cultural | ERC 1 | 0.32 | 110 |
| Ma et al. (2018) | 3 | Upcoming task | Motivational | ERC 1 | 0.17 | 110 |
| Ma et al. (2018) | 4 | Culture | Social-Cultural | ERC 1 | 0.21 | 143 |
| Ma et al. (2018) | 4 | Upcoming task | Motivational | ERC 1 | 0.26 | 143 |
| Markovitch et al. (2016) | 1 | Attitudes towards emotions | Individual | ERC 3 | 0.27 | 59 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Markovitch et al. (2017) | 1 | Attitudes towards emotions | Individual | ERC 3 | 0.38 | 68 |
| Markovitch et al. (2017) | 2 | Attitudes towards emotions | Individual | ERC 3 | 0.28 | 66 |
| Markovitch et al. (2017) | 3 | Attitudes towards emotions | Individual | ERC 3 | 0.56 | 45 |
| Martins et al. (2018) | 1 | Age | Individual | ERC 2 | 0.28 | 80 |
| Martins et al. (2018) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.71 | 80 |
| Martins et al. (2018) | 1 | Valence of the focal emotion | Affective | ERC 2 | 0.65 | 80 |
| Mastro et al. (2002) | 1 | Level of arousal | Affective | ERC 3 | 0.2 | 84 |
| Matthews et al. (in press) | 1a | Intensity of the emotion | Affective | ERC 2 | 0.76 | 37 |
| Matthews et al. (in press) | 1b | Intensity of the emotion | Affective | ERC 2 | 0.77 | 50 |
| Mehta et al. (2017) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.44 | 28 |
| Mehta et al. (2017) | 3 | Culture | Social-Cultural | ERC 1 | 0.07 | 81 |
| Mehta et al. (2017) | 3 | Culture | Social-Cultural | ERC 2 | 0.19 | 81 |
| Mehta et al. (2017) | 3 | Intensity of the emotion | Affective | ERC 1 | 0.58 | 81 |
| Mehta et al. (2017) | 3 | Intensity of the emotion | Affective | ERC 2 | 0.4 | 81 |
| Mehta et al. (2017) | 2a | Intensity of the emotion | Affective | ERC 1 | 0.67 | 38 |
| Mehta et al. (2017) | 2a | Intensity of the emotion | Affective | ERC 2 | 0.31 | 38 |
| Mehta et al. (2017) | 2b | Intensity of the emotion | Affective | ERC 1 | 0.55 | 14 |
| Mehta et al. (2017) | 2b | Intensity of the emotion | Affective | ERC 2 | 0.25 | 14 |
| Millgram et al. (2015) | 1 | Mental health | Individual | ERC 3 | 0.24 | 61 |
| Millgram et al. (2015) | 2 | Mental health | Individual | ERC 3 | 0.35 | 65 |
| Millgram et al. (2015) | 3 | Mental health | Individual | ERC 5 | 0.25 | 61 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Millgram, Joorman, et al. (2019) | 1 | Mental health | Individual | ERC 5 | 0.31 | 102 |
| Millgram, Joorman, et al. (2019) | 1 | Motivation to experience happiness | Individual | ERC5 | 0.28 | 103 |
| Millgram, Joorman, et al. (2019) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.26 | 102 |
| Millgram, Sheppes, et al. (2019) | 2 | Goal (Decrease/increase emotion) | Motivational | ERC 2 | 0.85 | 37 |
| Millgram, Sheppes, et al. (2019) | 3 | Goal (Decrease/increase emotion) | Motivational | ERC 2 | 0.82 | 30 |
| Millgram, Sheppes, et al. (2019) | 3 | Valence of the focal emotion | Affective | ERC 2 | 0.03 | 30 |
| Millgram, Sheppes, et al. (2019) | 5 | Goal (Decrease/increase emotion) | Motivational | ERC 2 | 0.86 | 58 |
| Millgram, Sheppes, et al. (2019) | 5 | Mental health | Individual | ERC 2 | 0.17 | 58 |
| Milyavsky et al. (2019) | 1 | Effort | Cognitive | ERC 1 | 0.21 | 40 |
| Milyavsky et al. (2019) | 1 | Intensity of the emotion | Affective | ERC 1 | 0.2 | 40 |
| Milyavsky et al. (2019) | 2 | Effort | Cognitive | ERC 1 | 0.81 | 89 |
| Milyavsky et al. (2019) | 2 | Intensity of the emotion | Affective | ERC 1 | 0.48 | 89 |
| Milyavsky et al. (2019) | 3 | Effort | Cognitive | ERC 1 | 0.32 | 128 |
| Milyavsky et al. (2019) | 3 | Intensity of the emotion | Affective | ERC 1 | 0.27 | 128 |
| Murphy & Young (2017) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.33 | 52 |
| Murphy & Young (2017) | 1 | Previous choice, previous affect | Individual | ERC 2 | 0.16 | 52 |
| Murphy & Young (2020) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.14 | 68 |
| Oliver (2008) | 2 | Valence of the focal emotion | Affective | ERC 5 | 0.34 | 124 |
| Oliver (2008) | 3 | Valence of the focal emotion | Affective | ERC 5 | 0.35 | 96 |
| Orejuela-Dávila et al. (2019) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.82 | 109 |
| Orejuela-Dávila et al. (2019) | 1 | Post-traumatic growth | Individual | ERC 2 | 0.24 | 109 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Ossenfort & Isaacowitz (2018) | 1 | Age | Individual | ERC 3 | 0.31 | 61 |
| Ossenfort & Isaacowitz (2018) | 1 | Age | Individual | ERC 4 | 0.19 | 61 |
| Ossenfort et al. (2020) | 1 | Age | Individual | ERC 3 | 0.11 | 111 |
| Ozkaya (2014) | 1 | Gender | Individual | ERC 3 | 0.14 | 144 |
| Ozkaya (2014) | 1 | TV viewing habits | Individual | ERC 3 | 0.22 | 83 |
| Ozkaya (2014) | 1 | Emotion regulation: depleted, non-depleted | Individual | ERC 3 | 0.16 | 83 |
| Park (2018) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.64 | 128 |
| Petersen (2012) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.3 | 80 |
| Petersen (2012) | 2 | Valence of the focal emotion | Affective | ERC 5 | 0.35 | 61 |
| Pletzer et al. (2015) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.51 | 39 |
| Pletzer et al. (2015) | 1 | Occupation | Individual | ERC 2 | 0.08 | 39 |
| Pliskin et al. (2018) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.33 | 101 |
| Porat, Halperin & Tamir (2016) | A2 | Political ideology | Social-Cultural | ERC 5 | 0.19 | 114 |
| Porat, Halperin & Tamir (2016) | A4 | Political ideology | Social-Cultural | ERC 5 | 0.23 | 155 |
| Porat, Halperin & Tamir (2016) | B4 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.11 | 70 |
| Porat, Halperin, et al. (2016) | 2 | Need to belong | Social-Cultural | ERC 5 | 0.35 | 55 |
| Porat, Halperin, et al. (2016) | 3 | Need to belong | Social-Cultural | ERC 5 | 0.25 | 109 |
| Porat, Halperin, et al. (2016) | 1a | Need to belong | Social-Cultural | ERC 5 | 0.34 | 94 |
| Porat, Halperin, et al. (2016) | 1a | Perceived utility of emotion(s) | Individual | ERC 5 | 0.58 | 94 |
| Porat, Halperin, et al. (2016) | 1b | Need to belong | Social-Cultural | ERC 5 | 0.22 | 237 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Porat, Halperin, et al. (2016) | 1b | Perceived utility of emotion(s) | Individual | ERC 5 | 0.46 | 237 |
| Porat et al. (2018) | 1 | Political ideology | Social-Cultural | ERC 3 | 0.29 | 118 |
| Reinecke et al. (2012) | 1 | Valence of the focal emotional | Affective | ERC 3 | 0.25 | 111 |
| Rovenpor & Isbell (2018) | 3 | Control beliefs | Individual | ERC 3 | 0.31 | 293 |
| Rovenpor & Isbell (2018) | 4 | Control beliefs | Individual | ERC 3 | 0.31 | 416 |
| Rovenpor et al. (2013) | 1 | Age | Individual | ERC 3 | 0.07 | 67 |
| Rovenpor et al. (2013) | 1 | Age | Individual | ERC 4 | 0.17 | 67 |
| Rovenpor et al. (2013) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.69 | 67 |
| Rovenpor et al. (2013) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.8 | 67 |
| Sai et al. (2020) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.72 | 31 |
| Sai et al. (2020) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.5 | 30 |
| Sai et al. (in prep) | 3 | Intensity of the emotion | Affective | ERC 2 | 0.75 | 30 |
| Sands (2017) | 2 | Age | Individual | ERC 3 | 0.26 | 245 |
| Sands & Isaacowitz (2017) | 1 | Age | Individual | ERC 3 | 0.42 | 59 |
| Sands & Isaacowitz (2017) | 1 | Level of arousal | Affective | ERC 3 | 0.81 | 59 |
| Sands & Isaacowitz (2017) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.42 | 59 |
| Sands et al. (2016) | 1 | Age | Individual | ERC 4 | 0.27 | 60 |
| Sands et al. (2016) | 1 | Level of arousal | Affective | ERC 4 | 0.09 | 60 |
| Sands et al. (2016) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.28 | 60 |
| Sauer et al. (2016) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.85 | 75 |
| Sauer et al. (2016) | 1 | Mental health | Individual | ERC 2 | 0.05 | 75 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Sauer et al. (2016) | 1 | Nature of emotional event | Affective | ERC 2 | 0 | 75 |
| Scheibe et al. (2015) | 1 | Age | Individual | ERC 2 | 0.37 | 77 |
| Scheibe et al. (2015) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.72 | 77 |
| Scheibe et al. (2015) | 1 | Level of executive control | Individual | ERC 2 | 0.33 | 77 |
| Schwartz et al. (2018) | 1 | Goal | Motivational | ERC 5 | 0.62 | 102 |
| Schwartz et al. (2018) | 1 | Level of construal | Cognitive | ERC 5 | 0.19 | 102 |
| Schwartz et al. (2018) | 2 | Level of construal | Cognitive | ERC 5 | 0.02 | 126 |
| Schwartz et al. (2018) | 2 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.89 | 126 |
| Schwartz et al. (2018) | 3 | Level of construal | Cognitive | ERC 5 | 0.36 | 88 |
| Schwartz et al. (2018) | 3 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.7 | 88 |
| Shafir et al. (2015) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.56 | 27 |
| Shafir, Guarino, et al. (2016) | 1 | Self-esteem | Individual | ERC 2 | 0.08 | 41 |
| Shafir, Thiruchselvam, et al. (2016) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.46 | 24 |
| Shafir et al. (2018) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.32 | 29 |
| Shafir et al. (2020) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.86 | 37 |
| Shafir et al. (2020) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.82 | 43 |
| Shen et al. (2020) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.11 | 180 |
| Shen et al. (2020) | 3 | Valence of the focal emotion | Affective | ERC 5 | 0.19 | 130 |
| Shen et al. (2020) | 4 | Valence of the focal emotion | Affective | ERC 5 | 0.03 | 312 |
| Shen et al. (2020) | 5 | Valence of the focal emotion | Affective | ERC 5 | 0.13 | 115 |
| Sheppes et al. (2011) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.83 | 20 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Sheppes et al. (2011) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.85 | 20 |
| Sheppes et al. (2011) | 3 | Intensity of the emotion | Affective | ERC 2 | 0.61 | 16 |
| Sheppes et al. (2014) | 1 | Incentives (money) | Motivational | ERC 2 | 0.61 | 20 |
| Sheppes et al. (2014) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.82 | 20 |
| Sheppes et al. (2014) | 2 | Affordances | Cognitive | ERC 2 | 0.32 | 30 |
| Sheppes et al. (2014) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.79 | 30 |
| Sheppes et al. (2014) | 3 | Goal (use of strategy for short-term benefits or longer-term benefits) | Motivational | ERC 2 | 0.46 | 22 |
| Sheppes et al. (2014) | 3 | Intensity of the emotion | Affective | ERC 2 | 0.94 | 22 |
| Sheppes et al. (2014) | 4 | Intensity of the emotion | Affective | ERC 2 | 0.77 | 22 |
| Sheppes et al. (2014) | 5 | Intensity of the emotion | Affective | ERC 2 | 0.47 | 26 |
| Sheppes et al. (2014) | 6 | Intensity of the emotion | Affective | ERC 2 | 0.82 | 18 |
| Suri et al. (2015) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.09 | 25 |
| Suri et al. (2015) | 3 | Affordances | Cognitive | ERC 2 | 0.16 | 88 |
| Suri et al. (2015) | 3 | Presence of absence of a default strategy | Cognitive | ERC 2 | 0.6 | 88 |
| Szczygieł & Baryła (2019) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.8 | 40 |
| Szczygieł & Baryła (2019) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.85 | 40 |
| Tahlier et al. (2013) | 1 | Nature of emotional event | Affective | ERC 5 | 0.35 | 49 |
| Tahlier et al. (2013) | 2 | Control beliefs (manipulated) | Individual | ERC 5 | 0.27 | 79 |
| Tahlier et al. (2013) | 2 | Nature of emotional event | Affective | ERC 5 | 0.32 | 79 |
| Tamir (2005) | 2 | Anticipation of an upcoming task | Motivational | ERC 5 | 0.23 | 227 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Tamir (2005) | 2 | Neuroticism | Individual | ERC 5 | 0.17 | 227 |
| Tamir (2005) | 2 | Valence of the focal emotion | Affective | ERC 5 | 0.23 | 227 |
| Tamir (2005) | 3 | Neuroticism | Individual | ERC 3 | 0.53 | 47 |
| Tamir (2005) | 4 | Neuroticism | Individual | ERC 3 | 0.21 | 92 |
| Tamir (2009) | 3 | Extraversion | Individual | ERC 5 | 0.41 | 40 |
| Tamir (2009) | 3 | Valence of the focal emotion | Affective | ERC 5 | 0.14 | 40 |
| Tamir & Ford (2009) | 1 | Gender | Individual | ERC 5 | 0.29 | 40 |
| Tamir & Ford (2009) | 1 | Goal (of upcoming task) | Motivational | ERC 5 | 0.89 | 40 |
| Tamir & Ford (2009) | 2 | Goal (of upcoming task) | Motivational | ERC 5 | 0.96 | 98 |
| Tamir & Ford (2012a) | 1 | Gender | Individual | ERC 5 | 0.2 | 175 |
| Tamir & Ford (2012a) | 1 | Goal (of upcoming task) | Motivational | ERC 5 | 0.55 | 173 |
| Tamir & Ford (2012a) | 1 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.66 | 173 |
| Tamir & Ford (2012a) | 1 | Personal preference for emotions | Individual | ERC 5 | 0.19 | 173 |
| Tamir & Ford (2012b) | 1 | Goal (of upcoming task) | Motivational | ERC 5 | 0.35 | 71 |
| Tamir & Ford (2012b) | 1 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.25 | 71 |
| Tamir & Ford (2012b) | 2 | Goal (of upcoming task) | Motivational | ERC 5 | 0.37 | 48 |
| Tamir & Ford (2012b) | 2 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.36 | 48 |
| Tamir, Chui, & Gross (2007) | 1 | Anticipation of an upcoming task | Motivational | ERC 5 | 0.61 | 50 |
| Tamir, Chui, & Gross (2007) | 1 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.33 | 50 |
| Tamir et al. (2008) | 1 | Goal (of upcoming task) | Motivational | ERC 5 | 0.84 | 82 |
| Tamir et al. (2013) | 1 | Goal (of upcoming task) | Motivational | ERC 5 | 0.37 | 92 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Tamir et al. (2013) | 1 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.22 | 92 |
| Tamir et al. (2015) | 1 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.32 | 57 |
| Tamir et al. (2015) | 2 | Gender | Individual | ERC 5 | 0.36 | 66 |
| Tamir et al. (2015) | 2 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.44 | 66 |
| Tamir et al. (2015) | 3 | Gender | Individual | ERC 5 | 0.26 | 69 |
| Tamir et al. (2015) | 3 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.37 | 69 |
| Tamir et al. (2015) | 4 | Perceived utility of emotion(s) | Individual | ERC 3 | 0.5 | 62 |
| Tamir et al. (2015) | 5 | Gender | Individual | ERC 5 | 0.28 | 60 |
| Tamir et al. (2015) | 5 | Perceived utility of emotion(s) | Individual | ERC 5 | 0.27 | 60 |
| Taylor & Friedman (2014) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.22 | 88 |
| Taylor & Friedman (2015) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.42 | 47 |
| Taylor & Friedman (2015) | 2 | Nature of emotional event | Affective | ERC 5 | 0.12 | 172 |
| Taylor & Friedman (2015) | 2 | Valence of the focal emotion | Affective | ERC 5 | 0.39 | 172 |
| Taylor & Friedman (2015) | 3 | Nature of emotional event | Affective | ERC 5 | 0.06 | 89 |
| Taylor & Friedman (2015) | 3 | Valence of the focal emotion | Affective | ERC 5 | 0.27 | 89 |
| Thoma et al. (2012) | 1 | Control beliefs | Individual | ERC 5 | 0.13 | 89 |
| Tice et al. (2001) | 3 | Control beliefs (manipulated) | Individual | ERC 4 | 0.4 | 88 |
| Tsai et al. (2007) | 4 | Culture | Social-Cultural | ERC 3 | 0.36 | 140 |
| Tsai et al. (2007) | 4 | Goal (leader or matcher condition) | Motivational | ERC 3 | 0.33 | 140 |
| Van Bockstaele et al. (2020) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.52 | 38 |
| Van Bockstaele et al. (2020) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.65 | 38 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Vishkin et al. (2020) | 1 | Specific emotions | Affective | ERC 2 | 0.29 | 96 |
| Vishkin et al. (2020) | 2 | Specific emotions | Affective | ERC 2 | 0.31 | 40 |
| Vishkin et al. (2020) | 4a | Specific emotions | Affective | ERC 2 | 0.43 | 100 |
| Vujović & Urry (2018) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.08 | 46 |
| Vujović & Urry (2018) | 2 | Valence of the focal emotion | Affective | ERC 3 | 0.43 | 90 |
| Vujović et al. (2014) | 1 | Level of arousal | Affective | ERC 3 | 0.25 | 58 |
| Vujović et al. (2014) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.86 | 58 |
| Wegener & Petty (1994) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.28 | 112 |
| Wegener & Petty (1994) | 2 | Valence of the focal emotion | Affective | ERC 5 | 0.31 | 131 |
| Wegener & Petty (1994) | 3 | Valence of the focal emotion | Affective | ERC 5 | 0.38 | 19 |
| Wilson (2018) | 2 | Control beliefs | Individual | ERC 2 | 0.18 | 202 |
| Wood et al. (2009) | 1 | Self-esteem | Individual | ERC 1 | 0.12 | 122 |
| Wood et al. (2009) | 1 | Valence of the focal emotion | Affective | ERC 1 | 0.49 | 122 |
| Wood et al. (2009) | 3 | Self-esteem | Individual | ERC 1 | 0.09 | 57 |
| Wood et al. (2009) | 3 | Valence of the focal emotion | Affective | ERC 1 | 0.33 | 57 |
| Wood et al. (2009) | 4 | Valence of the focal emotion | Affective | ERC 5 | 0.13 | 62 |
| Xue et al. (2018) | 1 | Valence of the focal emotion | Affective | ERC 5 | 0.52 | 49 |
| Yoon et al. (2020) | 1 | Mental health | Individual | ERC 3 | 0.29 | 76 |
| Young & Suri (2020) | 1 | Affordances | Cognitive | ERC 2 | 0.04 | 67 |
| Young & Suri (2020) | 1 | Intensity of the emotion | Affective | ERC 2 | 0.04 | 67 |
| Young & Suri (2020) | 1 | Specific emotions | Affective | ERC 2 | 0.02 | 67 |

**Table 2.1** - *Continued*

| Author | Study | Determinants that could potentially influence ERC | Category | Measure of ERC | *r* | *N* |
|---|---|---|---|---|---|---|
| Young & Suri (2020) | 2 | Affordances | Cognitive | ERC 2 | 0.04 | 59 |
| Young & Suri (2020) | 2 | Intensity of the emotion | Affective | ERC 2 | 0.03 | 59 |
| Young & Suri (2020) | 2 | Specific emotions | Affective | ERC 2 | 0.01 | 59 |
| Young & Suri (2020) | 3 | Affordances | Cognitive | ERC 2 | 0.02 | 51 |
| Young & Suri (2020) | 3 | Intensity of the emotion | Affective | ERC 2 | 0.03 | 51 |
| Young & Suri (2020) | 3 | Specific emotions | Affective | ERC 2 | 0.03 | 51 |
| Zhao (2018) | 1 | Valence of the focal emotion | Affective | ERC 3 | 0.22 | 268 |
| Zillmann et al. (1980) | 1 | Gender | Individual | ERC 4 | 0.1 | 72 |
| Zillmann et al. (1980) | 1 | Valence of the focal emotion | Affective | ERC 4 | 0.26 | 72 |

*Note*. ERC 1 = intentions to regulate, ERC 2 = choice of strategy, ERC 3 = choice of stimuli, ERC 4 = time spent with stimuli, ERC 5 = emotional preferences

## 2.3. Results

### 2.3.1. What influences intentions to regulate and ERC?

Eighteen potential determinants of intentions to regulate and/or ERC were identified across the 219 studies. The discussion of these below is organised with respect to the nature of the potential determinant – i.e., affective, cognitive, motivational, individual, or social-cultural.

### 2.3.2. Affective Determinants

Five affective factors that could influence intentions to regulate and/or ERC were identified, including the *valence* and *intensity* of the target emotion, along with the *level of arousal*, the *nature of the emotional event* (e.g., whether it is self-relevant, resolved etc.), and the *specific emotion* to be regulated.

The *valence* of the focal emotion was the most frequently studied factor ($k = 81$) and has been studied in relation to intentions to regulate and across all four measures of ERC. In terms of how valence influences intentions to regulate and ERC, it seems that people are more motivated to regulate negative than neutral emotions (Wood et al., 2009). Studies have also found differences in the regulation strategies that people choose in response to positive and negative stimuli. For example, Hay and colleagues (2015) found that participants had stronger preferences for distraction when regulating their responses to negative than when regulating their responses to positive images. Additionally, people generally prefer to approach positive stimuli and/or avoid negative stimuli (Isaacowitz et al., 2015, 2018; Sands & Isaacowitz, 2017; Sands et al., 2016; Vujović & Urry, 2018), but the valence of an individual's emotions can influence the stimuli that people choose to engage with or prefer, with several studies finding a mood-congruency effect in which participants select (e.g., Friedman et al., 2012, Study 1; Kim, 2013) or prefer (e.g., Erber et al., 1996, Study 1; Greenwood, 2010) stimuli that are in line with the valence of their mood. Sample-weighted

average effect sizes ranged from medium ($r_{+\,adj} = 0.21$) to very large ($r_{+} = 0.41$) for the association between valence of the focal emotion and ERC (see Table 2.2).

Fifty-eight studies examined the relationship between emotional *intensity* and intentions to regulate and ERC. The emotional intensity of a situation has been most frequently examined in relation to the choice of regulation strategy ($k = 51$), with studies repeatedly showing that people typically choose to distract themselves in response to relatively intense negative emotional situations while they choose to reappraise in response to less intense negative emotional situations (e.g., Hay et al., 2015; Sheppes et al., 2011, 2014). This pattern of results has also been demonstrated in response to positive images (e.g., Martins et al., 2018; Shafir et al., 2018) and negative sounds (Feldman & Freitas, 2021, Study 2), words (Aharon, 2018), and shocks (Sheppes et al., 2011, Study 3). Furthermore, this pattern of findings has been found when the intensity of an emotional experience is measured, rather than manipulated (e.g., Orejuela-Dávila et al., 2019; Shafir, Thiruchselvam, et al., 2016; Young & Suri, 2020). A few studies have also found that the emotional intensity of a situation influences intentions to regulate emotions (e.g., Mehta et al., 2017; Milyavsky et al., 2019) – with evidence that participants are more willing to regulate their emotional responses to high-intensity images compared to low-intensity images (Mehta et al., 2017) - and that intensity influences whether people choose to switch or maintain a regulation strategy (e.g., Birk & Bonanno, 2016; Dorman-Ilan et al., 2020; Murphy & Young, 2020). The intensity of the emotion was found to have a very large-sized relationship with both intentions to regulate ($r_{+} = 0.46$) and the choice of strategy ($r_{+} = 0.61$) (see Table 2.2).

Fourteen studies examined whether and how *levels of arousal* influence ERC, with the most frequently studied outcome measure being the stimuli that participants choose to engage with ($k = 8$). The primary studies reported mixed effects of arousal. For example, some studies found that moderately and highly arousing stimuli were typically viewed more

than less arousing stimuli (Sands & Isaacowitz, 2017), whereas other studies found no differences in the frequency with which they were chosen (Sands, 2017) or the amount of time that participants chose to engage with the stimuli (Sands et al., 2016). Similarly, some studies have found that people who are stressed (i.e., high in arousal) are more likely to choose to watch relaxing or undemanding content compared to those who are bored (i.e., low in arousal, Bowman & Tamborini, 2015; Bryant & Zillmann, 1984), whereas others have not found a difference between people who were overstimulated (i.e., stressed) and under stimulated (e.g., in the selection of relaxing websites, Mastro et al., 2002). Other studies have found that arousal interacts with the valence of the stimuli (Vujović et al., 2014), or the age of the individual (e.g., Sands et al., 2016) to determine choice. Finally, there is some evidence that level of arousal influences whether people choose to switch to a different regulation strategy, with Birk and Bonanno (2016) finding that people switch from reappraisal to distraction on more arousing trials (Study 1), although arousal did not affect when participants switched from distraction to reappraisal (Study 2). Taken together, there was a very large-sized association between the level of arousal and the choice of stimuli ($r_+ = 0.47$); however, as the studies above illustrate, the way that arousal influences ERC is mixed.

Nine studies examined whether and how the *nature of the emotional event* affects ERC by measuring participants' choice of strategy, stimuli (often music) and/or emotional preferences. Studies typically find that the nature of the emotional event influences regulatory choices. For example, studies have found differences in choices and/or preferences for music depending on whether the emotional event that the participants is trying to regulate is resolved or unresolved (Tahlier et al., 2013), whether the emotional event involves interpersonal loss (e.g., losing a significant other) or a non-interpersonal loss (e.g., failing an exam, DeMarco et al., 2015), and how the emotion is induced (e.g., reality-based vs. fiction based, DeMarco & Friedman, 2018). However, the self-relevance of the emotional event does

not seem to influence preferences (Taylor & Friedman, 2015). Taken together, it seems how people choose to regulate their emotions can be influenced by the nature of the emotional event; however, too few studies have examined how the nature of the event relates to specific measures of ERC to estimate the magnitude of the relationship using meta-analysis.

Finally, nine studies investigated whether *specific emotions* influence emotion regulation choice. For example, different discrete emotions may influence whether people choose distraction or reappraisal to regulate their emotions (Young & Suri, 2020) and/or what specific tactics they choose to reappraise. Vishkin et al. (2020) found that people preferred to use the reappraisal tactic of acceptance (e.g., tell themselves that "nothing could be done") when regulating sadness, but tried to think about alternative future consequences (e.g., tell themselves that "things will turn out better than expected") when regulating fear. Other studies suggest that anger influences people's preferences for different activities (Harmon-Jones et al., 2018) and the information that people choose to engage with (de los Santos & Nabi, 2019). Taken together, there was a medium-sized association between specific emotions and the choice of strategy ($r_+ = 0.20$, see Table 2).

**Table 2.2**

*Sample-Weighted Average Relationships between Determinants (Organised by Category) and Measures of Intentions to Regulate and ERC*

| | | Measure | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Intentions to regulate | | | Choice of strategy | | | Choice of stimuli | | | Time spent with stimuli | | | Preference for stimuli | | |
| | | | | 95% CI | | | 95% CI | | | 95% CI | | | 95% CI | | | 95% CI |
| Category | Factor | $r_+$ | *k* | LL, UL | $r_+$ | *k* | LL, UL | $r_+$ | *k* | LL, UL | $r_+$ | *k* | LL, UL | $r_+$ | *k* | LL, UL |
| Affective | Intensity | 0.46 [a] | 6 | 0.25, 0.63 | 0.61 [a] | 51 | 0.53, 0.68 | - | 1 | - | - | - | - | - | - | - |
| | Arousal | - | 1 | - | - | 3 | - | 0.47 [a] | 8 | 0.10, 0.72 | - | 2 | - | - | - | - |
| | Valence | - | 2 | - | 0.41 [a] | 6 | -0.07, 0.73 | 0.32 [a] | 23 | 0.21, 0.42 | 0.21 [a b] | 17 | 0.15, 0.40 | 0.22 [a b] | 33 | 0.25, 0.30 |
| | Nature | - | - | - | - | 2 | - | - | 3 | - | - | - | - | - | 4 | - |
| | Specific Emotions | - | - | - | 0.20 [a] | 6 | -0.01, 0.39 | - | 1 | - | - | - | - | - | 2 | - |
| Cognitive | Affordances | - | - | - | 0.10 | 5 | -0.03, 0.23 | - | - | - | - | - | - | - | - | - |
| | Effort | - | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | Construal Level | - | - | - | - | - | - | - | - | - | - | - | - | - | 3 | - |
| | Defaults | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |

**Table 2.2 -** *Continued*

| | | Intentions to regulate | | | Choice of strategy | | | Choice of stimuli | | | Time spent with stimuli | | | Preference for stimuli | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 95% CI | | | 95% CI | | | 95% CI | | | 95% CI | | | 95% CI |
| Category | Factor | $r_+$ | $k$ | LL, UL | $r_+$ | $k$ | LL, UL | $r_+$ | $k$ | LL, UL | $r_+$ | $k$ | LL, UL | $r_+$ | $k$ | LL, UL |
| Motivational | Goals | - | - | - | - | 4 | - | - | 2 | - | - | 1 | - | 0.70 [a] | 10 | 0.40, 0.84 |
| | Anticipation of Upcoming Task/Situation | - | 2 | - | - | - | - | - | 4 | - | - | 2 | - | - | 4 | - |
| | Incentives | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - |
| Individual | Individual Differences | - | 4 | - | 0.18 | 7 | 0.10, 0.26 | 0.27 [a] | 19 | 0.21, 0.33 | 0.21 [a] | 5 | 0.01, 0.40 | 0.38 [a] | 22 | 0.27, 0.49 |
| | Gender | - | - | - | - | - | - | 0.23 | 5 | 0.12, 0.33 | - | 4 | - | 0.21 [b] | 9 | 0.13, 0.29 |
| | Age | - | - | - | - | 2 | - | 0.19 | 7 | 0.08, 0.30 | 0.17 | 10 | 0.11, 0.23 | - | 1 | - |
| | Mental Health | - | - | - | 0.15 | 5 | 0.01, 0.29 | - | 4 | - | - | - | - | - | 2 | - |
| Social-Cultural | Social Context | - | 1 | - | - | 2 | - | - | 1 | - | - | - | - | 0.25 | 6 | 0.19, 0.31 |
| | Cultural Context | - | 3 | - | - | 1 | - | - | 1 | - | - | - | - | - | - | - |

*Note*. Determinants are ordered within a category by the average size of their (sample-weighted average) relationship with the measures of intentions to regulate and ERC. $k$ = the number of independent tests of the association included in the analysis; $r_+$ = sample-weighted average effect size; 95% CI = the 95% confidence interval. Confidence intervals that do not contain zero indicate that the effect size is significant at the $p < .05$ level.

[a] Indicates that the Q statistic was significant at $p < .05$ suggesting that the effect sizes from the primary studies were heterogeneous. [b] Indicates that the sample-weighted average $r_+$ was adjusted using Duval and Tweedie's (2000) trim and fill technique.

### 2.3.3. Cognitive Determinants

Four potential cognitive determinants of intentions to regulate and ERC were identified: *Affordances* or opportunities for using particular regulation strategies inherent within emotional stimuli (e.g., reappraisal and distraction affordances), *cognitive effort* (e.g., how difficult it was to reappraise), *construal level* (e.g., low- vs. high-level construal) and the presence of a *default strategy*, which refers to the option selected if people do not decide.

Five studies examined the role of *affordances* on ERC – in each case, operationalised in terms of what strategy people chose to regulate their emotions. The findings suggest that both self-reported reappraisal affordances (but not distraction affordances, Young & Suri, 2020) and experimentally manipulated reappraisal affordances (Sheppes et al., 2014, Study 2; Suri et al., 2015) are associated with a greater choice of reappraisal. Taken together, there was a small-sized association between affordances and choice of strategy ($r_+ = 0.10$, see Table 2.2).

Three studies examined the role of (anticipated or actual) *effort* associated with regulation on intentions to regulate. Milyavsky and colleagues (2019) manipulated cognitive effort in two studies by having participants make choices that they would not implement (low effort) and by making choices that they had to subsequently implement (high effort). In a third study, participants were presented with reappraisal instructions that were more effortful to implement (i.e., rethink as positive) or less effortful to implement (i.e., rethink as fake). The findings suggested that participants were more likely to choose reappraisal when the cognitive effort was reduced (Study 2); although there was also evidence that cognitive effort interacted with emotional intensity to determine whether people chose to reappraise or to watch the images (Studies 1 and 3). Specifically, participants were more likely to choose to reappraise their emotional response to high-intensity images when the cognitive effort was

low compared to when the cognitive effort was high. Taken together, these findings suggest that people consider the effort required when making regulatory decisions.

Three studies examined whether an individual's *level of construal* influenced their emotional preferences. For example, Schwartz and colleagues (2018) manipulated the level of construal by presenting participants with a goal (e.g., maintain a healthy relationship) and asking them to either explain why they wished to pursue the goal (a procedure that invoked a high-construal level) or how they wished to pursue the goal (a procedure that invoked a low-construal level). The findings suggested that people are more likely to take into account how useful emotions will be when they adopt a higher level of construal compared to a lower level of construal. For example, invoking higher-level construals led participants to report stronger preferences for anger when anger was thought to be useful, whereas invoking low-level construals meant that preferences for emotions were not influenced by how useful they were thought to be. Taken together, these findings suggest that an individual's construal can influence what emotions they prefer to experience.

Finally, only one study to date has examined the role of *defaults* in shaping ERC. Specifically, Suri and colleagues (2015, Study 3) either asked participants to choose whether to reappraise or watch an image, or provided participants with a default option (e.g, watch the image) and asked whether they wanted to override and choose the alternative option instead (if participants did nothing, then the default option was chosen). It was found that participants were less likely to choose to regulate their emotions (using reappraisal) if the default option was simply to watch the image (compared to if there was no default option or the default option was to use reappraisal). Thus, intentions to regulate may be influenced by the presence of a default option.

### 2.3.4. Motivational Determinants

The primary studies considered three potential motivational determinants of intentions to regulate and/or ERC: the goal or *goals* that are salient at the point of choice (e.g., approach vs. avoidance), the *anticipation of an upcoming task*, and *incentives* such as money.

Seventeen studies examined whether *goals* influence ERC. For example, studies have found differences in which strategies people choose as a function of both *temporal* goals (e.g., studies have found a greater preference for reappraisal for long-term vs. short-term goals, Sheppes et al., 2014) and *directional* goals (e.g., studies have found that people prefer to use distraction when trying to decrease emotions, but rumination when trying to increase emotions, Millgram, Sheppes, et al., 2019). Some studies have examined the role of more *situational/instrumental* goals on ERC. These studies typically find that people prefer emotions that will (or they believe will) help them to achieve a particular goal, whether it be a positive emotion, such as preferring to experience happiness when the goal of the task is to collaborate with someone (e.g., Tamir & Ford, 2012a, 2012b; Tamir et al., 2013) or a negative emotion, such as fear, when the goal is to avoid something dangerous (e.g., Tamir & Ford, 2009). Goals were found to have a very large-sized relationship with preferences for emotional stimuli ($r_+ = 0.70$, see Table 2.2).

Twelve studies found that *anticipating* an upcoming task or situation was associated with intentions to regulate and ERC, suggesting that people consider the nature of the task ahead when choosing how to regulate their emotions. Specifically, evidence suggests that whether participants anticipate doing a task that involves creative or analytical skills influences what stimuli they choose to engage with (Cohen & Andrade, 2004, Studies 2 and 4). Similarly, whether a task is cognitively demanding (Tamir, 2005, Study 2) or potentially threatening (i.e., an intelligence test, Tamir, Chiu, & Gross, 2007) influences participants' emotional preferences. Evidence suggests that people also take into consideration whether

they will interact with another person when choosing how to control their emotions, and also the mood of the person that they will interact with (Erber et al., 1996). That being said, other studies have not found that anticipating an upcoming task is associated with the amount of time that people choose to engage with stimuli (e.g., Cohrdes et al., 2017) and that the effect of anticipating an upcoming task on intentions to regulate can depend on the cultural background of the individual doing the regulating. For example, Ma et al. (2018) found that anticipating a task that requires high cognitive effort led American participants to report trying to savour (vs. dampen) positive emotions more frequently than it did Asian participants. It is worth noting that most studies to date have experimentally manipulated whether participants anticipate upcoming tasks and only one study to date has measured what future activities people (naturally) anticipated in their day-to-day lives at the point of choosing what media to engage with (Bolt, 2016). Nevertheless, these findings suggest that anticipating an upcoming task can influence intentions to regulate and ERC.

Finally, only one study has examined the role of *incentives* on ERC to date – specifically, Sheppes et al. (2014, Study 1) varied the monetary incentive associated with using different regulatory options between trials. It was found that increasing the monetary incentive of a strategy increased its selection, suggesting that incentives influence choice.

### 2.3.5. Individual Determinants

Studies to date have considered four individual determinants of intentions to regulate and/or ERC including demographic determinants such as *age* and *gender* and also other individual determinants such as *mental health* and both state- and trait-like *individual differences* (e.g., levels of neuroticism, beliefs about emotions).

Twenty studies have examined the effect of *age* across all four measures of ERC. These studies highlight age differences in the strategies that people typically choose in response to positive (Martins et al., 2018) and negative stimuli (Martins et al., 2018; Scheibe

et al., 2015). For example, Scheibe and colleagues (2015) found that older participants showed a stronger preference for distraction than younger adults. Similarly, there appear to be age differences in the stimuli that participants choose to engage with (e.g., Sands & Isaacowitz, 2017) and the amount of time that participants choose to engage with different stimuli (e.g., Cohrdes et al., 2017; Livingstone & Isaacowitz, 2015). That being said, the findings were mixed, with some studies not finding any age differences in ERC (e.g., Ossenfort & Isaacowitz, 2018). Sample-weighted average effect sizes for the association between age and ERC were small, ranging from $r_+ = 0.17$ (for time spent with stimuli) to $r_+ = 0.19$ (for choice of stimuli).

Eighteen studies examined the effect of *gender* on three measures of ERC. Studies have found differences between males and females in the stimuli that they choose to engage with (e.g., Biswas et al., 1994; Ozkaya, 2014) and their emotional preferences (Greenwood, 2010) following mood inductions, and also the amount of time that they choose to spend with different stimuli when expecting an opportunity to retaliate (Knobloch-Westerwick & Alter, 2006). While males and females have been found to prefer the same emotions as a function of the goal of the situation, women typically have stronger preferences than men (Tamir & Ford, 2012a). However, while primary studies have found differences in ERC as a function of gender, as with the effects of age, the findings have been mixed. For example, some studies suggest that females have a stronger preference for positive (compared to negative) stimuli than males (e.g., Tamir et al., 2015), whereas others suggest the opposite (e.g., Erber et al., 1996) or have not found an effect of gender on ERC (e.g., Kim & Oliver, 2011; Zillmann et al., 1980). Nevertheless, meta-analytic results suggest that, across the evidence to date, gender has medium-sized associations with the choice of stimuli ($r_+ = 0.23$) and emotional preferences ($r_{+adj} = 0.21$).

Eleven studies examined the association between different *mental health disorders* and measures of ERC. These studies did not typically find differences in ERC across different mental health disorders including bipolar disorder (Hay et al., 2015), borderline personality disorder (Sauer et al., 2016), or major depressive disorder (Millgram, Sheppes, et al., 2019). Other studies have, however, found that depressed participants are more likely to choose to engage with sad stimuli compared to healthy controls/those without a diagnosis (e.g., Arens & Stangier, 2020; Millgram et al., 2015, Study 1, Study 2; Yoon et al., 2020). Similarly, differences between these populations have been found regarding the direction with which participants choose to regulate their emotions (e.g., Millgram et al., 2015; Millgram, Joorman, et al., 2019), although there are inconsistent findings across studies. For example, Millgram and colleagues (2015) found that depressed participants were more likely to choose to upregulate sadness than non-depressed participants but there was no difference in how they responded to happy stimuli, whereas Millgram, Joorman, and colleagues (2019) found that depressed participants were less likely to choose to upregulate their reactions to happy stimuli than non-depressed participants, but there were no differences in responses to sad stimuli. These differences may, however, be accounted for by differences in how the task was administered across studies. For example, participants in Millgram et al.'s (2015) study completed the tasks in a lab setting in which active training was provided by a researcher, whereas participants in Millgram, Joorman et al.'s (2019) study completed the tasks online with written instructions. Therefore, additional research is needed. Overall, the sample-weighted average size of the relationship between mental health disorders and choice of strategy was small ($r_+ = 0.15$, see Table 2.2).

Fifty-seven studies examined the association between both state- and trait-like *individual differences* and intentions to regulate and/or ERC. In terms of intentions to regulate, the findings suggest that motivation to repair mood may depend on levels of self-

esteem (e.g., Wood et al., 2009) and/or agreeableness (e.g., Cortes et al., 2019), with higher levels of self-esteem and/or agreeableness typically associated with being more motivated to regulate emotions. Self-esteem has also been associated with what strategies people choose to regulate their emotions (Shafir, Guarino, et al., 2016) and the stimuli that people choose to engage with (Heimpel et al., 2002). Other individual differences that have been associated with how people choose to regulate their emotions include neuroticism (Tamir, 2005), dispositional regulatory style (i.e., an individual's regulation tendencies, such as the tendency to ruminate, Chen et al., 2007; Thoma et al., 2012) and (dispositional) preferences for particular emotions (Arens & Stangier, 2020; Tamir & Ford, 2012a).

Furthermore, several studies have found positive relationships between people's attitudes towards a particular emotion and whether they choose to strive for, or engage with, that emotion (Markovitch et al., 2016, 2017). ERC has also been found to be associated with people's self-reported and/or externally manipulated beliefs about particular emotions, such including how much control they believe they have over their emotions (e.g., Rovenpor & Isbell, 2018; Wilson, 2018) and how useful they perceive different emotions to be (e.g., self-reported perceived utility, Tamir et al., 2015; Tamir & Ford, 2012a, 2012b). The typical finding here is that people prefer emotions that they believe will be instrumental/useful. Sample-weighted average effect sizes ranged from medium ($r_+ = 0.18$) to large ($r_+ = 0.38$) for the association between individual differences and ERC.

### 2.3.6. Social-Cultural Determinants

To date, ten studies have examined potential *social* determinants of ERC. For example, the extent to which people feel the need to belong within a group has been found to shape emotional preferences (Porat, Halperin, et al., 2016), with people being more motivated to experience even negative group-based emotions such as sadness if they believe that it will help them to connect with their group. Political ideology has also been found to influence

people's preferences for group-based emotions (i.e., their motivation to experience emotions as a member of a group) and what strategy they typically choose to regulate emotions. More specifically, Pliskin and colleagues (2018) found liberals were more likely than conservatives to choose distraction than reappraisal in response to images depicting outgroup harm. Additionally, when faced with a threat to their group, Porat et al. (2018) found that liberals were more motivated than conservatives to engage with stimuli that are likely to lead them to experience collective angst. Taken together, social determinants were found to have a medium-sized association with emotional preferences ($r_+ = 0.25$, see Table 2.2).

Finally, only five studies have examined potential *cultural* determinants of intentions to regulate and/or ERC to date. As described above, culture has been found to shape intentions to regulate (e.g., evidence suggests that American's prefer to savour positive emotions more than Asian participants, Ma et al., 2018), but has also been found to be associated with what strategies people choose in response to high-intensity (but not low-intensity) images. For example, Mehta and colleagues (2017) found that Indian participants were more likely to use reappraisal for high-intensity images than American participants. Therefore, although the evidence base is currently quite limited, these studies suggest that cultural factors may influence ERC.

## 2.4. General Discussion

Chapter 2 sought to identify the determinants both of *whether* people try to regulate their emotions (i.e., intentions to regulate) and *how* people choose to regulate their emotions (i.e., ERC). A systematic search identified 219 studies that measured or manipulated one or more potential determinants and examined whether it influenced measures of intentions to regulate and/or ERC. Drawing on and extending Sheppes and colleagues (2014) framework, in line with Sheppes (2020), the potential determinants were categorised as affective, cognitive, motivational, individual, or social-cultural. Where there was sufficient evidence

(i.e., at least 5 studies), meta-analysis was used to quantify the size of the relationships between the potential determinants and intentions to regulate and the various measures of ERC that have been used in the empirical studies to date.

### 2.4.1. Overview of Findings

Affective factors have been the most frequently studied category of potential determinants to date ($k = 171$). The findings from the primary studies suggest that both intentions to regulate and ERC can be influenced by general aspects of emotion, such as intensity (e.g., Sheppes et al., 2011), valence (e.g., Kim, 2013; Rovenpor et al., 2013) and arousal (e.g., Bowman & Tamborini, 2015), as well as more specific aspects of emotion, such as the specific emotion to be regulated (e.g., Vishkin et al., 2020) and the nature of the emotional event (e.g., whether it is resolved or not, Tahlier et al., 2013). Overall, affective factors typically had medium-to-very large associations with intentions to regulate and ERC (effect sizes ranged from $r_+ = 0.20$ to 0.61).

Cognitive factors have been the least frequently studied category to date ($k = 12$). Despite this, cognitive factors do seem to influence both intentions to regulate and also ERC. For example, the effort associated with regulating and affordances or opportunities inherent within a stimulus have both been found to influence whether a person chooses to regulate using reappraisal (e.g., Milyavsky et al., 2019; Young & Suri, 2020). As cognitive determinants have only been considered with respect to intentions to regulate and only two measures of ERC to date, future research might not only examine the influence of other cognitive factors on choice, but also how cognitive determinants shape other measures of ERC (e.g., the stimuli that people choose to engage with in an attempt to control their emotions).

In terms of motivational factors ($k = 30$), different goals, such as temporal (e.g., Sheppes et al., 2014), directional (e.g., Millgram, Sheppes, et al., 2019), and

situational/instrumental goals (e.g., Tamir & Ford, 2012a), and also the nature of an upcoming task (e.g., creative vs. analytical, Cohen & Andrade, 2004) or interaction (e.g., Erber et al., 1996) have been found to influence how people choose to regulate their emotions. Taken together, based on the evidence reviewed, it seems that people typically choose to direct their emotions in a way that they believe will help them to achieve a goal or prepare for a task, such as neutralising their mood ahead of a social interaction (Erber et al., 1996). Overall, the evidence to date suggests that motivational factors typically have a very-large sized relationship with ERC ($r_+ = 0.70$).

Individual factors have been frequently examined ($k = 106$) across both intentions to regulate and all measures of ERC. Findings to date suggest that demographic factors (e.g., age, Cohrdes et al., 2017; gender, Biswas et al., 1994), mental health (e.g., Millgram et al., 2015) and both trait-like and state-like individual differences, including levels of neuroticism (Tamir, 2005) and beliefs about the utility of emotions (e.g., Tamir et al., 2015) influence both whether and how people choose to regulate their emotions. The findings support the idea that people typically choose to regulate in ways that are consistent with their tendencies (e.g., Chen et al., 2007), attitudes (e.g., Markovitch et al., 2016, 2017), and beliefs (e.g., Tamir & Ford, 2012a, 2012b). The findings also suggested that older people are more likely to choose to regulate their emotions in a more pro-hedonic manner (e.g., Cohrdes et al., 2017); and that gender is associated with ERC, but that the findings to date concerning how gender is associated with ERC are mixed (e.g., Erber et al., 1996; Tamir et al., 2015). Individual factors typically have small-to-large sized relationships with intentions to regulate and ERC (effect sizes ranged from $r_+ = 0.18$ to 0.38).

The final category of potential determinants identified in the present review were social-cultural factors. Compared to the other potential determinants of ERC, social-cultural determinants were relatively understudied, which is perhaps surprising given extensive

evidence on the influence and importance of contextual determinants on emotion regulation more generally (see, for example, Greenaway et al., 2018 for a review). However, the evidence to date suggests that social determinants typically have a medium-sized relationship with ERC ($r_+ = 0.25$) and, together, provide preliminary evidence that both the immediate social context and the broader cultural context can influence whether and how someone chooses to regulate their emotions.

### 2.4.2. A Framework for Understanding Intentions to Regulate and ERC

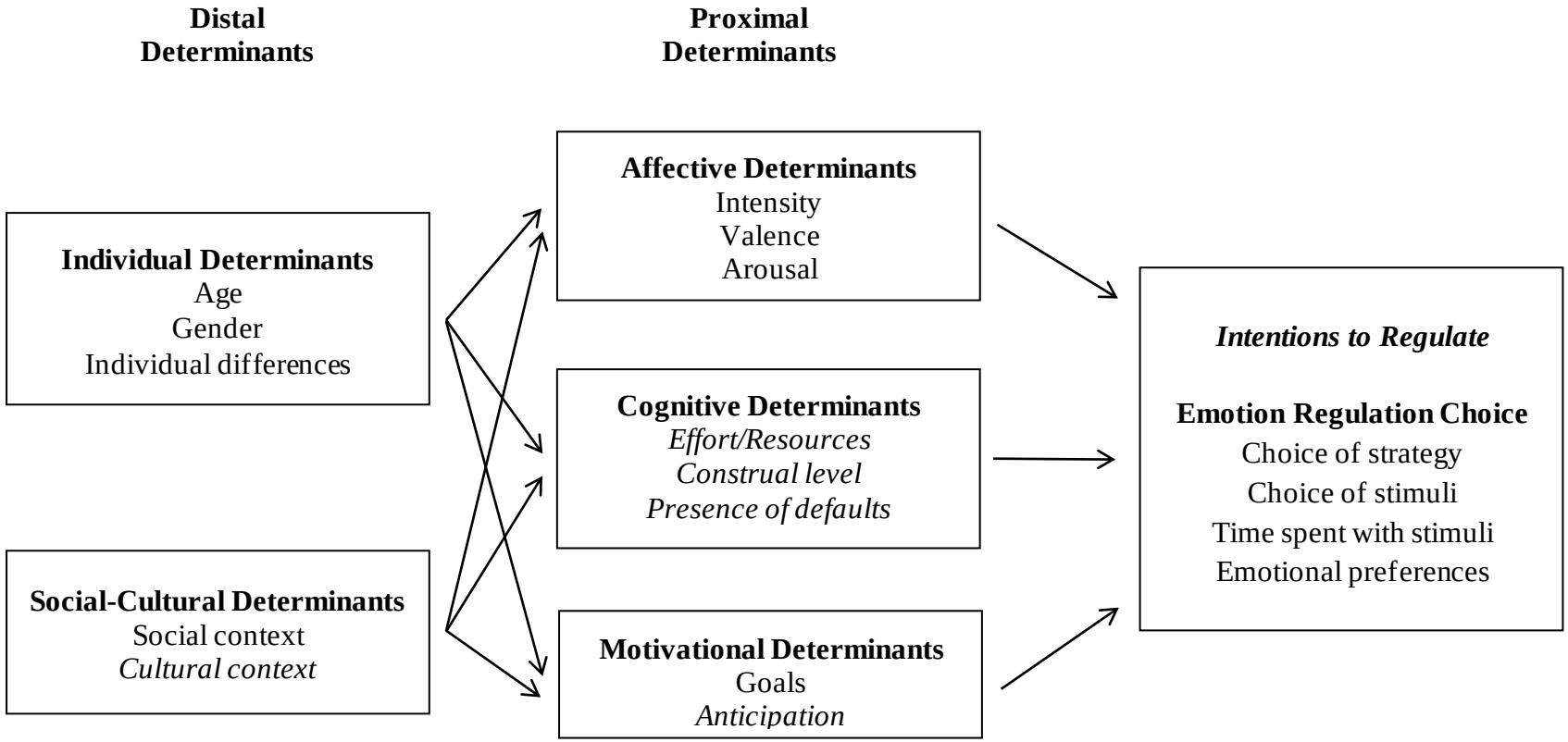
Figure 2.2 proposes a framework for understanding ERC. The framework was generated applying the guidelines outlined by Fusar-Poli and Radua (2018) to the findings of the present review to determine whether the evidence that a given factor is associated with intentions to regulate and/or ERC is (i) convincing, (ii) highly suggestive, (iii) suggestive, (iv) weak, or (v) non-significant (see Table 2.3). [4]

Determinants that were found to have found 'highly suggestive' or 'convincing' evidence were reliably associated with at least one measure of ERC were included in the framework (shown in normal font). However, the evidence to date regarding whether and how people choose to regulate their emotions is relatively limited in terms of both the potential determinants that have been studied and the number of studies examining particular determinants. Therefore, the proposed framework for understanding ERC also includes factors that seem likely to be associated with whether and how people choose to regulate their emotions, but that have received insufficient empirical attention to date (these factors are shown in italic font).

[4] Due to the limited number of studies examining the association between some of the factors and ERC, Fusar-Poli and Radua's criteria was amended and the benchmark for the number of cases to be greater than 500 (as opposed to 1000) for the evidence to be classed as either "suggestive" or "highly suggestive". Additionally, as Meta-Essentials only reports significance to 3 decimal places, the significance level was amended to $p < .001$, for "suggestive", "highly suggestive" and "convincing" evidence (from $p < .00001$). All of the other criteria remained the same.

**Figure 2.2**

*Framework for Understanding the Determinants of Intentions to Regulate and ERC*




*Note.* Factors that seem likely to be associated with whether and how people choose to control their emotions but have not received sufficient empirical attention to date are presented in italics, while factors for which convincing evidence has emerged are in normal font.

**Table 2.3**

*Assessment of the Strength of the Evidence that each Factor is Associated with ERC*

| **Measure of ERC** / Factor | Sample Size (number of cases) | Sample-weighted average effect size (95% CI) | Significance (under random-effects model) | 95% prediction interval | $I^2$ | Evidence of small-study effects / excess significance bias | Largest study effect size (95% CI) | Strength of evidence |
|---|---|---|---|---|---|---|---|---|
| **Intentions to regulate** | | | | | | | | |
| Intensity | 390 | 0.46 (0.25, 0.63) | < .001 | [-0.04, 0.77] | 66.08% | No/No | 0.27 (0.10, 0.43) | Weak |
| **Choice of strategy** | | | | | | | | |
| Intensity | 2499 | 0.61 (0.53, 0.68) | < .001 | [-0.05, 0.90] | 86.54% | No/No | 0.64 (0.52, 0.73) | Highly Suggestive |
| Valence | 370 | 0.41 (-0.07, 0.73) | .003 | [-0.73, 0.95] | 93.19% | No/No | 0.07 (-0.14, 0.27) | Weak |
| Specific Emo. | 413 | 0.20 (-0.01, 0.39) | .001 | [-0.26, 0.58] | 62.48% | No/No | 0.43 (0.25, 0.58) | Weak |
| Affordances | 295 | 0.10 (-0.03, 0.23) | .032 | [-0.03, 0.23] | 0.00% | No/Yes | 0.16 (-0.05, 0.36) | Weak |
| Mental health | 311 | 0.15 (0.01, 0.29) | .004 | [0.01, 0.29] | 0.00% | No/Yes | 0.20 (-0.02, 0.40) | Weak |
| Individual diff. | 605 | 0.18 (0.10, 0.26) | <.001 | [0.10, 0.26] | 0.00% | No/No | 0.18 (0.04, 0.31) | Highly Suggestive |
| **Choice of stimuli** | | | | | | | | |
| Valence | 3192 | 0.32 (0.21, 0.42) | <.001 | [-0.10, 0.64] | 84.23% | No/No | 0.14 (0.04, 0.26) | Highly Suggestive |
| Arousal | 790 | 0.47 (0.10, 0.72) | .003 | [-0.56, 0.93] | 94.87% | No/No | 0.16 (0.03, 0.29) | Highly Suggestive |
| Age | 863 | 0.19 (0.08, 0.30) | <.001 | [0.00, 0.37] | 31.79% | No/No | 0.26 (0.02, 0.28) | Highly Suggestive |
| Gender | 600 | 0.23 (0.12, 0.33) | <.001 | [0.12, 0.33] | 0.00% | No/Yes | 0.24 (0.11, 0.36) | Highly Suggestive |
| Individual diff. | 2305 | 0.27 (0.21, 0.33) | <.001 | [0.08, 0.44] | 46.18% | No/Yes | 0.31 (0.22, 0.39) | Highly Suggestive |
| **Time spent with stimuli** | | | | | | | | |
| Valence | 1969 | 0.21 (0.15, 0.40) | <.001 | [-0.15, 0.62] | 81.52% | No/Yes | 0.20 (0.08, 0.32) | Highly Suggestive |
| Age | 1081 | 0.17 (0.11, 0.23) | <.001 | [0.11, 0.23] | 0.00% | No/No | 0.11 (-0.02, 0.24) | Suggestive |
| Individual diff. | 689 | 0.21 (0.01, 0.40) | .004 | [-0.23, 0.58] | 72.11% | No/No | 0.35 (0.24, 0.45) | Suggestive |

**Table 2.3 -** *Continued*

| **Measure of ERC** / Factor | Sample Size (number of cases) | Sample-weighted average effect size (95% CI) | Significance (under random-effects model) | 95% prediction interval | $I^2$ | Evidence of small-study effects / excess significance bias | Largest study effect size (95% CI) | Strength of evidence |
|---|---|---|---|---|---|---|---|---|
| **Preference for stimuli** | | | | | | | | |
| Valence | 4104 | 0.22 (0.25, 0.30) | <.001 | [0.02, 0.45] | 60.39% | Yes/Yes | 0.13 (0.05, 0.22) | Highly Suggestive |
| Goal | 839 | 0.70 (0.40, 0.84) | <.001 | [-0.43, 0.97] | 95.81% | No/No | 0.55 (0.43, 0.64) | Highly Suggestive |
| Gender | 838 | 0.21(0.13, 0.28) | <.001 | [0.11, 0.29] | 3.59% | Yes/Yes | 0.20 (0.05, 0.34) | Highly Suggestive |
| Individual diff. | 2214 | 0.38 (0.27, 0.49) | <.001 | [-0.20, 0.77] | 88.78% | No/No | 0.46 (0.43, 0.70) | Highly Suggestive |
| Social context | 764 | 0.25 (0.19, 0.31) | <.001 | [0.19, 0.31] | 0.00% | No/No | 0.22 (0.09, 0.34) | Highly Suggestive |

*Note*. Criteria for concluding that evidence is convincing: > 1000 cases, $p < .001$, $I^2 < 50\%$, 95% prediction interval excludes zero, no evidence of small-study effects and no evidence of excess significance bias.

Criteria for concluding that evidence is highly suggestive: > 500 cases, $p < .001$ and largest study with the 95% CI excludes zero.

Criteria for concluding that evidence is suggestive: > 500 cases and $p < .001$.

Criteria for concluding that evidence is weak: $p < .05$. Non-significant criteria: $p > .05$.

The resulting framework makes it clear that whether and how people choose to regulate their emotions is influenced by affective, individual, motivational, and social-cultural determinants. The evidence regarding affective factors such as the valence, arousal and intensity of the emotional situation is 'highly suggestive', indicating they are reliably associated with ERC. Individual determinants including demographic factors such as age and gender, and individual differences such as self-esteem and beliefs and attitudes about emotions were also found to be reliably associated with ERC. Furthermore, motivational determinants, such as the goal of the current situation and social-contextual determinants such as political ideology and the need to belong were reliably associated with at least one measure of ERC. Taken together then, the present review suggests that people making decisions about how to regulate their emotions are sensitive to factors relating to themselves, the emotion they are regulating, and also the immediate situation and broader social context that the regulation attempt is taking place in.

In terms of factors that seem likely to be associated with whether and how people choose to regulate their emotions, but that have received insufficient empirical attention to date, the present review highlights that only a few studies have examined whether and how the social and cultural context influences ERC (e.g., Ma et al., 2018; Mehta et al., 2017, Study 3). This is perhaps surprising as a number of studies have examined the effect of culture on other facets of emotion regulation, such as the use of regulation strategies (e.g., De Leersnyder et al., 2013; Matsumoto et al., 2008; Mauss et al., 2010). Thus, the proposed framework includes culture, but further research is needed to better understand whether and how people choices about emotion regulation are shaped by cultural determinants. Similarly, there were only sufficient studies to examine the magnitude of the relationship between one of the identified determinants (namely, the intensity of the emotional situation) and intentions to regulate. Further research on intentions to regulate and the putative determinants of

intentions would strengthen this aspect of the proposed framework for understanding intentions to regulate and ERC.

The framework also suggests that it may be valuable to differentiate between relatively proximal determinants of ERC and more distal determinants. Proximal determinants can be considered as more immediate factors that may have more direct effects on ERC, whereas distal determinants may have more indirect effects on ERC. As seen in Figure 2.2, it is suggested that some of the factors identified may be more distal determinants, namely the individual and social-cultural determinants, whereas the affective, motivational and cognitive determinants may be more proximal determinants of ERC. Furthermore, the proximal determinants may suggest mechanisms by which the more distal determinants influence how people choose to regulate their emotions. For example, the effect of individual determinants, such as age or gender, on ERC may be mediated by more proximal determinants, such as the valence of the emotion to be regulated. That is, older people may be more likely to choose to engage with more positive stimuli or to immediately reduce negative emotions by choosing distraction over reappraisal because they prioritise optimising their immediate well-being and prefer to experience positive emotions (Carstensen, 2006; Carstensen et al., 1999). Future studies may aim to directly examine the proposed framework.

### 2.4.3. Limitations and Future Directions

One advantage of identifying and categorising the potential determinants of ERC, along with measures of ERC, is that it provides a means to organise the growing number of empirical studies examining ERC. However, this approach also reveals gaps in the empirical work conducted to date. For example, the impact of specific determinants on ERC has typically been evaluated with respect to specific measures of ERC (i.e., within specific paradigms). Fifty-eight of the studies included examined the intensity of the emotion, but 51 of these studies looked at the impact of intensity on participants' choice of strategy; no

studies considered whether and how the intensity of the emotion influences peoples' preferences for stimuli or the amount of time that they spend viewing particular stimuli in an effort to regulate their emotions. Likewise, 17 studies examined whether salient goals affected choice, but 10 of these studies measured ERC in terms of participants' preferences for stimuli. Thus, it is difficult to compare the various determinants, as some determinants have only been considered with respect to some (and sometimes only one) measure of ERC.

Additionally, the impact of specific determinants has often been examined using the same measures and/or manipulations. Future research may want to consider examining the influence of these potential determinants of ERC using different paradigms and/or measures in an effort to provide a conceptual replication. For example, emotional intensity is often manipulated through the use of images, but the intensity of emotions is not only shaped by aspects of the situation (i.e., the images that participants look at) but also aspects of the individual, such as how sensitive they are (Aron et al., 2012; Jagiellowicz et al., 2016). Furthermore, it is possible that some of the measures of ERC that were identified, such as the stimuli that participants choose to engage with, may confound people's goals (i.e., the emotional state they want to achieve by regulating) with the strategy that they choose to achieve the desired outcome (i.e., engaging with goal-congruent stimuli). Therefore, future research should also try to disentangle emotional goals from the means to do so (Tamir et al., 2020).

It is also worth noting that the studies included in this review examined ERC in the laboratory or collected data online, which may raise questions regarding the ecological validity of the findings. Although some studies conducted in the field have purportedly measured ERC, they typically do so by measuring the use of emotion regulation strategies (e.g., English et al., 2017; Wilms et al., 2020), which may not necessarily reflect a conscious, active choice (Sheppes, 2020). For example, many behaviours occur automatically and are

driven by habits rather than deliberate choice (e.g., Neal et al., 2011) - something that also occurs when regulating emotions (Koole et al., 2015; Mauss et al., 2007). Therefore, while studies using experience sampling help to understand what strategies people use in daily life, they may not accurately measure what strategies people choose in a particular situation. Consequently, future research may choose to test hypotheses proposed by the framework presented in Figure 2.2 outside of the laboratory, to address possible concerns regarding the ecological validity of current research on ERC. For example, experience sampling methods could include explicit questions about the strategies that people chose in particular situations.

Based on the evidence reviewed, there are several other possible avenues for future research. For example, some factors (e.g., level of arousal and gender) have had a mixed effect on ERC; therefore, the precise nature of the effects may warrant further examination. Similarly, there is limited evidence regarding the effect of particular determinants, such as social-cultural factors. The importance of these factors in emotion regulation has previously been highlighted (see Greenaway et al., 2018), therefore this may prove to be a fruitful area for future research. Finally, the effect of some factors (e.g., goals and incentives) has only been investigated using manipulations that provide participants with a goal and/or incentive. Such goals are therefore externally determined. Given that externally vs. autonomously motivated goals have been found to have quite different impacts on a range of outcomes (for a review, see Ryan & Deci, 2000), future research may measure people's personally held goals or incentives to examine the influence of these on whether and how people choose to control their emotions.

## 2.5. Conclusion

The research presented here responded to the need for a comprehensive and systematic review of the empirical work to date examining whether and how people choose to regulate their emotions. Eighteen potential determinants of intentions to regulate and/or ERC

were identified; 11 of which had been studied sufficiently frequently (i.e., $k > 5$) to allow meta-analysis to estimate the magnitude of the relationship between the potential determinant and the measure(s) of ERC. The findings identify affective, cognitive, motivational, individual, and social-cultural determinants that are associated with ERC, suggesting that decisions about how to regulate are influenced by aspects of the individual doing the regulating, the emotion that is being regulated, as well as the immediate situation and broader context in which the regulation is taking place. This being said, it is also clear that further research is needed, especially regarding potential determinants of intentions to regulate and the influence of some determinants on some measures of choice. Through categorising the potential determinants and measures of ERC, along with the proposed framework for understanding ERC, this research has the potential to provide a basis for a coordinated and systematic program of research to understand whether and how people regulate their emotions.

# Chapter 3: Interpersonal Emotion Regulation

Chapter 2 suggests that there are a number of potential determinants of intentions to regulate and emotion regulation choice (ERC). Specifically, as seen in Figure 2.2, the review identified 18 factors and organised these into affective, cognitive, motivational, individual and social-cultural determinants. The review also identified different ways in which ERC has been measured: (i) the choice of strategy; (ii) the choice of stimuli; (iii) the amount of time spent with stimuli; and (iv) preferences for stimuli. Taken together, the findings from Chapter 2 help to understand how people choose to regulate their own emotions (i.e., intrapersonal ERC). However, emotion regulation is not confined to purely intrapersonal processes (Butler & Gross, 2009; Coan et al., 2006; Hofmann, 2014; Rimé, 2007). Humans are social beings, and both the experience and regulation of emotions often occurs within social contexts (Beckes & Coan, 2011; Butler & Randall, 2013; Gross et al., 2006; Zaki & Williams, 2013). Consequently, people also frequently try to help those around them to control their emotions; for example, trying to comfort a friend who is upset or trying to calm an angry colleague. Therefore, people also make decisions about how to help others to regulate their emotions. This idea forms the basis of the remainder of the work presented in this thesis and so, Chapter 3 provides an introduction to research on interpersonal emotion regulation, including how people help others to regulate their emotions (i.e., interpersonal emotion regulation strategies) and why people might do this (i.e., motives for interpersonal emotion regulation). The chapter ends by introducing ERC in interpersonal contexts, which is the focus of the remainder of the work presented in this thesis.

## 3.1. Defining Interpersonal Emotion Regulation

Returning to the example provided in Chapter 1, imagine an interviewee who is feeling anxious ahead of their interview. This person may attempt to regulate their own emotions, but it is also possible that another person might try to help them to control their

emotions. For example, ahead of their interview, a friend may have encouraged them to view their nerves as helping them to perform better. This attempt from the friend to help the anxious interviewee to control their emotions is an example of interpersonal emotion regulation (e.g., Niven, 2017). The term interpersonal emotion regulation, therefore, refers to situations when one individual (namely, the regulator) deliberately attempts to regulate another person's emotions (namely, the target). This definition of interpersonal emotion regulation highlights 4 key characteristics of interpersonal emotion regulation. Namely that interpersonal emotion regulation is a (1) goal-directed and (2) deliberate process that (3) targets an affective (i.e., feeling) state that (4) belongs to someone else than the person doing the regulating (i.e., has a social target, Niven, 2017). That said, it bears noting that other researchers have used the term 'interpersonal emotion regulation' more broadly to refer to the regulation of emotions within a social context/interaction and distinguish between *intrinsic* interpersonal emotion regulation attempts, which refers to an individual initiating social contact to regulate their emotions (e.g., the anxious interviewee might call a friend while waiting for their interview), and *extrinsic* interpersonal emotion regulation attempts which refer to an individual attempting to regulate another person's emotions (Zaki & Williams, 2013). The work presented in this thesis defines interpersonal emotion regulation in line with Niven and colleagues (2009; Niven 2017) definition of interpersonal emotion regulation, and Zaki and Williams (2013) definition of extrinsic interpersonal emotion regulation (i.e., deliberate attempts to influence another person's feelings).

Research to date has highlighted that interpersonal emotion regulation is frequently used in daily life and across a range of different relationships and contexts. For example, this has been examined between ., such as between family members (e.g., Morris et al., 2017), friends (e.g., Williams et al., 2018), romantic partners (e.g., Horn & Maercker, 2016), and colleagues (e.g., Troth et al., 2018). Indeed, people utilise their broader social networks to

help with regulating their emotions and distribute their emotion regulation needs across different relationships. This was highlighted by Cheung and colleagues (2015), who found that people have a range of "emotionships" - meaning that people turn to particular people to help them to regulate specific emotions, such as turning to a sibling when feeling sad and a friend when feeling angry.

Engaging in interpersonal emotion regulation has also been found to have a number of different outcomes. Numerous studies have highlighted how having others regulate their emotions is associated with the development of closer friendships (e.g., Rose et al., 2007) and increased feelings of intimacy between romantic partners (e.g., Horn et al., 2019). Similarly, Williams and colleagues (2018) found that those who had a high tendency to pursue interpersonal emotion regulation (i.e., sought out more intrinsic emotion regulation) felt more socially connected and developed more supportive relationships during their first year at college. Furthermore, interpersonal emotion regulation not only has social benefits for the target of the emotion regulation attempt but also for the regulator. For example, research has found that attempting to improve other's emotions can boost the quality of existing relationships (Niven, Holman, et al., 2012) and also help with the formation of new relationships (Niven et al., 2015). Alongside social consequences, interpersonal emotion regulation has also been found to be associated with psychological health and wellbeing. For example, having a more diverse range of "emotionships" was found to be associated with higher wellbeing (Cheung et al., 2015). Research has also highlighted the importance of interpersonal emotion regulation in the context of mental health disorders such as anxiety and depression (Hofmann, 2014; Marroquín, 2011). Research between romantic partners has also highlighted that the tendency to use different interpersonal emotion regulation strategies can have different consequences. For example, the tendency to engage in co-reappraisal were related to better adjustment to life stressors, whereas the tendency to engage in co-brooding

were related to more severe depressive symptoms (Horn & Maercker, 2016). Finally, helping others to regulate their emotions has also been found to be associated with the wellbeing of the regulator, with those who attempted to improve the feelings of others reporting more positive affect one month later (Niven, Totterdell, et al., 2012). Taken together, the research to date has highlighted different social and psychological consequences associated with interpersonal emotion regulation.

### 3.2. Motives for Interpersonal Emotion Regulation

Like intrapersonal emotion regulation, interpersonal emotion regulation is goal-directed (e.g., Niven, 2017; Nozaki & Mikolajczak, 2020; Reeck et al., 2016), and therefore, can be driven by a range of different motivations. For example, similar to why people regulate their own emotions, it has been suggested that people regulate others' emotions for instrumental reasons. Instrumental motives were illustrated by Netzer and colleagues (2015) who found that people were more motivated to increase emotions in another person when they expected to benefit from this personally. This pattern of results was found across a series of 3 studies, for both negative and positive emotions and also when this involved improving how a rival feels and worsening how a partner feels. Therefore, these studies suggest that interpersonal emotion regulation attempts may be instrumentally motivated, and that people may regulate other people's emotions for their own benefit or gain.

Research has also suggested that people may engage in interpersonal emotion regulation for the benefit of the target of the regulation attempt. López-Pérez and colleagues (2017) found that participants who took the perspective of another person preferred to engage with stimuli that would benefit their performance in a specific situation. For example, when participants were told that the other person's goal was confrontational (e.g., kill as many enemies as possible), participants chose stimuli that would be more likely to induce anger. López-Pérez and colleagues' findings suggest that people may regulate another person's

emotions to help them to achieve a goal, suggesting that interpersonal emotion regulation may be prosocially motivated (Niven, 2016). Furthermore, it has also been suggested that a person's values can predict motives for interpersonal emotion regulation. Niven and colleagues (2019) found that those who have higher levels of care and concern for others demonstrated a greater tendency to engage in interpersonal emotion regulation for prosocial reasons than instrumental reasons.

Other motives may underlie interpersonal emotion regulation, alongside – or in addition to – instrumental and prosocial motives. For example, Niven (2016) suggested that people may engage in interpersonal emotion regulation to improve the other person's wellbeing or to increase their own pleasure. Additionally, people may engage in interpersonal emotion regulation because they feel obligated to do so, because they are conforming to social norms, to shape an impression of themselves or to build a socially desired identity. Therefore, people may engage in interpersonal emotion regulation for different reasons, some of which overlap with those previously outlined in Chapter 1 as to why people regulate their own emotions (e.g., hedonic and instrumental motives, Tamir, 2016).

### 3.3. Interpersonal Emotion Regulation Strategies

Once motivated to regulate another person's emotions, there are a wealth of strategies available to do so, and different ways of organising the strategies have been proposed. For example, Niven and colleagues (2009) identified 378 interpersonal regulation strategies. These strategies were then classified into strategies that could be used to improve how the target was feeling (i.e., affect-improving) and strategies that could be used to worsen how the target of the regulation was feeling (i.e., affect-worsening). Distinctions were also made between strategies that intend to engage the target with the emotional situation or their current emotional state (i.e., positive engagement and negative engagement) versus strategies that focus on the relationship between the target and the regulator (i.e., acceptance and

rejection). Affect-improving strategies include positive engagement strategies such as allowing the target to vent and trying to change the way the target is thinking about the situation (i.e., reappraisal), and relationship-focused acceptance strategies such as giving the target attention and arranging an activity for the regulator (i.e., distraction). In terms of affect-worsening strategies, this includes negative engagement strategies such as letting the target know how they have upset someone or complaining about their current behaviour in an attempt to change how the target feels or behaves respectively, and relationship-focused rejection strategies such as rejecting how they feel and putting one's own feelings ahead of theirs by sulking, for example.

Reeck and colleagues (2016) suggested additional strategies that can also be used in interpersonal contexts based on Gross' (1998a) process model which organises strategies based on when they are implemented during the emotion-generation process. More specifically, the antecedent regulation strategies of situation selection and situation modification may also be used in interpersonal contexts. For example, a regulator may help an individual to avoid a particular situation by inviting them to another event so they could provide an excuse for the event that they do not want to attend. These strategies were not included in Niven and colleagues (2009) classification due to their definition of "affect" to include both emotions and moods, and it is thought that moods may not be due to a specific situation.

Furthermore, as suggested by Zaki and Williams (2013), interpersonal emotion regulation attempts can also be response-independent or response-dependent. Specifically, response-dependent regulation depends on the feedback of another person. For example, for the regulator to achieve the goal of regulating the target's emotions, there needs to be an element of feedback between the target and the regulator. This can occur through either verbal or non-verbal feedback between the target and the regulator (Troth et al., 2018).

Response-independent regulation, on the other hand, does not require any feedback from the target. For example, the regulator may help the target to regulate their emotions by helping them to reappraise the situation. The target may not provide any feedback to the regulator, but by helping the target, the regulator may experience a 'warm-glow' feeling which can be enough to signal to the regulator that their regulation goal has been fulfilled (Zaki & Williams, 2013). Therefore, the success of different regulation strategies may depend on the level of feedback between the target and the regulator.

In short, there are a wealth of strategies that can be used in interpersonal regulation contexts, some of which may only be used in an interpersonal context, such as some relationship-focused strategies that target the relationship between the regulator and the target, whereas other strategies can be used across interpersonal and intrapersonal regulation contexts such as distraction and reappraisal. Finally, it is also worth noting that the work in this thesis is focusing on deliberate and conscious interpersonal emotion regulation attempts, but it is also likely that just like with intrapersonal emotion regulation, the way people help others to regulate their emotions may also occur unconsciously and out of habit.

### 3.4. The Social Regulatory Cycle (Reeck et al., 2016)

Interpersonal emotion regulation is also a multi-stage process. For example, the social regulatory cycle (Reeck et al., 2016) - which essentially extends the action control perspective on emotion regulation (Webb, Schweiger Gallo, et al., 2012) – suggests that interpersonal emotion regulation is also a multi-stage process that involves a dynamic and interactive sequence of 4 stages: (i) identification, (ii) evaluation, (iii) strategy selection, and (iv) implementation.

During the *identification stage*, the regulator identifies the emotion that is being experienced by the target. Unlike when regulating one's own emotions, the regulator does not have access to internal states which can help to identify which emotion is being experienced;

therefore, people often rely on expressive behaviours and cues from the context to infer the emotions that the target is likely to be experiencing. The ability to identify emotions may be influenced by an individual's emotional intelligence (Salovey & Mayer, 1990), and also by the relationship between the target and the regulator. For example, relationships can be thought of as communal (i.e., where there is concern for another's welfare) or exchange in nature (i.e., they are transactional, Clark & Mills, 1979). It has been suggested that emotions are more likely to be expressed and communicated in communal relationships (Clark & Finkel, 2005). Consequently, this may provide greater insight for a regulator into how the target is feeling, and thus allow the regulator to better identify the target's emotion. However, the regulator may inaccurately perceive how the target is feeling, such as misinterpreting sadness as anger which may then have downstream effects in later stages of the process. For example, previous research has suggested that the strategy that people choose to regulate their emotions is influenced by the specific emotion that is being experienced (e.g., Vishkin et al., 2020); therefore, if an error is made in the recognition of that emotion, then an inappropriate strategy may be selected for regulating that emotion.

Once an emotion has been identified, this activates the *evaluation stage* of the social regulatory cycle , during which the regulator: (i) determines how the target wants to feel (i.e., their desired emotional state), based on how the regulator thinks the target wants to feel or on how the regulator would like the target to feel, and (ii) assesses the need for regulation by comparing the target's (perceived) current emotional state to a (perceived) desired emotional state. The desired emotional state may be determined by the motives for interpersonal emotion regulation. For example, it may be prosocially motivated, for instance, if the desired emotional state for the target is similar for both the target and the regulator, or it may be instrumentally motivated if the reason for engaging in interpersonal emotion regulation is self-serving (e.g., Netzer et al., 2015). Once a (perceived) desired emotional

state is determined, the discrepancy between the (perceived) current emotional state and the desired emotional state is monitored to determine whether there is a need to regulate. If an individual struggles with the ability to perceive the thoughts and feelings of others (e.g., Mayer & Geher, 1996), a discrepancy between the current and desired emotional state may not be identified and therefore no further consideration may be given to the possibility of engaging in interpersonal emotion regulation.

If a large enough discrepancy is detected between the (perceived) current emotional state and the (perceived) desired emotional state, then this can trigger the need for regulation and activate the *strategy selection stage* of the social regulatory cycle. The main goal of the strategy selection stage is for the regulator to choose which strategy they will use to help the target to control their emotions. However, before a strategy can be selected, the regulator has to decide whether engage in interpersonal emotion regulation. Despite having identified a need to regulate during the evaluation stage, the regulator may decide not to help the other person to regulate. This may be the case if they think that the target is capable of regulating their own emotions, or if think that it would be in the target's best interests for them to regulate their own emotions, such as if a parent is trying to help their child to develop their own self-regulation skills (Gottman & Katz, 1996; Wilson et al., 2014). Similarly, there may be another person who is best suited to engage in the interpersonal emotion regulation attempt, such as a manager or mediator in organisational contexts or a parent if a child is distressed. Furthermore, as when regulating one's own emotions as outlined by the action control perspective in Chapter 1 (Section 1.3), the decision to regulate may be influenced by an individual's motives and beliefs about whether they believe the emotion can be regulated and/or their self-efficacy in regulating another person's emotions (Webb, Schweiger Gallo, et al., 2012).

If a person does decide to help the target to regulate their emotions, they then can choose an emotion regulation strategy to do so. Reeck and colleagues (2016) suggest that strategy selection may be influenced by two different things: (i) the regulator's knowledge and experience of regulating emotions and (ii) the person's ability to forecast the target's likely reaction to the strategy. In terms of an individual's knowledge and experience, this can be based on an individual's intrapersonal emotion regulation experience, and/or their interpersonal emotion regulation experience, both as a regulator and also as a target. This experience can determine which regulation options are available to choose from, and also when in the emotion-generation sequence (i.e., situation – attention – appraisal – response) to attempt to regulate the other person's emotions. In terms of a person's ability to forecast the target's likely reaction to the regulation strategy, this may determine the specific strategy selected and also whether the regulation attempt will be visible and direct, or less visible and indirect. For example, if the regulator expects the target to react negatively to the emotion regulation attempt, they may attempt to regulate the target's emotions in a less visible way. If a regulator struggles to anticipate the target's reaction effectiveness and appropriateness of chosen strategies, this could lead to less effective regulation. Like with the selection stage in intrapersonal emotion regulation, it is also possible that contextual features influence what strategies that people choose to help others to regulate their emotions, however, research into this area is very limited.

Once a strategy has been selected, this then activates the *implementation stage* of the social regulatory cycle, during which the regulator puts their selected strategy into action in an attempt to regulate the target's emotions. Reeck and colleagues (2016) suggest that the ability to implement the selected strategy may depend on previous experience with using the strategy. Furthermore, similar to intrapersonal emotion regulation, it is possible that the implementation of different strategies also depends on the "critical moment" being accurately

identified and seized, and also the regulator's cognitive resources. For example, strategies such as cognitive reappraisal require a large amount of cognitive resources to implement (e.g., Strauss et al., 2016), and when experiencing an emotion, this may reduce the capacity for regulating emotions (e.g., Sheppes & Gross, 2011). Therefore, in interpersonal contexts, if the regulator is not directly experiencing the emotion, they may not experience the reduced cognitive capacity and consequently may have more cognitive resources available to implement a strategy such as reappraisal. Finally, regulators monitor the progress and outcomes of the regulation attempt throughout the process of emotion regulation. As with intrapersonal emotion regulation, monitoring the interpersonal emotion regulation attempt can result in the regulator deciding to maintain, switch or stop current efforts to regulate emotions (Ford & Gross, 2018; Nozaki & Mikolajczak, 2020). While Reeck and colleagues (2016) did not propose an explicit monitoring stage in the social regulatory cycle, the process of monitoring the target's emotions and the success of the regulation attempt is acknowledged in the selection and implementation stages of the cycle.

In short, interpersonal emotion regulation can also be considered a multi-stage, iterative process. According to the social regulatory cycle (Reeck et al., 2016), this involves: (i) the regulator identifies the target's current emotional state, (ii) evaluates the need to regulate by comparing their current emotional state against the desired emotional state, (iii) selects whether to try and help the regulator to control their emotions and which strategy to use to do so, and (iv) implements the selected strategy. The success of the regulation attempt is monitored throughout the regulatory cycle.

### 3.5. Research to Date on Interpersonal Emotion Regulation

Compared to the wealth of research conducted to date on how people choose to regulate their own emotions, the research into how people help others to regulate their emotions is relatively understudied (Barthel et al., 2018; Zaki & Williams, 2013).

Furthermore, the research that has been conducted to date examining interpersonal emotion regulation has focused on similar research questions to the research regarding intrapersonal emotion regulation. For example, research has examined questions such as which strategies people use to help another person to control their emotions, in both lab-based (e.g., Pauw et al., 2019) and field-based studies through the use of experience sampling methods (e.g., Liu et al., 2021), the effectiveness of different regulation strategies in response to different emotions (e.g., Shu et al., 2020), the relative effectiveness of intrapersonal and interpersonal emotion regulation (e.g., Levy-Gigi & Shamay-Tsoory, 2017), and the motives underlying interpersonal emotion regulation (e.g. López-Pérez et al., 2017; Netzer et al., 2015; Niven et al., 2019). Additionally, attention has been paid to try and address issues surrounding the inconsistencies in the use of the term 'interpersonal emotion regulation' (e.g., Zaki & Williams, 2013) which have provided clearer frameworks for examining this phenomenon, thus, in turn, allowing for more precise investigations and research into the topic (Dixon-Gordon et al., 2015, 2018).

As outlined in the previous section on the social regulatory cycle (Reeck et al., 2016), interpersonal emotion regulation is also thought to be a multi-stage process, with important processes that both precede and follow the process of implementing a regulation strategy. However, similar to research into intrapersonal emotion regulation, research examining interpersonal emotion regulation has also often focused on the implementation of different strategies. While some research has started to examine different stages of interpersonal emotion regulation, such as the selection stage (e.g. López-Pérez et al., 2017; Netzer et al., 2015; Niven et al., 2019), research into this area is not as developed as it is for intrapersonal emotion regulation. As a result, it is currently unclear how people make decisions about whether and how to regulate others' emotions. As previously outlined, the effectiveness of different regulation strategies depends on the context that they are used in (e.g., Bonanno &

Burton, 2013; Haines et al., 2016; Kashdan & Rottenberg, 2010; Troy et al., 2013). Therefore, it is important to not only understand how people choose to regulate their own emotions, but also to understand how people choose to help others to regulate their emotions to understand what may lead to different regulation strategies being selected in different contexts.The remainder of this thesis addresses this disparity in the research by investigating how people choose to help others to regulate their emotions (i.e., interpersonal ERC).

### 3.6. Interpersonal Emotion Regulation Choice

In line with the definition outlined in Chapter 1 (e.g., Sheppes, 2020; Sheppes et al., 2011, 2014) and building on the nuances of ERC explored in Chapter 2, interpersonal ERC can refer to how people choose to help other people to regulate their emotions between and within the different regulation strategies available to them in different contexts when emotion regulation is warranted and there is more than one regulatory option active. Research has started to explore how people choose to regulate others' emotions. As outlined in Chapter 2, there are multiple different ways in which ERC can be measured. For example, choosing between different strategies such as distraction and reappraisal (e.g., Sheppes et al., 2011, 2014), choosing which stimuli to engage with (e.g., Kappes & Schikowski, 2013) and how long to engage with particular stimuli for (e.g., Sands et al., 2016). ERC can also be measured by looking at preferences for emotional stimuli. For instance, Tamir and colleagues (2008) examined what stimuli people would prefer to engage with ahead of playing a game with a particular goal (e.g., a confrontation goal). More recently, research has begun to use these procedures to examine how people choose to regulate other's emotions. By doing so, it has been suggested that goals – including goals that will benefit the target and goals that will benefit the regulator - can also influence interpersonal ERC (e.g., López-Pérez et al., 2017; Netzer et al., 2015; Niven et al., 2019).

Building on these studies that have examined whether people choose to regulate others' emotions using strategy selection and/or modification, research has also begun to examine how people choose between other regulation strategies in interpersonal contexts. For example, López-Pérez and Pacella (2021) presented children with different scenarios in which characters expressed different emotions (sadness, fear and anger). The participants were then asked to identify the emotion that the character was expressing and then to choose between 4 different regulation strategies (2 adaptive strategies and 2 maladaptive strategies) to try and help the character to feel better. It was found that the choice of adaptive strategies varied across the different emotion scenarios, with adaptive strategies being selected less frequently for fear than sadness and anger. Therefore, in line with Chapter 2, these findings suggest that affective factors, such as the type of emotion being experienced by the target of the regulation attempt may influence how children choose to help others to regulate their emotions.

Sadly, some studies that have purportedly examined interpersonal ERC have actually measured the *use* of different strategies, which, as explained with reference to research into intrapersonal ERC (see Section 2.2.2.) may not necessarily reflect an active choice. For example, Pauw and colleagues (2019) showed participants a video of a person crying and then asked them to ask the person to "simply respond in a way they normally would if this had been their friend crying". Participants also reported the extent to which they had used 12 different strategies in their response to the emotional individual and their responses were coded by researchers. Retrospective recall of what strategies were *used* means that it is difficult to determine whether the way that participants responded was an active choice or whether they responded out of habit. Thus, drawing conclusions about what strategy people chose could be misleading. That being said, these studies are valuable in helping us to further understand how people use different strategies in different interpersonal contexts and can

highlight different factors (e.g., contextual factors) that could influence interpersonal ERC that could be further examined in future studies.

As part of my MSc research, I examined whether people choose the same strategies to regulate someone else's emotions as they choose to regulate their own (i.e., directly compared intrapersonal and interpersonal ERC, Matthews et al., in press, Study 1a). This question was investigated by replicating and extending the task that Sheppes and colleagues (2011) developed to study ERC in intrapersonal contexts. As in Sheppes et al's paradigm, participants were taught how to use the regulation strategies of reappraisal (i.e., thinking of the situation in a more positive way) and distraction (i.e., thinking of something completely unrelated). After extensive teaching and practice trials, participants were presented with two blocks of images from the IAPS that were matched in terms of intensity based on the normative ratings of arousal and valence (i.e., low and high intensity) and content. In response to one block of images, the participants were asked to choose between the two emotion regulation strategies that they had been taught to regulate their own emotions (i.e., intrapersonal regulation), as in Sheppes et al's research. However, in the adapted task, participants were then shown a second block of images and asked to choose between the strategies to regulate the other participant's emotions (i.e., an interpersonal regulation task). It is important to note that the order of these blocks was counterbalanced and that the "other participant" was in fact a confederate to control for the influence of any individual characteristics on the choice of strategy.

The findings from this study both replicated and extended the previous findings that had solely focused on intrapersonal emotion regulation. Namely, during the intrapersonal ERC trials, it was found that participants selected reappraisal more frequently in response to low-intensity images whereas distraction was selected more frequently for high-intensity images. This basic pattern of results was also found when participants were asked to help the

other participant to regulate their emotions (i.e., interpersonal ERC), with reappraisal being selected more frequently in response to the low-intensity images and distraction more frequently in response to the high-intensity images. However, while the basic pattern of findings was repeated, the findings also highlighted a difference between intrapersonal and interpersonal ERC. Specifically, it was found that participants selected reappraisal more frequently in response to high-intensity images when helping the other participant to regulate their emotions, compared to when they were regulating their own emotions. This difference in the effect of intensity was only found for those participants who helped the other person to control their emotions first. Therefore, these findings suggest that the intensity of an emotion does not only influence how people choose to control their own emotions (i.e., intrapersonal ERC), but also how people choose to help others to control their emotions (i.e., interpersonal ERC). However, the findings also suggest there are differences in the effect of intensity between these different regulation contexts that seem to depend on whether people choose how to regulate another person's emotions before choosing how to control their own emotions. It is these findings, along with the body of work conducted by Sheppes and colleagues (2011, 2014), that provides the basis for the work presented in the remainder of this thesis.

# Chapter 4: Do People Choose the Same Strategies to Regulate Other People's Emotions as they Choose to Regulate Their Own?


## Abstract

The research presented in this chapter aimed to replicate the findings from my MSc project on how the intensity of an emotional situation influences which strategies people choose to regulate their own (i.e., intrapersonal ERC) and other people's emotions (i.e., interpersonal ERC). Given that a difference in the effect of intensity was also identified between intrapersonal and interpersonal contexts, this current study also investigated whether this difference was related to individual differences (i.e., empathy, self-monitoring, and social desirability). It was found that the intensity of the emotional situation influenced whether participants chose distraction or reappraisal in both intrapersonal and interpersonal regulation contexts, but also that the effect of intensity differed between the contexts, and that this difference was stronger when participants helped the other person to control their emotions first. None of the individual differences examined significantly predicted the difference in the effect of intensity between intrapersonal and interpersonal contexts. The results are discussed in relation to previous ERC findings and limitations of the current study are highlighted alongside possible future directions.

## 4.1. Introduction

Contemporary perspectives posit that emotion regulation is a multi-stage process (e.g., Gross, 2015b; Reeck et al., 2016; Webb, Schweiger Gallo, et al., 2012), with stages that both precede and follow the implementation of different strategies (Sheppes, 2020). While to date the majority of research has focused on the implementation stage of emotion regulation, there has been growing interest in the other stages of the process of emotion regulation, with considerable attention being paid to the selection stage. That said, this research has largely focused on how people choose to regulate their own emotions (i.e., intrapersonal ERC), yet humans are social beings who frequently help others to control their emotions (i.e., interpersonal emotion regulation; Niven, 2017; Zaki & Williams, 2013). Therefore, an important question now is to understand how people choose to help others to regulate their emotions (i.e., interpersonal ERC). Consequently, to address this disparity in the research, Chapter 4 aimed to further examine how people choose to regulate both their own and other people's emotions.

As outlined in Chapter 3, my MSc project replicated previous findings regarding the effect of intensity in intrapersonal contexts and extended them to interpersonal contexts. Using an amended version of the ERC task, the basic effect of intensity was replicated and extended with participants choosing reappraisal more frequently in response to low-intensity images and distraction more frequently to control both their own and another person's emotions. Importantly, a difference in the effect of intensity on ERC between intrapersonal and interpersonal contexts was also found, with participants choosing reappraisal more frequently to regulate their own emotions in response to low-intensity images than when helping someone else to regulate their emotions, but choosing reappraisal more frequently when helping someone else to regulate their emotions in response to high-intensity images than when regulating their own emotions. This regulatory choice pattern was only found for

those who helped another person to control their emotions first, and not for those who controlled their own emotions first. Therefore, the main aim of the current study (Study 1) was to replicate these findings regarding intrapersonal and interpersonal ERC, and based on the difference in the effect of intensity between intrapersonal and interpersonal contexts, this study also aimed to explore a possible explanation for the difference between these two regulation contexts.

As outlined in Chapter 2, characteristics relating to the person doing the regulating (i.e., individual/dispositional determinants) have been found to be associated with how people choose to regulate their own emotions (i.e., intrapersonal ERC). Thus, it is possible that that the difference in the effect of intensity between intrapersonal and interpersonal contexts could be predicted by individual differences. For example, one possible explanation for increased choice of reappraisal in high-intensity interpersonal contexts compared to high-intensity intrapersonal contexts is that participants made a more considered choice when helping the other person to regulate their emotions. That is, reappraisal requires that the person engages with the emotional information (Sheppes & Gross, 2011), so it may have been selected in interpersonal contexts to demonstrate to the individual whose emotions they were regulating that they have considered – and are considerate of – their possible emotional response. In other words, participants may choose reappraisal over distraction in interpersonal contexts as the regulation attempt is more overt and the target is witness to it, which may raise self-monitoring or self-presentational concerns in the regulator (Snyder, 1974). In turn, this may result in the regulator they want to make a good impression on the other participant and choose a strategy that portrays them in a favourable light (e.g., shows that they are taking the other person's emotions seriously).

Similarly, the increased use of reappraisal when helping someone else could be due to empathy. Empathy refers to an individual's ability to understand and respond to others'

emotions (e.g., Spreng et al., 2009). People may choose reappraisal more frequently in interpersonal contexts to demonstrate to the target that they understand how they feel, and consequently are more willing to help them to reappraise the situation. Finally, the difference in the effect of intensity could be due to social desirability. As the researcher stayed in the room throughout the testing session, the participant may be increasing their use of reappraisal to paint themselves in a good light to the researcher. Therefore, a secondary aim of the current study was to explore whether individual differences in empathy, self-monitoring, and/or social desirability was associated with the difference in the effect of intensity between intrapersonal and interpersonal contexts.

### 4.1.1. The Present Research

Despite interpersonal emotion regulation being a common occurrence in daily life, little is known about how people choose to help others to regulate their emotions (i.e., interpersonal ERC). The study I conducted during my MSc was the first to my knowledge to (i) investigate whether emotional intensity influences how people choose to regulate both their own and another person's emotions (ii) make comparisons between the active regulatory choices made in these contexts, and (iii) to find that the order of regulation influenced the effect of intensity on ERC. Therefore, the main aim of this study was to examine whether these findings could be replicated.

Study 1 also explored whether three individual differences; namely, empathy, self-monitoring, and social desirability, were related to the (difference in) the effect of intensity on ERC between intra- and interpersonal contexts. It was predicted that the difference in ERC between intrapersonal and interpersonal contexts would be larger for those who are (i) more likely to be concerned about how they appear to others (termed "higher self-monitors"); (ii) more empathetic, and (iii) are responding in a socially desirable way. Consequently, participants completed an online questionnaire comprised of measures of dispositional

empathy, self-monitoring and social desirability before completing the amended ERC task as described in Chapter 3 (Section 3.6). Dispositional measures were selected as these traits have been found to be associated with state measures (e.g., Lockwood et al., 2017; Shen et al., 2010).

## 4.2. Method

### 4.2.1. Participants

A power analysis was conducted using G*Power to detect a medium -sized relationship ($f^2 = 0.15$) between individual differences and differences in emotion regulation choice between intrapersonal and interpersonal contexts. Based on an alpha = .05 and power = .80 and 3 predictors in a linear multiple regression, the projected sample size was 77.Fifty female participants completed the study ($M_{age} = 20.44$, $SD = 4.63$). Participants were recruited via an undergraduate research participation scheme ($N = 38$) and an email to a University-wide list of volunteers ($N = 12$). Psychology students received 4-course credits for their participation, and those from the volunteer list were remunerated with a £5 voucher.

### 4.2.2. Materials

*4.2.2.1 Empathy.* To measure empathy, the Toronto Empathy Questionnaire (TEQ; Spreng et al., 2009) was used. This is a 16-item measure with a 5-point Likert scale which participants use to rate how frequently they feel/act in the manner described from never (0) to always (4). Example items include: "I can tell when others are sad even when they do not say anything" and "I get a strong urge to help when I see someone who is upset". The scores were summed to calculate a total for the TEQ ($\alpha = .79$).

*4.2.2.2 Self-Monitoring.* To measure self-monitoring, the Revised Self-Monitoring Scale (RSMS; Lennox & Wolfe, 1984) was used. This is a 13-item measure in which participants respond to each item on a 6-point Likert scale from "certainly always false" to "certainly always true". Example questions include: "In social situations, I have the ability to

alter my behaviour if something else if called for" and "My powers of intuition is quite good when it comes to understanding others' emotions and motives". The scores were summed to calculate a total for the RSMS (α = .82).

*4.2.2.3 Social Desirability*. The Balanced Inventory of Desirable Responding Short Form (BIDR-16; Hart et al., 2015) was used to measure social desirability. This is a 16-item measure in which participants indicate the extent to which they agree with each of the statements on a 7-point scale (strongly disagree - strongly agree). Example items include: "I sometimes lose out on things because I can't make my mind up soon enough" and "I sometimes tell lies if I have to". Each item that the participant rated as 6 or 7 was scored 1 and then these scores were then summed to give a total out of 16 (α = .82).

*4.2.2.4 Emotional Stimuli.* Images from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2008) were used to induce negative emotions of varying intensity. The images presented in the intrapersonal regulation choice section were those previously used by Sheppes and colleagues (2011) and the images used in the interpersonal regulation choice section were matched to those in the intrapersonal section based on normative ratings of arousal and valence as published by Lang et al. (2008) and content. The images were categorised as either low-intensity (mean arousal = 4.74, *SD* = 0.75, mean valence = 3.48, *SD* = 0.35) or high-intensity (mean arousal = 6.08, *SD* = 0.96, mean valence = 2.04, *SD* = 0.35). Levels of arousal ($t(58) = 6.03$, $p < .001$, $d = 1.56$) and valence ($t(58) = 15.91$, $p < .001$, $d = 4.11$) differed significantly between the low and high-intensity images, but there were no significant differences between the ratings of valence ($t(29) = 1.14$, $p = .266$, $d = 0.13$) or arousal ($t(29) = 0.47$, $p = .643$, $d = 0.09$) between the sets of images used in the intrapersonal and interpersonal regulation sections.

*4.2.2.5 Emotion Regulation Strategies*. The regulation strategies that participants could choose between were the same as in Sheppes et al. (2011), namely, the early-

disengagement strategy of distraction and the late-engagement strategy of reappraisal. For distraction, participants were told to think of something neutral and unrelated to the image, and for reappraisal, they were told to change the meaning of the image but without saying that it was a fake scene (e.g., from a movie). The order in which the participants were taught how to use the different strategies was counterbalanced across participants.

*4.2.2.6 Ratings.* After each trial, participants were asked to rate either how negative the image that they had seen made them feel (after the intrapersonal choice trials) or how negative they thought the image made the other person feel (after the interpersonal choice trials). Participants provided these ratings on a scale of 1 (not negative at all) to 9 (very negative).[5]

*4.2.2.7 Perceived Similarity.* The Inclusion of Other in the Self Scale (IOS; Aron et al., 1992) was used to measure perceived similarity between themselves and the other participant. The scale includes a set of seven pairs of concentric circles (one that is labelled "self" and one labelled "other") which vary in their degree of overlap ranging from two separate circles (1) to almost completely overlapping circles (7). Participants were asked to circle the description that best described how similar they perceived themselves and the other participant to be.

### 4.2.3. Procedure

This study was split into two parts: (i) an online questionnaire (Appendix B1), and (ii) the lab-based ERC task (Appendix B2). The online questionnaire was completed before participants attended the lab-based session. After providing informed consent, participants completed the measures of empathy (TEQ, Spreng et al., 2009), self-monitoring (RSMS, Lennox & Wolfe, 1984) and social desirability (BIDR-16, Hart et al., 2015). The

[5] In line with the ERC task (Sheppes et al., 2011), these negativity ratings were included and exploratory analyses examining are included in Appendix B3 examining whether there are differential relationships between choosing reappraisal or distraction and these negativity ratings. However, as outlined the appendix, these results are presented within the confines of a number of limitations.

questionnaire was conducted via Qualtrics and the order in which the questionnaires was presented was randomised. The online questionnaire took approximately 10 minutes to complete.

The ERC task was completed in person and was created and conducted via E-Studio. During the ERC task, participants worked alongside another person, who they were led to believe was another participant, but was, in fact, a confederate. The confederate was another student at the University of Sheffield who was recruited through the University's student JobShop to assist with the running of the study. The confederate was trained by the researcher and engaged with the participant before and during the study to reinforce the idea that they were interacting with another participant. The participant and confederate both 'participated' in the study at the same time and on computers in the same room which were separated by a screen so they could not how the other person was reacting to the image.

As can be seen in Figure 4.1, after providing informed consent, the participants were first taught how to use the two different regulation strategies of distraction and reappraisal. They then completed 6 practice trials, in which each strategy was used 3 times: Once to control their own emotions, once to help the confederate to control their emotions, and a final time in which the confederate used the strategy to help the participant to regulate their emotions. Participants were told that the main part of the study would consist of 3 blocks in a random order: The main part of the study consisted of 2 blocks. (i) the intrapersonal regulation block, during which participants were asked to regulate their own emotions, and (ii) the interpersonal regulation block, during which participants were asked to talk aloud to the confederate to regulate the regulate the confederate's emotions. Participants were also told that there would be another interpersonal block in which the confederate would talk aloud to the participant to regulate their emotions. However, this was not the case and the study ended after the first two blocks (i.e., the intrapersonal block and the interpersonal block

where the participant helped the confederate to control their emotions). The order of these two blocks was counterbalanced across participants.

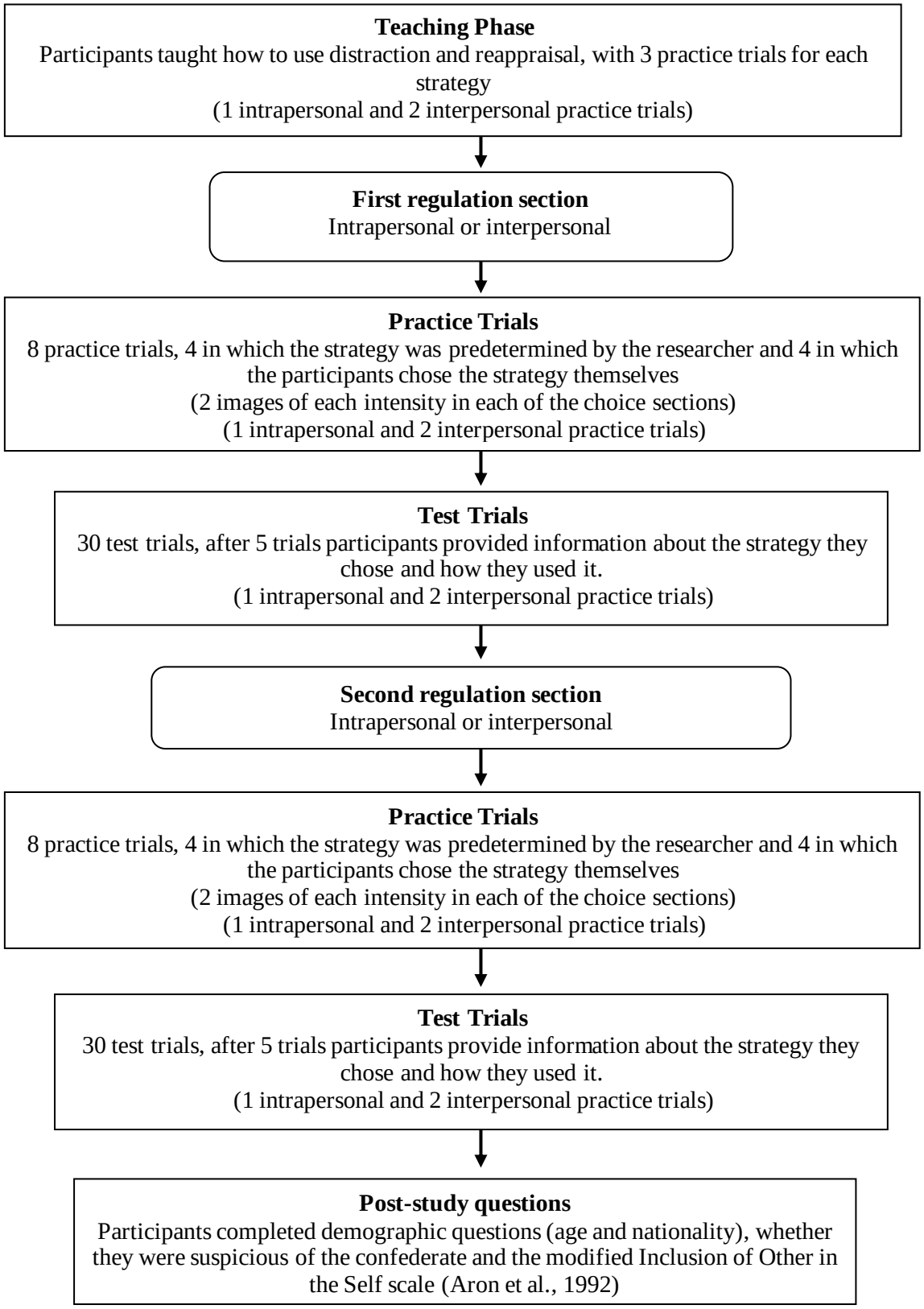
Each block started with eight practice trials. In the first four of these trials, the choice of strategy was predetermined, with one trial for each strategy at each intensity level. For the remaining four practice trials (two at each intensity level), participants chose which of the two strategies to use. Each of the trials comprised of: Brief presentation of the image for 500ms, participants indicating which strategy they intended to use by pressing one of two keys on the keyboard, and implementation of the strategy during a second longer presentation of the image (5000ms). Finally, participants rated either how negative the picture made them (intrapersonal section) or the other participant (interpersonal section) feel. The images were presented to both the participant and the confederate simultaneously. To ensure that the participants used the strategies as intended, at the end of each of the intrapersonal practice trials, participants were asked to state which strategy they had used and how they used it in response to the images that they had seen (e.g., what they told themselves or tried to think). To reflect that interpersonal emotion regulation in real life often occurs within live social interactions (Dixon-Gordon et al., 2015; Zaki & Williams, 2013) and therefore likely involves suggesting to another person (verbally) how they might deal with a given situation, during the interpersonal practice trials (and also the main trials), the participant was asked to talk aloud to the other participant (i.e., the confederate). Again, to reinforce the idea that the confederate was a true participant, during the teaching of the strategies and the practice trials, the confederate would also talk aloud to the other participant to help them to control their emotions.

The main part of the task involved 30 trials in both the intrapersonal and interpersonal blocks, with each block presenting 15 low-intensity images and 15 high-intensity images (i.e., 60 trials overall). To ensure that the strategies continued to be used correctly throughout the

choice trials, after 6 of the trials, participants were asked to briefly describe the strategy that they had selected and how they had used it. Following the main part of the study, participants completed the Inclusion of the Other in Self Scale (Aron et al., 1992), reported their age and nationality and were asked whether they were suspicious at any point that the confederate was not another participant. Participants were then fully debriefed, thanked, and remunerated for their time. The ERC task took approximately 45 minutes to complete and was approved by the Research Ethics Committee in the Department of Psychology at The University of Sheffield (Amendment to Ref. 012550).

**Figure 4.1**

*Procedure of Study 1*



### 4.3. Results

The means and standard deviations for the choice of the emotion regulation strategy by the condition can be found in Table 4.1. All analyses were conducted using SPSS.

**Table 4.1**

*Frequency of Choice of Reappraisal (out of 15) by the Nature of Regulation and the Intensity of the Images*

| | Order of regulation sections | | | | | |
|---|---|---|---|---|---|---|
| **Regulation** and intensity | Regulated own emotions first ($N$ = 24) | | | Regulated others' emotions first ($N$ = 26) | | |
| | *Mean* | *SD* | *95% CI* | *Mean* | *SD* | *95% CI* |
| **Intrapersonal regulation** | | | | | | |
| Low-intensity | 10.67 | 2.55 | [9.59, 11.74] | 11.54 | 2.87 | [10.38, 12.70] |
| High-intensity | 4.25 | 2.52 | [3.18, 5.32] | 4.69 | 2.47 | [3.69, 5.69] |
| **Interpersonal regulation** | | | | | | |
| Low-intensity | 10.83 | 2.84 | [9.63, 12.03] | 9.92 | 2.45 | [8.93, 10.91] |
| High-intensity | 6.13 | 2.79 | [4.95, 7.30] | 6.84 | 2.51 | [5.83, 7.86] |

#### 4.3.1. Do people choose the same strategies to regulate another person's emotions as they choose to regulate their own?

A 2 within (intensity: low vs. high) x 2 within (nature of regulation: intrapersonal vs. interpersonal) x 2 between (order of regulation sections: intrapersonal first vs. interpersonal first) ANOVA was conducted on the frequency with which participants chose reappraisal to control emotions (see Figure 4.2). As revealed by standardised scores for skewness and kurtosis – which were examined alongside the Shapiro-Wilks test - not all the data was

normally distributed. Three of the eight z-scores for skewness and one of the eight z-scores for kurtosis exceeded +/- 1.96, which corresponds to an alpha level of 0.05. As ANOVA is deemed to be robust to violations of non-normality (Field, 2013; Glass et al., 1972) the data was not transformed, and the 3-way ANOVA was conducted.

The main effects of the nature of regulation, $F(1, 48) = 4.94$, $p = .031$, $\eta_p^2 = .09$, and intensity, $F(1, 48) = 120.61$, $p < .001$, $\eta_p^2 = .72$, were qualified by a significant two-way interaction between nature of regulation and intensity, $F(1, 48) = 36.27$, $p < .001$, $\eta_p^2 = .43$, which, was qualified by a significant three-way interaction between the order of the regulation sections, the nature of regulation, and intensity, $F(1, 48) = 5.13$, $p = .028$, $\eta_p^2 = .10$.

Bonferroni-corrected follow-up analyses indicated that there was a statistically significant two-way interaction between the nature of the regulation and intensity on ERC among participants who completed the interpersonal regulation section first, $F(1, 25) = 36.56$, $p < .001$, $\eta_p^2 = .59$. Intensity had a significant main effect on ERC when participants were regulating their own, $F(1, 25) = 74.06$, $p < .001$, $\eta_p^2 = .75$ (mean difference = 6.85, 95% CI [5.21, 8.49], $p < .001$) and the other person's emotions, $F(1, 25) = 23.87$, $p < .001$, $\eta_p^2 = .49$ (mean difference = 3.08, 95% CI [1.78, 4.37], $p < .001$). Participants who helped the other person to control their emotions first chose reappraisal more frequently (over distraction) to regulate their own and others' emotions in response to low, relative to high-intensity images, although the effect was larger when regulating own compared to another person's emotions.

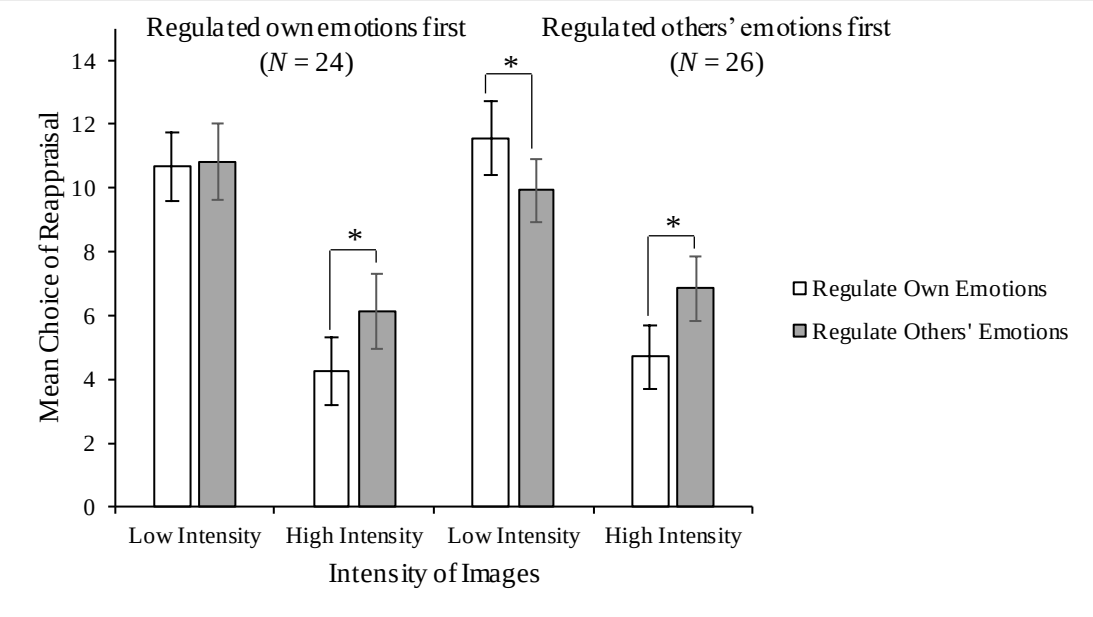
Additionally, the nature of regulation had a significant effect on ERC in response to the high-intensity images, $F(1, 25) = 20.46$, $p < .001$, $\eta_p^2 = .45$ (mean difference = -2.15, 95% CI [-3.14, -1.17], $p < .001$), such that participants who helped the other person to control their emotions first chose to regulate the other person's emotions using reappraisal more frequently (rather than distraction) in response to high-intensity images than when choosing how to regulate their own emotions to similarly intense images. There was also a smaller (although

still statistically significant) effect of nature of regulation on ERC in response to the low-intensity images, $F(1, 25) = 9.21$, $p = .006$, $\eta_p^2 = .27$ (mean difference = 1.62, 95% CI [0.52, 2.71], $p = .006$) as participants who helped the other person to control their emotions first chose reappraisal more frequently (compared to distraction) to regulate their own emotional responses to low-intensity images than when choosing how to help others to regulate their emotional responses to low-intensity images.

The two-way interaction between the nature of the regulation and intensity on ERC was smaller in magnitude for participants who completed the intrapersonal regulation section first, $F(1, 23) = 6.63$, $p = .017$, $\eta_p^2 = .22$. The form of this interaction was similar to that reported above: Intensity had a significant main effect on ERC when participants were choosing how to regulate their own, $F(1, 23) = 66.49$, $p < .001$, $\eta_p^2 = .74$ (mean difference = 6.42, 95% CI [4.79, 8.05], $p < .001$), and the other person's emotions, $F(1, 23) = 36.32$, $p < .001$, $\eta_p^2 = .61$ (mean difference = 4.71, 95% CI [3.09, 6.33], $p < .001$), although the effect was larger when regulating their own compared to another person's emotions. The nature of regulation had a significant effect on ERC in response to the high-intensity images, $F(1, 23) = 9.58$, $p = .005$, $\eta_p^2 = .29$ (mean difference = -1.88, 95% CI [ -3.13, -0.62], $p < .005$), but not in response to the low-intensity images, $F(1, 23) = 0.13$, $p = .721$, $\eta_p^2 = .006$.

**Figure 4.2**

*Number of Trials on which Participants Chose Reappraisal (out of 15) by the Nature of Regulation, the Intensity of the Images, and the Order of Regulation Sections*




*Note.* Error bars show 95% confidence intervals. Asterisks denote statistically significant differences between the frequency with which people choose reappraisal to control own vs. others' emotions in the respective settings (e.g., when choosing how to regulate emotions in response to high-intensity images having already chosen how to regulate someone else's emotions in a similar context).

### 4.3.2. Are individual differences related to the difference in the effect of intensity between intrapersonal and interpersonal regulation contexts?

In order to examine the relationship between empathy, self-monitoring, and social desirability and the effect of interest (namely, the interaction between intensity and nature of regulation on ERC, due to the nature of the study-design (i.e., a within-subjects design with 2 categorical IVs that each had two levels), a single outcome variable had to first be calculated reflecting the strength of the interaction between intensity and regulation on ERC for each participant. As suggested by Kenny's (2015) summary of Judd and colleagues (2001) paper, this was done by calculating difference scores between the two levels of the independent variables. More specifically, as there were 2 categorical IV's, 2 scores of difference were

calculated. First, for both the intrapersonal and interpersonal trials, a score was computed to reflect the effect of intensity. Namely, the choice of reappraisal for the high-intensity images was subtracted from the choice of reappraisal for the low-intensity images for both the intrapersonal and interpersonal regulation trials. The order of the calculation was based on the previous evidence that the choice of reappraisal would be higher in response to the low-intensity images, which results in the values calculated being positive, thus allowing for ease of interpretation. These calculations provided 2 difference score measures to reflect the effect of intensity on reappraisal choice. These difference scores were then used to calculate the final outcome score which reflected the interaction between the two categorical IVs (i.e., intensity and regulation). This was calculated by subtracting the difference in the choice of reappraisal when regulating another's emotions was subtracted from the difference in reappraisal when regulating one's own emotions.

Multiple regression was then used to examine whether individual differences in empathy, self-monitoring, and/or social desirability were associated with the difference in the effect of intensity on ERC between inter- and intrapersonal regulation contexts. Table 4.1 displays the results of the regression analysis. The regression equation was not significant, $F(3, 43) = 2.21$, $p = .101$ and the beta-weights for empathy, self-monitoring or social desirability were all non-significant.

**Table 4.2**

*Summary of regression analysis for variables predicting ERC (N = 47)*

| Variable | *B* | *SE B* | *b* |
|---|---|---|---|
| Empathy | -.17 | .09 | -.31 |
| Self-Monitoring | .14 | .08 | .29 |
| Social Desirability | -.20 | .25 | -.13 |

*Note*. Three participants were not included as they did not complete the individual differences measures, therefore $N = 47$. $R^2 = .13$.

### 4.4. Discussion

The aim of this study was two-fold. Firstly, Study 1 aimed to replicate previous findings regarding the effect of intensity on how people choose to regulate both their own (i.e., intrapersonal ERC) and another person's (i.e., interpersonal emotions) to further examine the question of whether intensity influences interpersonal ERC and whether people choose the same strategies to regulate another person's emotions as they choose to regulate their own. Secondly, this study also aimed to explore a whether the difference in the effect of intensity between intrapersonal and interpersonal contexts previously highlighted was related to a number of individual differences

In terms of whether the emotional intensity of a situation also influences interpersonal ERC and whether people choose the same strategies to regulate another person's emotions as they choose to regulate their own, the findings of Study 1 replicated those of my MSc work as discussed in Chapter 3. More specifically, the current findings demonstrate that the intensity of the emotional situation influences ERC when people are choosing how to regulate both their own and another person's emotions, with reappraisal being selected over distraction more frequently for low-intensity images and distraction being selected over

reappraisal more frequently for high-intensity images when regulating both their own and another person's emotions. This study also found that people chose reappraisal more frequently to regulate their own emotions in response to low-intensity images than when helping someone else to regulate their emotions, but chose reappraisal more frequently to help someone else in response to high-intensity images than they are when regulating their own emotions. Furthermore, as previously found, this was especially likely to be the case if participants chose how to regulate the other person's emotions before they chose how to regulate their own.

This study also predicted that differences in ERC between intrapersonal and interpersonal contexts would be larger for those who are more (i) empathetic; (ii) likely to be concerned about how they appear to others (termed "higher self-monitors"); and (iii) responding in a socially desirable way. However, contrary to these predictions, none of the individual difference measures examined significantly predicted the strength of the interaction between intensity and regulation/difference in the effect of intensity between intrapersonal and interpersonal emotion regulation contexts. The examination of the association between the effect of intensity and individual differences was exploratory, and while other individual differences may have been associated with the difference in the effect of intensity that were not examined in this study, the sample size for this study was likely too small to detect a significant effect ($N = 47$). Consequently, based on this study, we cannot conclude that these individual differences predict the difference in the effect of intensity, instead, these results may be a reflection of an underpowered sample. Therefore, future research may want to further investigate the association between individual differences and ERC.

### 4.4.1. Study Limitations and Future Directions

There are several limitations to this study that should be considered. Firstly, this study assessed interpersonal behaviour within a lab-based setting and the paradigm used to assess which strategies were chosen only provided participants with the option of two different strategies. While it is thought that the strategies examined in the present study are widely used in daily life (e.g., Brans et al., 2013; English et al., 2017), it is likely that outside of the lab people will have a greater repertoire of strategies to choose from, and also more flexibility regarding how they are implemented. For example, in the current study, if participants choose distraction, they were asked to think of something emotionally neutral whereas outside the lab, they may choose to implement the strategy behaviourally, such as by watching the television. Future studies should consider examining the choice of strategy from a greater number of options, and also consider assessing interpersonal ERC outside of the lab, through the use of experiencing sampling for example.

A second limitation relates to the nature of the sample examined in this study which may limit the generalisability of the current findings. More specifically, all the participants in this study were female undergraduate students. Both gender and age have found to be associated with emotion regulation (Zimmermann & Iwanski, 2014), so future studies may want to assess the interpersonal emotion regulation choices made between males, or between males and females. Furthermore, as a confederate was used, the interpersonal interaction assessed was occurring between 2 strangers, which again may have possibly influenced the results as the regulatory choices made could be different between friends or family members, for instance. Therefore, future studies should investigate the emotion regulatory choices made with different populations comprising the dyadic interaction. Furthermore, based on the power analysis reported earlier in this chapter (sub-section 4.4.1), the required sample size was 77 participants. However, due to a number of participants not attending the testing sessions after booking and funding constraints, the final sample consisted of 50 participants,

with only 47 of those providing sufficient information to be included in the regression analysis. Therefore, it is possible that the sample size in this study was too small to detect an effect. Consequently, future studies may want to continue examining the relationship between individual differences, such as empathy and self-monitoring, on how people choose to help others to control their emotions.

Finally, it is also worth noting that the individual differences measures used in the online questionnaire part of the study were self-report measures. While this method of data collection allowed for a number of different factors to be examined at once, and that the measures of self-monitoring and social-desirability allowed the concern regarding the researcher being in the room during the testing session, the nature of these measures may have led to possible response bias.

### 4.5. Conclusion

In conclusion, the results of this study support and extend previous work examining how people choose to control their own emotions to also consider how people choose to help others to control their emotions and make comparisons between the different regulation contexts. Taken together, it appears that the intensity of a situation not only influences how people choose to regulate their own emotions, but also how people choose to help others to regulate their emotions, thus suggesting similarities between intrapersonal and interpersonal ERC. However, there are also differences between these two regulation contexts and the regulatory choices made seem to be influenced by whose emotions the individual controls first. These findings further reinforce previous findings regarding intrapersonal vs. interpersonal ERC (Matthews et al., in press, Study 1a). Having established that the effect of intensity differs between intrapersonal and interpersonal contexts, and based on this study it cannot be concluded that the difference in the effect of intensity is not related to individual differences in empathy, self-monitoring and/or social desirability, Chapter 5 examined

alternative explanations for the difference in the effect of intensity and why the regulatory choices made differ depending on whose emotions were controlled first.

# Chapter 5: Possible Explanations for the Difference in the Effect of Intensity between Intrapersonal and Interpersonal Emotion Regulation Choice


## Abstract

The research presented in this chapter aimed to explore possible explanations for the difference in the effect of intensity between intrapersonal and interpersonal contexts and why this is effect is stronger for those who helped another person to regulate their emotions first as highlighted in Chapter 4. To that end, three studies are presented which examined whether differences in perceived intensity (Study 2a and Study 2b) and/or the anticipated effort or effectiveness of the strategies (Study 3) could explain the difference between intrapersonal and interpersonal contexts and why it was stronger for those who completed the interpersonal section first. The findings provide preliminary evidence that the differences between intrapersonal and interpersonal emotion regulation choice (ERC) may be associated with differences in the anticipated effort and effectiveness of regulation between these contexts. Study limitations and possible directions for future work are discussed.

## 5.1. Study 2a: Is the difference in the effect of intensity between the regulation contexts because people underestimate how negative another person finds the emotional images?

Chapter 4 identified that intensity influences how people choose to regulate their own and someone else's emotions. Importantly, the effect of intensity was found to be different in intrapersonal and interpersonal contexts, and also seems to be stronger for those who helped another person to control their emotions first. The remainder of this thesis aims to examine a possible explanation for this difference. To that end, Study 2a examined one potential explanation for the increased choice of reappraisal for regulating intense emotions when helping another person to control their emotions, namely whether people underestimate how negative another person finds the emotional stimuli.

As identified in Chapter 2 and replicated in Chapter 4, people tend to choose reappraisal (over distraction) more frequently to regulate their own emotions in response to low-intensity stimuli, and distraction (over reappraisal) more frequently in response to high-intensity images (e.g., Sheppes et al., 2011, 2014). It has been suggested that this regulatory choice pattern is due to a trade-off between the short- and long-term costs and benefits associated with using the different strategies in different contexts. For example, it is thought that people choose reappraisal over distraction in less intense emotional situations as people can attend to the scene depicted in the image and reappraise the situation before being overwhelmed by the full emotional response, whereas people are more likely to choose distraction in response to high-intensity images as processing the scene depicted in the images requires more cognitive resources, therefore the less cognitively-taxing strategy of distraction is selected (e.g., Sheppes et al., 2011).

Previous research has suggested that people tend to perceive other people's emotional experiences as less intense than their own (Miller & McFarland, 1987) – this has been termed the emotion intensity bias (Chambers & Suls, 2007). For example, McFarland and Miller (1990) found that when faced with completing aversive tasks, participants thought that other

people would find the task less unpleasant (i.e., less intense) than they would. Furthermore, people also underestimate the prevalence to which people experience negative emotions (Jordan et al., 2011). Therefore, when taken together, it seemed possible that the participants in Study 1 (Chapter 4) chose reappraisal more frequently for others in intense situations than for themselves as they did not believe that others would find these emotional images as intense – in other words, they underestimated the other person's emotional response. If so, this might also explain why the difference between the regulation contexts was smaller when participants chose how to regulate their own emotions first – because thinking about their responses to the images reminded them of how the other person was likely to feel and prevented any underestimation of their response.

Furthermore, the findings from Study 1 also highlight that people are less likely to choose reappraisal when helping another person to regulate their emotions in response to low-intensity images than when regulating one's own emotions in response to low-intensity images. Thus, these findings suggest that people may actually overestimate how intense another person would find low-intensity images. Thus, it is possible that people don't only underestimate how negative other people would find high-intensity emotions, but that they underestimate the range of other people's emotions. This idea is in line with the outgroup homogeneity effect (Quattrone & Jones, 1980), such that a person may think that others have a more limited range of emotional intensity than themselves, such that others would be more affected by low intensity images and less affected by high intensity images.

### 5.1.1. The Present Research

To examine how negative people think another person would find emotional stimuli, and the hypothesis that people underestimate how negative another person finds emotional stimuli, participants were asked to rate (i) how negative they found the images used in a previous study examining intrapersonal and interpersonal ERC, and (ii) how negative they

think that others would find the images. One-half of the participants rated how negative they would find the images first, the other half of the participants rated how negative they believed that the other person would find the images first. It was predicted that people would provide lower ratings for the other participants compared to their own ratings and that this would be especially (or only) likely when they rated how others would be likely to feel first.

## 5.2. Method

### 5.2.1. Participants

A power analysis was conducted to determine the size of the sample required to detect an interaction between order, intensity and nature of regulation on ERC of the magnitude indicated by my MSc research (Matthews et al., 2021, Study 1a). Specifically, the mean values for the frequency of choosing reappraisal were entered into GLIMMPSE V3 (Kreidler et al., 2013). Based on an alpha of = .05 and power = .80, the overall projected sample size required was 14 to examine an interaction between order, intensity and target of ratings using a mixed-ANOVA. One-hundred and twenty-five female participants completed an online questionnaire (Mage = 23.09, SD = 7.88). Participants were recruited via an undergraduate research participation scheme (N = 29) and an email to a University-wide list of volunteers (N = 96). Psychology students received 1-course credit for their participation.

### 5.2.2. Materials

*5.2.2.1. Emotional Stimuli.* As in Study 1 (Chapter 4), images from the International Affective Picture System (IAPS; Lang et al., 2008) were used to induce negative emotions of varying intensity. The images presented in the intrapersonal regulation choice section were those previously used by Sheppes and colleagues (2011) and the images used in the interpersonal regulation choice section were matched to those in the intrapersonal section based on normative ratings of arousal and valence as published by Lang et al. (2008) and content. The images were categorised as either low-intensity (mean arousal = 4.73, *SD* =

0.75, mean valence = 3.46, *SD* = 0.34) or high-intensity (mean arousal = 6.11, *SD* = 0.96, mean valence = 2.01, *SD* = 0.34). Levels of arousal ($t(58) = 6.17$, $p < .001$, $d = 1.59$) and valence ($t(58) = 16.40$, $p < .001$, $d = 4.24$) were significantly different between the low and high-intensity images, but there were no significant differences in the valence ($t(29) = 0.74$, $p = .463$, $d = 0.08$) or arousal ($t(29) = 0.56$, $p = .580$, $d = 0.01$) ratings between the sets of images used in the intrapersonal and interpersonal rating sections.[6]

*5.2.2.2. Ratings.* After seeing each image, participants were asked to rate how the image made them feel (i.e., intrapersonal ratings) or how they thought that the image made another person feel (i.e., interpersonal ratings) on a 9-point scale (1 = not negative at all, 9 = very negative). At the beginning of the interpersonal block, the participants were presented with an image of the confederate who assisted with my MSc project and asked to rate how they believed this person would feel in response to each of the images. Participants were led to believe that this person had previously completed the study and had provided their own ratings. To reinforce this cover story, the participants were told that they would be provided with an opportunity at the end of the study to upload a photograph of themselves to assist with future research.

### 5.2.3. Procedure

Participants completed an online questionnaire hosted by Qualtrics and the ratings were separated into two blocks: intrapersonal and interpersonal. At the beginning of each block, participants completed 4 practice trials, which were followed by 30 test trials. In each trial, the participants were presented with an image for 5 seconds followed by the rating scale. The order in which the intrapersonal and interpersonal blocks were completed was

[6] These images were the same set of images used in my MSc project. Between conducting my MSc study and Study 1 (outlined in Chapter 4), a small number of the images used in the interpersonal section were changed so that the content more closely matched the content of the images in the intrapersonal section. A full list of the images, along with all other materials for Study 2, can be found in Appendix C1.

counterbalanced. Following the ratings, participants were asked questions regarding their age and nationality and asked if they had a phobia of anything that they had seen in the images and, if so, what their phobia was.[7] Participants were then debriefed and told why they would not be required to provide a photograph of themselves. The study took approximately 15 minutes to complete. The study was approved by the Research Ethics Committee in the Department of Psychology at The University of Sheffield (Ref. 016937).

### 5.3. Results

The means and standard deviations for the negativity ratings by the target of regulation and intensity of the images can be found in Table 5.1. All analyses were conducted using SPSS.

[7] Analyses excluding the participants who reported a phobia associated with something presented in one or more of the images ($N = 30$) were also conducted. The findings were unchanged and so all participants were retained for analysis. These analyses are reported in Appendix C3.

**Table 5.1**

*Negativity Ratings by Target of Regulation and Intensity of the Images*

| | Order of rating sections | | | | | |
|---|---|---|---|---|---|---|
| **Regulation** and intensity | Rated for self first (*N*= 56) | | | Rated for other first (*N* = 69) | | |
| | *Mean* | *SD* | *95% CI* | *Mean* | *SD* | *95% CI* |
| **Intrapersonal regulation target (self)** | | | | | | |
| Low-intensity | 3.50 | 1.02 | [3.22, 3.77] | 3.81 | 1.27 | [3.50, 4.11] |
| High-intensity | 6.89 | 1.53 | [6.48, 7.30] | 6.97 | 1.38 | [6.64, 7.31] |
| **Interpersonal regulation target (other)** | | | | | | |
| Low-intensity | 4.55 | .07 | [4.26, 4.84] | 4.66 | 1.31 | [4.34, 4.97] |
| High-intensity | 7.11 | .95 | [6.86, 7.37] | 7.19 | 1.22 | [6.90, 7.49] |

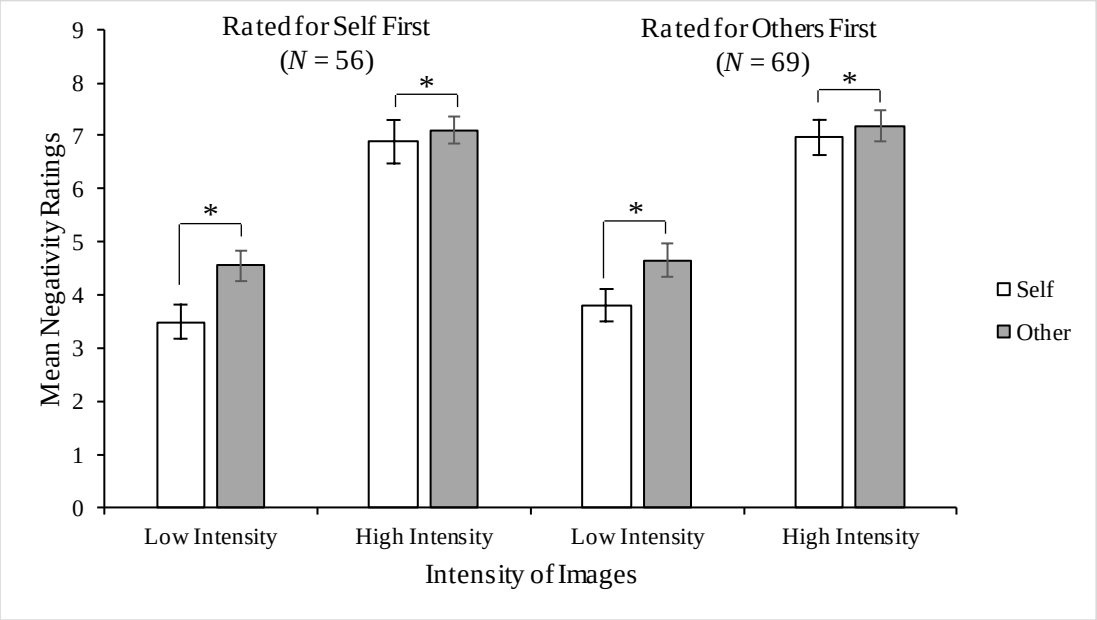
A 2 within (intensity: low vs. high) x 2 within (target: self vs. other) x 2 between (order of regulation sections: self first vs. other first) ANOVA was conducted with the ratings of emotion as the dependent variable (see Figure 5.1). Inspection of the data identified two extreme outliers, as assessed by inspection of box plots. The outliers were kept in the analysis because they did not materially affect the results, as assessed by a comparison of results with and without the outlier. Additionally, not all of the data was normally distributed, as revealed by standardised scores for skewness and kurtosis, which were examined alongside the Shapiro-Wilks test (*p's* > .05). However, as ANOVA is thought to be robust to violations of non-normality (Field, 2012; Glass, Peckham, & Sanders, 1972) the data was not transformed,

and the 3-way ANOVA was conducted. The three-way interaction between order of regulation sections, target, and intensity, was not significant ($F(1, 123) = 0.89$, $p = .348$, $\eta_p^2 = .01$), but there was a significant main effect of target ($F(1, 123) = 48.69$, $p < .001$, $\eta_p^2 = .28$) and intensity ($F(1, 123) = 1549.24$, $p < .001$, $\eta_p^2 = .93$), which was qualified by a significant interaction between target and intensity ($F(1, 123) = 47.79$, $p < .001$, $\eta_p^2 = .28$).

Bonferroni-corrected simple main effects revealed that intensity had a significant effect on the participant's ratings of how negative they felt, $F(1, 124) = 1036.92$, $p < .001$, $\eta_p^2 = .89$ (mean difference = 3.27, 95% CI [3.07, 3.47], $p < .001$) and how negative they thought that the other person would feel $F(1, 124) = 1101.84$, $p < .001$, $\eta_p^2 = .90$ (mean difference = 2.55, 95% CI [2.40, 2.70], $p < .001$). In each case, participants provided significantly higher ratings for both themselves and the other person in response to the high-intensity images compared to the low-intensity images. Additionally, there was a significant effect of target for both the low-intensity images, $F(1, 124) = 129.82$, $p < .001$, $\eta_p^2 = .51$ (mean difference = 0.94, 95% CI [0.78, 1.10], $p < .001$) and the high-intensity images $F(1, 124) = 3.98$, $p = .048$, $\eta_p^2 = .03$ (mean difference = 0.23, 95% CI [0.002, 0.44], $p = .048$). Participants' ratings indicated that they thought that the other person would feel more negative in response to both the low and high-intensity images than they would and that this difference was especially pronounced for the low-intensity images.

**Figure 5.1**

*Negativity Ratings by the Target of Regulation, the Intensity of the Images, and the Order of the Regulation Sections*




*Note.* Error bars show 95% confidence intervals. Asterisks denote statistically significant differences between negativity ratings in response to the images of varying intensity in the respective settings (e.g., when rating how negative they found the low-intensity images having already rated how negative they thought someone else would find the images).

### 5.4. Discussion

Study 2a aimed to examine whether the difference in the effect of intensity when choosing how to regulate another person's emotions compared to when regulating own emotions (as found in Study 1) could be due to people underestimating how negative other people find emotional situations; particularly those that are highly emotional. In contrast to what was predicted, however, the findings of Study 2a suggested that participants typically provided significantly higher (i.e., more negative) ratings for the other person than they did for themselves, especially in response to relatively low-intensity images. This pattern of results was found regardless of the order that the ratings were completed. These findings suggest that people may *over* – rather than underestimate other people's emotional reactions to images.

It is possible that this surprising finding was due to the study's design, in which participants rated both their own and the other person's emotional responses to a series of images. While this is like the design of Study 1 in which participants chose strategies to regulate their own and another person's emotions in response to the respective blocks of images, it did raise the question as to whether the within-participants design of Study 2a could have influenced the results. For example, it is possible participants were drawing comparisons between their own and others emotional reactions, leading them to focus on relative, rather than absolute emotionality. Therefore, Study 2b was conducted to examine whether the within-participants design influenced the results.

## 5.5. Study 2b: Could the findings from Study 2a be due to the within-participants design?

The aim of Study 2b was to see whether doing both tasks (i.e., providing ratings for both their own and someone else's emotions) did not influence the findings. Therefore, Study 2b largely adopted the same procedure as in Study 2a but with a between-participants design; participants were randomly allocated to rate either how negative they found a series of images or to rate how negative they thought that another person would find the images.

## 5.6. Method

### 5.6.1. Participants

A power analysis using GLIMMPSE V3 (Kreidler et al., 2013) was conducted to determine the approximate sample size required based on the means of the negativity ratings from Study 2a. from Study 2a. Based on an alpha of = .05 and power = .80, the projected sample size required was 44. One hundred and twenty-eight female participants were recruited via an email to a list of staff volunteers at The University of Sheffield ($M_{age}$ = 40.47, *SD* = 11.86).

### 5.6.2. Procedure and Materials

The procedure was the same as in Study 2a, except that participants were randomly allocated to the intrapersonal or interpersonal condition so that they only completed ratings for one block of images. Also, as the survey was circulated to a list of University staff, the photograph of the person who participants were led to believe had previously completed the study was of an older female (rather than a younger undergraduate student) with a brief comment stating that they were also a member of staff at the University. The study was approved by the Research Ethics Committee in the Department of Psychology at The University of Sheffield (Amendment to Ref. 016937).

### 5.7. Results

The means and standard deviations for the negativity ratings by the target of regulation and intensity of the images can be found in Table 5.2.

**Table 5.2**

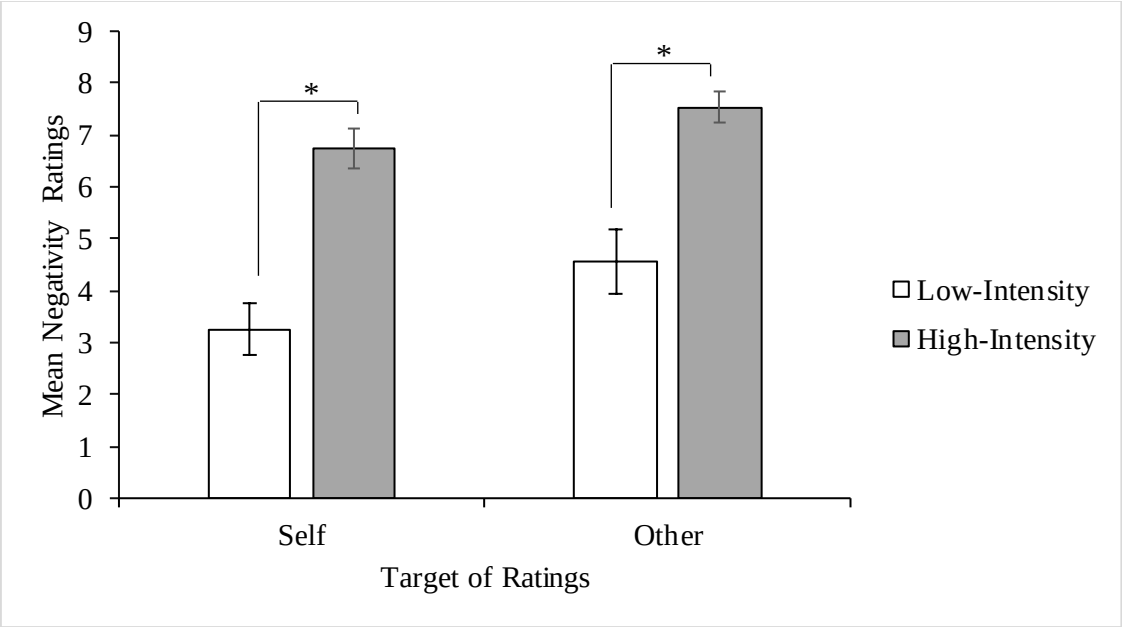
*Negativity Ratings by the Intensity of the Image and Target of Regulation*

| | Target of Regulation | | | | | |
|---|---|---|---|---|---|---|
| Image | Self ($N$ = 75) | | | Other ($N$ = 53) | | |
| | *Mean* | *SD* | *95% CI* | *Mean* | *SD* | *95% CI* |
| Low-intensity | 3.26 | 1.18 | [2.99, 3.53] | 4.56 | 0.91 | [4.31, 4.81] |
| High-intensity | 6.74 | 1.47 | [6.40, 7.08] | 7.54 | 0.71 | [7.34, 7.73] |

The assumption of normality and the assumption of equal variances was violated (as highlighted by a significant Levene's score); therefore, a 2 within (intensity: low vs. high) x 2 between (target: self vs. other) robust mixed-design ANOVA was conducted using R Studio. Based on trimmed means of 20%, there was a significant main effect for intensity, $F(1, 71.93) = 435.14$, $p < .001$, with participants rating the high-intensity images more negative than the low-intensity images, and the main effect for target, $F(71.12) = 33.36$, $p < .001$, with the participants who rated the other person's emotions providing higher ratings (i.e., more negative ratings) for both the low- and high-intensity images than participants who rated their own emotions (see Figure 5.2). However, there was no significant interaction between intensity and target ($F(1, 71.12) = 3.43$, $p = .068$), suggesting that participants thought that the intensity of the images would have a similar effect on their own response as it would on the other person's response.

**Figure 5.2**

*Negativity Ratings by Target of Regulation and Intensity of Images*




*Note.* Error bars show 95% confidence intervals. Asterisks denote statistically significant differences between negativity ratings in response to the images of varying intensity.

## 5.8. Discussion

Study 2b aimed to examine whether the results of Study 2a were due to the within-participants nature of the design. However, the findings of Study 2b suggest that the pattern of results found in Study 2a are not due to the within-participants nature of the design and, taken together, support the idea that people may typically over, rather than underestimate how negative someone else finds the situations. Consequently, the findings from both Study 2a and Study 2b suggest that the difference in the effect of intensity between intrapersonal and interpersonal contexts found in Study 1 is not likely to be due to participants simply underestimating how negative someone else finds the situations. Therefore, Study 3 examined another potential explanation for the difference in the effect of intensity between intrapersonal and interpersonal emotion regulation choice, namely, whether people this could be due to differences in how effortful and/or effective people anticipated regulating emotions in the different regulation contexts would be.

## 5.9. Study 3: Could the difference in the effect of intensity between intrapersonal and interpersonal contexts be explained by differences in anticipated effort and effectiveness of regulating emotions?

The aim of Study 3 was to investigate another possible explanation for the difference in the effect of intensity on how people choose to regulate their own versus another person's emotions. Motivational theories suggest that decisions about exerting control and/or engaging with goal-directed behaviours are made by weighing up the costs and benefits (as in the Expected Value of Control model; Shenhav et al., 2013, 2017) or driving and restraining forces (as in Cognitive Energetics Theory; Kruglanski et al., 2012) of the action. More specifically, the Expected Value of Control model (Shenhav et al., 2013, 2017) posits that when decisions are being made that require an element of cognitive control (emotion regulation in this instance), the expected costs and benefits are considered which estimates the expected value of control (EVC). This in turn determines whether (i) it is worth putting the effort into the task, (ii) how much effort should be put into the task, and (iii) if there are multiple options, which option is the most worthwhile. Cognitive Energetics Theory (CET; Kruglanski et al., 2012) proposes that the likelihood that people will engage in a cognitive process is a function of both driving and restraining forces. Driving forces include the importance of the goal (including expectations about whether this will be attained) and an individual's mental resources. These combine to determine the overall magnitude of the driving force. Restraining forces include the demands of the task at hand, competing goals, and the desire to conserve resources (Muraven et al., 2006).

Taking these motivational theories into account, the decision to choose a particular regulation strategy may involve considering whether the likely effectiveness of implementing the strategy (i.e., the benefits) is worth the effort (i.e., the costs) associated with doing so. As research suggests that reappraisal is more effortful and cognitively demanding than distraction (e.g., Strauss et al., 2016), Study 3 examined whether the difference in the effect of intensity on

intrapersonal and interpersonal ERC might occur because people expect reappraisal to be either less effortful and/or more effective (i) when regulating their own emotions in response to low-intensity images and/or (ii) when regulating someone else's emotions in response to high-intensity images. Specifically, reappraisal might be seen as less effortful/more effective than distraction when people are regulating their own emotions in response to low-intensity images as, according to Sheppes and Gross (2011), fewer resources are required to process less intense emotions so there are more resources available which may make the strategy of reappraisal seem less effortful. Reappraisal may also be seen as less effortful/more effective when helping another person to regulate their emotions in response to high-intensity images, as the 'regulator' may be more removed from the situation when viewing the images as they are thinking about helping another person. Therefore, fewer resources may be used to process the image, making it seem less effortful to use reappraisal to help another person to regulate their emotions.

Furthermore, the idea that people might discount – or forget – how effortful reappraisal is likely to be for other people might also explain why the difference in the effect of intensity on ERC between interpersonal and intrapersonal contexts was stronger when participants chose how to regulate another person's emotion before deciding how to regulate their own. Specifically, it is possible that regulating own emotions reminds people of the effortful nature of reappraisal and so they choose to regulate other's emotions in much the same way as they choose to regulate their own.

### 5.9.1. The Present Research

To that end, Study 3 investigated whether these two regulation contexts of intrapersonal and interpersonal emotion regulation differ in (i) how effortful people believe it will be to implement the different strategies of distraction and reappraisal and (ii) how effective they believe that the different strategies will be at regulating emotions. To do so, participants were asked to rate how effortful and effective they thought using the different strategies of distraction and reappraisal would be to regulate: (i) their own emotions, (ii) to

help another person to regulate their emotions, and (iii) for another person to regulate their own emotions.

Previous findings from Study 1 (Chapter 4) highlighted that participants (i) chose reappraisal to regulate their own emotions in response to low-intensity images, (ii) chose reappraisal to regulate the other person's emotions in response to high-intensity images, and (iii) were more likely to choose reappraisal if they had helped the other person to regulate their emotions first. Consequently, it was predicted that in this study, participants will anticipate that reappraisal is: (i) less effortful/more effective when regulating one's own emotions in response to low-intensity images, and (ii) less effortful/more effective when helping another person to regulate their emotions in response to high-intensity images, and that this would be especially likely for those who provided the ratings for the other person first.

## 5.10. Method

### 5.10.1. Participants

No previous research has investigated the effects of context (i.e., interpersonal vs. interpersonal) and emotional intensity (i.e., high vs. low) on the anticipated effort and effectiveness of regulation strategies. A power analysis was therefore conducted estimating effects on anticipated effort and effectiveness based on means for the interaction between order, intensity, regulation target, and regulation strategy. The overall projected sample size required was 114, with alpha = .05 and power = .80 to examine an interaction between order, intensity, regulation target and regulation strategy using a mixed design ANOVA.

One hundred and thirty-nine female students participated in the study. After those with incomplete responses were removed, the final sample consisted of 93 participants ($M_{age}$ = 19.48, *SD* = 3.02); 82 (76%) were level one Psychology students who received 3-course

credits; the remaining 11 participants were recruited via an email to a list of student volunteers and offered the opportunity to enter a prize draw for participating.

### 5.10.2. Materials

*5.10.2.1. Emotional Stimuli.* A subset of both the low- and high-intensity images from the IAPS used in the previous studies were selected to use in Study 3. Based on the normative ratings published by Lang et al. (2008), the images were categorised as either low-intensity (mean arousal = 4.66, *SD* = 0.61, mean valence = 3.36, *SD* = 0.24) or high-intensity (mean arousal = 6.32, *SD* = 0.49, mean valence = 2.00, *SD* = 0.35). Levels of arousal ($t(22) = 5.63$, $p < .001$, $d = 2.30$) and valence ($t(22) = 8.84$, $p < .001$, $d = 3.61$) were significantly different between the low and high-intensity images, but there were no significant differences between the valence ($t(11) = 0.16$, $p = .872$, $d = 0.03$) or arousal ($t(11) = 1.30$, $p = .220$, $d = 0.36$) ratings between the sets of images used in the intrapersonal and interpersonal regulation sections.

*5.10.2.2. Emotion Regulation Strategies.* Distraction and reappraisal were described to participants in the same way as in Study 1 (Appendix C5).

*5.10.2.3. Ratings.* After each image, participants were asked to rate how effortful and effective they thought that using either distraction or reappraisal would be in controlling either (i) their own emotions, (ii) another person's emotions, or (iii) for another person to control their own emotions on a 7-point scale (1 = not effortful/effective, 7 = very effortful/effective).

### 5.10.3. Procedure

Participants followed a link to an online questionnaire hosted by Qualtrics. Participants first read about the two regulation strategies (distraction and reappraisal) and then practised using these strategies in response to 6 images (3 for each strategy). Following this, they completed a series of test trials which consisted of a brief (1 second) presentation of

one of the images, followed by a question prompting participants to rate how effortful or effective using one of the strategies would be when (i) controlling their own emotions (i.e., intrapersonal regulation), (ii) helping another person to control their emotions (i.e., interpersonal regulation), and (iii) another person was controlling their own emotions (i.e., interpersonal regulation).[8] The ratings of effort and effectiveness in interpersonal contexts were separated into 2 separate blocks consisting of questions about how effortful and effective participants believed it would be to use a particular strategy (i) to help someone else to control their emotions and (ii) for someone else to control their emotions to clearly differentiate who would need to put in the effort – the participant helping someone else to regulate, or the other person doing that regulation. These judgements were separated into three blocks, which were presented in random order. Twelve images were presented in each block (6 of each intensity) and the study took approximately 35 minutes to complete. The study was approved by the Research Ethics Committee in the Department of Psychology at The University of Sheffield (Ref. 031021).

## 5.11. Results

### 5.11.1. Ratings of Anticipated Effort

The means and standard deviations for the anticipated effort ratings by regulation target, intensity of the images, regulation strategy and order of the rating sections can be found in Table 5.3. All analyses were conducted using SPSS.

[8] The block regarding ratings for how effective / effortful another person would find using the strategies to control their own emotions was included as I planned to complete another study during my PhD. This study would have been very similar to Study 1, where participants would be asked to choose which strategies they would use to regulate their own emotions (i.e., intrapersonal ERC) and another person's emotions (i.e., interpersonal ERC), but there would have been an additional block in which the person would simply select a strategy for the other person to use without having to also help the other person to implement that strategy. The inclusion of the additional block in Study 3 would have allowed me to more directly examine whether effort influenced the choice of strategy. However, due to time constraints, this study was not conducted during my PhD.

**Table 5.3.**

*Ratings of Effort by Target of Regulation, Intensity of Images, Regulation Strategy and the Order of the Regulation Sections*

| Regulation target | Order of rating sections | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Intrapersonal-Interpersonal ($N = 23$) | | | | | | Interpersonal-Intrapersonal ($N = 70$) | | | | | |
| | Low-intensity | | | High-intensity | | | Low-intensity | | | High-intensity | | |
| | *Mean* | *SD* | *95% CI* | *Mean* | *SD* | *95% CI* | *Mean* | *SD* | *95% CI* | *Mean* | *SD* | *95% CI* |
| | Reappraisal | | | | | | | | | | | |
| Self | 3.55 | 1.16 | [3.05, 4.05] | 5.09 | 1.14 | [4.60, 5.59] | 3.52 | 0.99 | [3.28, 3.76] | 5.45 | 1.01 | [5.21, 5.70] |
| Self helps other | 3.30 | 1.23 | [2.76, 3.83] | 4.99 | 0.73 | [4.68, 5.31] | 3.77 | 1.00 | [3.53, 4.01] | 5.09 | 0.91 | [4.87, 5.30] |
| Other helps self | 3.48 | 1.27 | [2.93, 4.03] | 4.98 | 0.94 | [4.57, 5.39] | 3.70 | 0.87 | [3.50, 3.91] | 5.19 | 0.97 | [4.96, 5.42] |
| | Distraction | | | | | | | | | | | |
| Self | 3.24 | 1.21 | [3.71, 3.76] | 4.99 | 1.19 | [4.48, 5.51] | 3.18 | 0.89 | [2.96, 3.39] | 5.60 | 0.99 | [5.36, 5.83] |
| Self helps other | 3.17 | 1.33 | [2.67, 3.66] | 4.95 | 1.09 | [4.48, 5.42] | 3.34 | 1.06 | [3,08, 3.59] | 5.18 | 0.98 | [4.95, 5.42] |
| Other helps self | 3.33 | 1.38 | [2.73, 3.92] | 5.01 | 1.12 | [4.52, 4.49] | 3.32 | 0.98 | [3.08, 3.55] | 5.23 | 0.99 | [5.00, 5.47] |

A 2 within (intensity: low vs. high) x 2 within (regulation strategy: reappraisal vs. distraction) x 3 within (nature of regulation: self, self helps other, other helps self) x 2 between (order of regulation section: intrapersonal first, interpersonal first)[9] ANOVA was conducted with ratings of effort as the dependent variable (see Figure 5.3). There were significant main effects of intensity, $F(1, 91) = 228.52$, $p < .001$, $\eta_p^2 = .72$ (participants expected it to be more effortful to regulate their responses to high, relative to low-intensity images, *Ms* = 5.22 and 3.44, respectively, *SDs* = 0.80 and 0.87) and regulation strategy, $F(1, 91) = 8.68$, $p = .004$, $\eta_p^2 = .09$ (participants expected using reappraisal to be more effortful than using distraction, *Ms* = 4.40 and 4.26, respectively, *SDs* = 0.70 and 0.72), which were qualified by a significant two-way interaction between intensity and regulation strategy, $F(1, 89) = 14.42$, $p < .001$, $\eta_p^2 = .14$, and a significant three-way interaction between intensity, nature of regulation, and order of regulation, $F(2, 182) = 3.39$, $p = .036$, $\eta_p^2 = .04$.

Bonferroni-corrected follow-up tests highlighted a statistically significant two-way interaction between intensity and nature of regulation for those who completed the interpersonal ratings first, $F(2, 138) = 12.54$, $p < .001$, $\eta_p^2 = .15$, but not for those who completed the intrapersonal ratings first, $F(2, 42) = 0.16$, $p = .850$, $\eta_p^2 = .01$.Follow-up analyses of this two-way interaction among participants who completed the interpersonal ratings first identified a significant main effect of the nature of regulation on effort both for the low-intensity images, $F(2, 138) = 47.86$, $p < .001$, $\eta_p^2 = .41$, and the high-intensity images, $F(2, 138) = 9.43$, $p < .001$, $\eta_p^2 = .12$. However, the direction of this effect differed between low- and high-intensity images. Participants thought that using the strategies to regulate their own responses to low-intensity images would be significantly *less* effortful for themselves compared to using them to help someone else (mean difference = -0.68, $p < .001$,

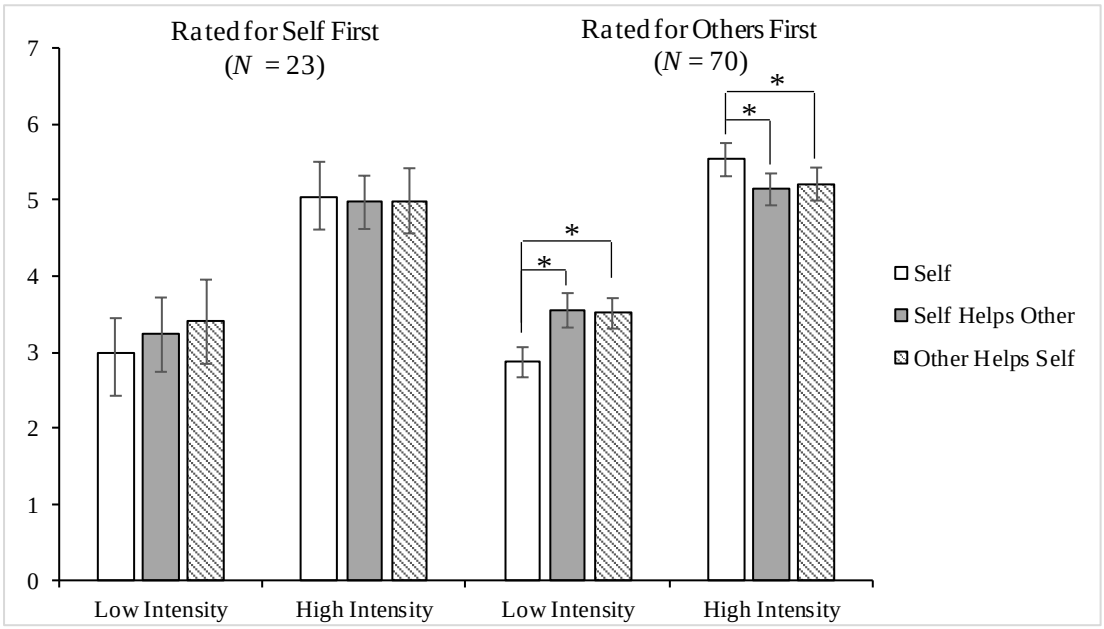
[9] For the purposes of looking at the effect of order, the 'self helps other' and 'other helps self' blocks were collapsed as both reflect interpersonal regulation.

95% CI [-0.87, -0.49]) or for another person to use them to control their own emotions (mean difference = -0.64, $p < .001$, 95% CI [-0.82, -0.45]). In contrast, these participants thought that using the strategies to regulate their own responses to high-intensity images would be significantly *more* effortful than using them to use them to help another person to regulate their emotions (mean difference = 0.39, $p = .001$, 95% CI [0.14, 0.64]) or for another person to use the strategies to control their own emotions (mean difference = 0.31, $p = .003$, 95% CI [0.09, 0.54]). There was no significant difference in the ratings of effort between the two different types of interpersonal emotion regulation.

In turn, although participants consistently rated regulation as more effortful for high-intensity images than low-intensity images, intensity had a larger effect on the ratings of effort when participants were thinking about regulating own emotions, $F(1, 69) = 337.98$, $p < .001$, $\eta^2_p = .83$ (mean difference = -2.65, $p < .001$, 95% CI [-2.94, -2.36]), than when thinking about helping another person to regulate their own emotions, $F(1, 69) = 141.67$, $p < .001$, $\eta_p^2 = .67$ (mean difference = -1.58, $p < .001$, 95% C1 [-1.85, -1.32]), and when thinking about how effortful someone else would find it to regulate their own emotions, $F(1, 69) = 161.23$, $p < .001$, $\eta_p^2 = .70$ (mean difference = -1.70, $p < .001$, 95% CI [-1.97, -1.43]).

**Figure 5.3**

*Ratings of the Anticipated Effort Associated with Regulating by the Target of Regulation, the Intensity of the Images, and the Order of the Regulation Sections*




*Note.* Error bars show 95% confidence intervals. Asterisks denote statistically significant differences between how effortful people thought intrapersonal and interpersonal emotion regulation would be in respective settings (e.g., when thinking about how effortful it would be to regulate their emotions in response to intense images having already chosen how to regulate someone else's emotions in a similar context).

### 5.11.2. Ratings of Anticipated Effectiveness

The means and standard deviations for the anticipated effort ratings by regulation target, intensity of the images, regulation strategy and order of the rating sections can be found in Table 5.4. All analyses were conducted using SPSS.

A similar 2 within (intensity: low vs. high) x 2 within (regulation strategy: reappraisal vs. distraction) x 3 within (nature of regulation: self, self helps other, other helps self) x 2 between (order of regulation section: intrapersonal first, interpersonal first) ANOVA was conducted with the ratings of the effectiveness as the dependent variable (see Figure 5.4). There were significant main effects of intensity, $F(1, 91) = 178.49$, $p < .001$, $\eta^2_p = .66$ (participants expected regulation to be more effective in response to low-intensity images than high-intensity images, *Ms* = 4.77 and 3.30, respectively, *SDs* = 0.83 and 0.89), regulation strategy, $F(1, 91) = 4.16$, $p = .044$, $\eta_p^2 = .04$ (participants expected distraction to be more effective than reappraisal, *Ms* = 5.40 and 5.30, respectively, *SDs* = 1.07 and 1.08), and nature of regulation, $F(2, 182) = 8.80$, $p < .001$, $\eta_p^2 = .09$ (participants thought that the strategies would be more effective for someone else regulating their own emotions than for regulating their own emotions and for them when helping someone else to regulate their emotions, *Ms* = 6.03, 5.84 and 4.18, respectively, *SDs* = 1.24, 1.21 and 0.84). However, as with the ratings of effort, these main effects were qualified by a significant two-way interaction between intensity and regulation strategy, $F(1, 91) = 7.31$, $p = .008$, $\eta_p^2 = .07$, that, in turn, was qualified by a significant three-way interaction between intensity, regulation target, and order of regulation, $F(2, 182) = 3.40$, $p = .036$, $\eta_p^2 = .04$.

**Table 5.4.**

*Ratings of Effectiveness by Target of Regulation, Intensity of Images, Regulation Strategy and the Order of the Regulation Sections*

| Regulation target | Order of rating sections | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Intrapersonal-Interpersonal ($N = 23$) | | | | | | Interpersonal-Intrapersonal ($N = 70$) | | | | | |
| | Low-intensity | | | High-intensity | | | Low-intensity | | | High-intensity | | |
| | *Mean* | *SD* | *95% CI* | *Mean* | *SD* | *95% CI* | *Mean* | *SD* | *95% CI* | *Mean* | *SD* | *95% CI* |
| | Reappraisal | | | | | | | | | | | |
| Self | 4.43 | 1.32 | [3.86, 5.00] | 3.27 | 1.31 | [2.70, 3.84] | 4.65 | 1.01 | [4.41, 4.88] | 2.99 | 1.14 | [3.23, 3.75] |
| Self helps other | 4.86 | 1.11 | [4.38, 5.34] | 3.58 | 1.11 | [3.10, 4.06] | 4.71 | 1.00 | [4.48, 4.95] | 3.49 | 1.09 | [3.23, 3.75] |
| Other helps self | 4.81 | 1.22 | [4.28, 5.34] | 3.48 | 1.19 | [2.95, 3.99] | 4.50 | 0.95 | [4.27, 4.73] | 3.35 | 1.12 | [3.08, 3.61] |
| | Distraction | | | | | | | | | | | |
| Self | 4.91 | 1.06 | [4.46, 5.37] | 3.47 | 1.18 | [2.96, 3.98] | 4.85 | 1.03 | [4.61, 5.11] | 2.83 | 1.17 | [2.55, 3.11] |
| Self helps other | 5.12 | 1.04 | [4.67, 5.57] | 3.75 | 1.33 | [3.17, 4.32] | 4.97 | 1.00 | [4.73, 5.21] | 3.36 | 1.07 | [3.11, 3.62] |
| Other helps self | 5.09 | 0.93 | [4.69, 5.50] | 3.59 | 1.19 | [2.96, 3.99] | 4.50 | 0.95 | [4.27, 2.73] | 3.35 | 1.12 | [3.08, 3.61] |

Follow-up analyses[10] highlighted a statistically significant two-way interaction between intensity and regulation target for those who completed the interpersonal ratings first, $F(1.74, 119.81) = 8.86$, $p < .001$, $\eta_p^2 = .11$, but not for those who completed the intrapersonal ratings first, $F(1.58, 34.69) = 0.22$, $p = .753$, $\eta_p^2 = .01$. Simple main effects identified a significant main effect of the nature of regulation for the low-intensity images, $F(2, 138) = 3.42$, $p = .036$, $\eta_p^2 = .05$, and the high-intensity images $F(2, 138) = 11.85$, $p < .001$, $\eta_p^2 = .15$. Participants who completed the interpersonal ratings first thought that regulation would be significantly *less* effective for another person trying to control their emotions in response to low-intensity images than if they were to help someone else to control their emotions in response to those images (mean difference = -0.24, $p = .029$, 95% CI [-0.46, -0.02]). There were no significant differences between how effective participants thought it would be to control their own emotions compared to both types of interpersonal emotion regulation. Furthermore, participants thought that regulation would be significantly *less* effective when regulating their own response to high-intensity images compared to helping someone else (mean difference = -0.52, $p < .001$, 95% CI [-0.82, -0.21]) or for another person to control their own emotions (mean difference = -0.44, $p = .001$, 95% CI [-0.73, -0.15]). There was no significant difference between how effective participants thought it would be to help someone else to control their emotions and how effective they thought it would be for someone else to control their emotions for the high-intensity images.

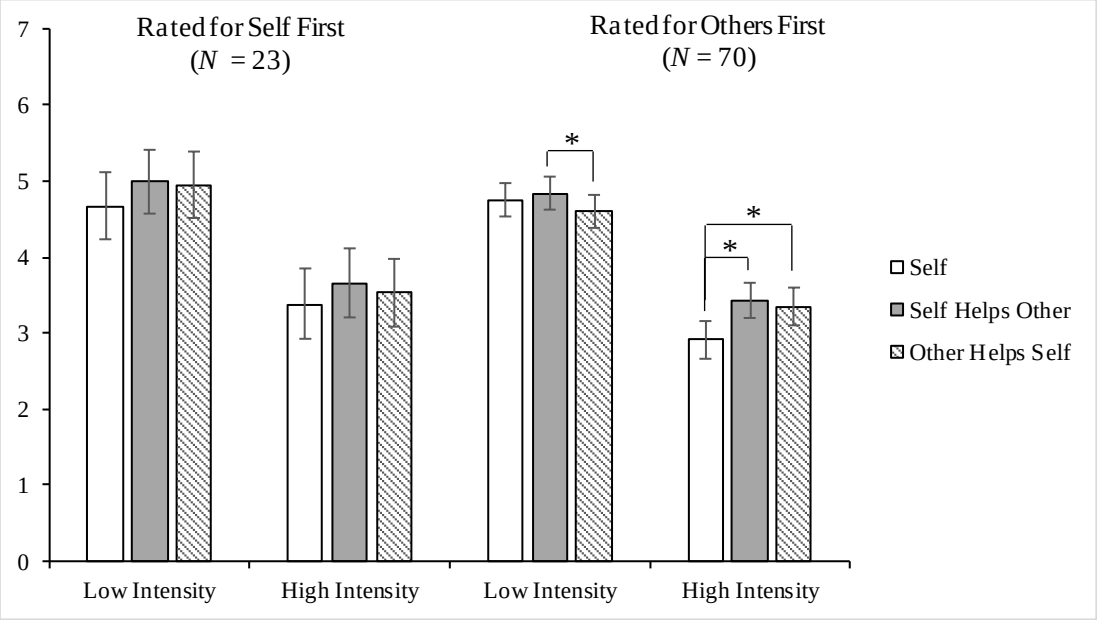
Simple main effects also revealed that, for those who completed the interpersonal ratings first, intensity influenced ratings of effectiveness in all three regulation contexts – i.e., when thinking about regulating own emotions, $F(1, 69) = 152.47$, $p < .001$, $\eta_p^2 = .69$ (mean

[10] Mauchly's test indicated that the assumption of sphericity had been violated, $\chi^2(2) = 11.20$, $p = .004$, therefore degrees of freedom were corrected using Greenhouse-Geisser estimates.

difference = 1.84, $p < .001$, 95% CI [1.54, 2.14]), when thinking about helping another person to regulate their own emotions, $F(1, 69) = 151.98$, $p < .001$, $\eta_p^2 = .69$ (mean difference = 1.41, $p < .001$, 95% CI [1.19, 1.64]), and when thinking about how effective someone else would find it to regulate their own emotions, $F(1, 69) = 78.19$, $p < .001$, $\eta_p^2 = .53$ (mean difference = 1.25, $p < .001$, 95% CI [0.97, 1.54]); although the effect of intensity on judgements of how effective strategies were likely to be was noticeably smaller when thinking about how effective someone else would find the strategies for regulating their emotions.

**Figure 5.4**

*Ratings of the Anticipated Effectiveness of Regulation by the Target of Regulation, the Intensity of the Images, and the Order of the Regulation Sections*




*Note.* Error bars show 95% confidence intervals. Asterisks denote statistically significant differences between how effective people thought intrapersonal and interpersonal emotion regulation would be in the respective settings (e.g. when thinking about how effective it would be to regulate their emotions in response to intense images having already chosen how to regulate someone else's emotions in a similar context

## 5.12. Discussion

Study 3 aimed to examine whether the extent to which people consider both the anticipated effort and anticipated effectiveness associated with implementing emotion regulation strategies might explain the difference in the effect of intensity on how people choose to control their own compared to another person's emotions identified in Study 1 (Chapter 4).

In terms of the effect of anticipated effort, it was thought that people may choose reappraisal more frequently when (i) regulating their own emotions in response to low-intensity images, and/or (ii) regulating someone else's emotions in response to high-intensity images because they anticipate that reappraisal will be less effortful in these contexts. Therefore, it was predicted that people would anticipate reappraisal to be less effortful when regulating their own emotions in response to low-intensity images, and/or regulating someone else's emotions in response to high-intensity images. It was found that participants who completed the ratings for another person first thought that regulation would be less effortful for themselves in response to low-intensity images than when helping someone else to regulate or for someone else helping themselves, but more effortful for themselves in response to high-intensity images than when helping someone else to regulate or for someone else helping themselves. While there do not appear to be differences in terms of how effortful the two different regulation strategies are perceived to be as I predicted, when considered with the main effect of strategy, which highlighted that participants expected reappraisal to be more effortful to use than distraction – which is in line with previous research (e.g., Strauss et al., 2016) - these findings suggest that differences in the anticipated effort associated with regulating emotions may contribute to the differences between ERC in intrapersonal and interpersonal contexts. Furthermore, as these differences were only found among participants who completed the interpersonal ratings first, it is possible that participants who completed

the ratings for themselves first (i.e., intrapersonal ratings) realised how much effort using reappraisal would require.

Participants were also asked how effective they thought that the strategies would be in helping them to regulate their emotional responses or those of the other person. Based on Shenhav et al.'s (2013, 2017) ideas about the expected value of control, it was predicted that people might choose reappraisal more frequently in (i) intrapersonal contexts in response to low-intensity images, and (ii) interpersonal contexts in response to high-intensity images because they anticipate reappraisal to be more effective in these contexts. Again, there do not appear to be differences in terms of how effective the two different regulation strategies are perceived to be as I predicted. However, it was found that participants who completed the interpersonal section first thought that regulation would be less effective for controlling their own emotions in response to high-intensity images than when helping another person to control their emotions or for another person controlling their own emotions. These findings can be taken to suggest that differences in expected effectiveness may also have contributed to the increased choice of reappraisal over distraction in response to high-intensity images in interpersonal contexts.

Taken together, these findings suggest that motivational frameworks, such as Cognitive Energetics Theory (CET; Kruglanski et al., 2012) could help to explain both the differences in the effect of intensity observed between intrapersonal and interpersonal ERC and why these differences were smaller when people regulated their own emotions first. CET (Kruglanski et al., 2012) proposes that a balance of driving and restraining forces determine the likelihood of an action. Milyavsky and colleagues (2019) applied this framework to understand whether people choose to regulate their emotional responses to images using reappraisal or simply to watch the images instead. They suggested that the intensity of an emotional situation can simultaneously act as both a driving force and a restraining force and

that people are less likely to choose reappraisal in response to high-intensity images because, despite being motivated to regulate in such contexts, which serves as a driving force, the difficulty associated with reappraisal is also high, which serves as a restraining force. As there are both driving and restraining forces, they essentially cancel each other out, resulting in reappraisal not being selected.

Study 3 could therefore be interpreted as comparing possible driving forces (e.g., the anticipated effectiveness of regulating) and restraining forces (e.g., the anticipated effort of regulating) in shaping intrapersonal and interpersonal ERC. The findings suggest that not only may the restraining force be lower when helping someone else to regulate their emotions (i.e., participants thought that regulation would be less effortful when helping to regulate others emotions than when regulating their own emotions) but also that the driving force may be higher when helping someone else to regulate their emotions (i.e., participants thought that regulation would be more effective when helping someone else regulate their response to high-intensity images compared to when regulating their own emotions). Subsequently, the driving force may be more likely to exceed the restraining force in interpersonal, as compared to intrapersonal contexts, which results in reappraisal being selected more frequently when helping someone else to regulate their response to high-intensity images, compared to when regulating own emotions.

Finally, CET may also help to explain the finding that the differences between regulatory choices between interpersonal and intrapersonal regulation contexts were more strongly found for those who completed the interpersonal section first. Specifically, it is possible that regulating own emotions (i.e., completing the intrapersonal regulation section first) anchored participants' judgements regarding the driving and restraining forces in this mode of regulation (e.g., participants were reminded of how effortful and effective the strategies were likely to be), resulting in the same regulatory choices being made when

helping someone else to control their emotions as when choosing how to control their own emotions. In contrast, when participants helped the other person to control their emotions first (i.e., completed the interpersonal regulation section first), they may have discounted or forgotten how effortful and/or effective strategies are, with the consequence that their decisions about how to regulate the other person's emotional responses reflected how effortful and effective they believed that the strategies would be *in interpersonal contexts*, without necessarily anchoring these judgements in their experiences of regulating their own emotions. Taken together, motivational accounts like CET not only help to understand how people choose to regulate their own emotions (Milyavsky et al., 2019), but also those of other people.

### 5.13. Study Limitations and Future Directions

The findings from Study 3 should be considered in light of its limitations. Despite providing preliminary evidence that the difference between the effect of intensity when controlling one's own emotions compared to when helping another person to control their emotions might be due to differences in the anticipated effort and effectiveness associated with implementing the different strategies, the regulation choices that people made and the expected effectiveness and effort associated with regulation strategies were not measured within the same study. Further research is therefore required to explicitly test whether beliefs about effort and efficacy predict choice.

Furthermore, while these findings seem consistent with a CET framework, the studies were not explicitly conducted within this framework and other factors that have not been considered here are likely to also contribute to the driving and restraining forces. For example, factors relating to the person doing the regulating, such as how empathetic they are or the extent to which they monitor how they appear to others (Snyder, 1974), might influence the driving and restraining forces associated with interpersonal ERC. Consequently,

this might prove a fruitful area for future research to further understanding regarding how people choose to help others to control their emotions.

This study also examined how different levels of the same processes (i.e., differences in the anticipated effort and effectiveness of the regulation strategies between intrapersonal and interpersonal emotion regulation) might explain the difference in the effect of intensity on intrapersonal and interpersonal ERC identified in Study 1 (Chapter 4). However, there may be additional processes involved in interpersonal ERC that were not considered in the present research. For example, the increased psychological distance between the target and the regulator in interpersonal regulation contexts might result in different choices being made (e.g., Polman & Emich, 2011). Additionally, as regulation attempts in interpersonal contexts are often more overt and someone else is witness to them (namely, the target), they may raise self-monitoring or self-presentational concerns in the regulator (Snyder, 1974). Such concerns may also influence the strategies that people choose to help someone else to regulate their emotions, as they may wish to choose a strategy that portrays them in a favourable light (e.g., shows that they are taking the other person's emotions seriously). These additional processes might impact ERC directly (i.e., in addition to beliefs about the anticipated effort and effectiveness of regulation strategies) or indirectly via, for example, beliefs regarding the anticipated effort and effectiveness of using different strategies in different regulation contexts. For instance, the increased psychological distance between the regulator and the target in interpersonal contexts might lead people to underestimate how effortful it would be to regulate the other person's emotions. In short, the present research should be considered as a starting point in understanding the mechanisms which underlie how people choose to help others to regulate their emotions.

Finally, it should be noted that the image sets used within the studies in Chapters 4 and 5 were not counterbalanced across the intrapersonal and interpersonal conditions. While

care was taken to match the images in terms of the valence and arousal of the emotions that they were likely to elicit (as indicated by the norms published by Lang et al., 2008) and the content of the images was also sought to be matched as far as possible and the image sets were not identical in each study. As outlined in Chapter 2, a wealth of research has also been conducted looking at the effect of intensity on ERC across various sets of images and the effect of intensity has been replicated across these studies. However, there could still be subtle differences between the image sets and counterbalancing the images used in the different blocks would have prevented any potential confound to this manipulation. Therefore, this is something that should be considered in future research into interpersonal ERC.

## 5.14. Conclusion

Chapter 5 has presented 2 different explanations for the difference in the effect of intensity between intrapersonal and interpersonal regulation contexts. The findings from Studies 2a and 2b suggest that the increased choice of reappraisal when helping someone else to regulate their emotions in response to high-intensity images is not likely to be due to people underestimating how negative they think another person would find the emotional images. Instead, it seems possible that the difference identified in Study 1 (Chapter 4) is due to differences in anticipated effort and effectiveness of emotion regulation in the different contexts. However, as highlighted above, these findings are indirect and preliminary as interpersonal ERC was not examined in this study. Further research is needed that examines both anticipated effort and effectiveness and actual regulatory choices before more definitive conclusions can be made. That being said, the present research begins to understand possible underlying mechanisms of interpersonal ERC.

# Chapter 6: General Discussion

The main aim of the research presented in this thesis was to further current understanding of relatively understudied stages of emotion regulation - namely the selection stage - and highlight and examine the factors that influence not only how people choose to control their own emotions (i.e., intrapersonal ERC), but also how people choose to help others to regulate their emotions (i.e., interpersonal ERC). To that end, this thesis has presented: A systematic review and meta-analysis of research examining the factors that influence intrapersonal ERC (Chapter 2); a study investigating whether people choose the same strategies to regulate both their own and other's emotions in response to varying emotional intensity (Chapter 4) and three studies testing possible explanations for the difference in the effect of intensity on ERC between intrapersonal and interpersonal regulation (Chapter 5). This final chapter will first outline the key findings and conclusions of this work (Section 6.1), alongside implications that can be drawn from these findings (Section 6.2), before discussing the strengths and limitations of the research (Section 6.3), and suggestions for future research (Section 6.4). Finally, overall conclusions will be drawn (Section 6.5).

## 6.1. Summary of Key Findings and Conclusions

Chapter 2 presented the first systematic review with meta-analysis examining the factors that influence whether and how people choose to regulate their emotions. Two-hundred and nineteen studies were identified that either measured and/or manipulated factors that might influence whether and how people choose to regulate their emotions (e.g., the emotional intensity of a situation, Sheppes et al., 2011, 2014; a person's beliefs about the utility of emotions, Tamir & Ford, 2012a, 2012b). These were organised and categorised using Sheppes and colleagues (2014) conceptual framework, which in line with Sheppes

(2020) was extended to include two additional categories of factors, namely individual/dispositional determinants (i.e., relating to the individual who is doing the regulating, such as gender or age) and social-cultural determinants (i.e., relating to the broader context in which the emotion regulation attempt is taking place in, such as culture). Multiple ways of measuring ERC were also identified: (i) measures in which participants chose between various strategies available to them to regulate their emotions; (ii) measures in which participants explicitly chose between stimuli likely to induce different emotions; (iii) measures that reflect the amount of time that participants spent viewing various stimuli in an attempt to regulate their emotions; and (iv) measures in which participants rated which stimuli they would prefer to engage with or which specific emotions they would ideally experience in a particular situation. The findings of the review were used to propose a framework for understanding intentions to regulate and ERC (see Figure 2.2).

The research presented in this thesis also extends research on ERC, which to date has largely examined how people choose to control their own emotions (i.e., intrapersonal ERC, as reviewed in Chapter 2), to also examine how people choose to help others to control their emotions (i.e., interpersonal ERC, Chapter 4). Specifically, Study 1 extended the ERC task developed by Sheppes et al. (2011) to apply to interpersonal contexts and used it to investigate whether people choose the same strategies to regulate other people's emotions as they do to regulate their own emotions in response to images of varying intensity. This study identified similarities between how people choose to regulate their own emotions and how people choose to help others to regulate their emotions, with participants choosing reappraisal more frequently in response to the low-intensity images and distraction more frequently in response to high-intensity images in both regulation contexts. However, the findings also suggested differences between intrapersonal and interpersonal emotion regulation, as participants chose reappraisal more frequently to regulate their own emotions in response to

low-intensity images, but more frequently to help the other person to control their emotions in response to high-intensity images. Furthermore, the difference in the effect of intensity between intrapersonal and interpersonal regulation contexts was stronger for those who helped the other person to control their emotions first. These findings replicated the findings from my MSc project outlined in Chapter 3.

Having established that the effect of intensity differs between intrapersonal and interpersonal contexts, First, it was examined whether individual differences in empathy, self-monitoring and/or social desirability might predict the difference between intrapersonal and interpersonal ERC (Study 1, Chapter 4). However, the results suggested that the difference in ERC between the intrapersonal and interpersonal contexts was not predicted by empathy, self-monitoring and/or social desirability. Therefore, in Chapter 5, a number of alternative explanations were examined. Firstly, Study 2a examined whether the difference in the effect of intensity could be explained by people underestimating how negative another person would find the images However, contrary to what was predicted, the findings from this study suggested that people may over – rather than under – estimate other people's emotional reactions. Study 2b confirmed that this difference was not simply a methodological artefact of the within-participants design.

Study 3 drew on motivational frameworks such as the Expected Value of Control model (Shenhav et al., 2013, 2017) and Cognitive Energetics Theory (Kruglanski et al., 2012) to examine whether people choose reappraisal more frequently for (i) themselves in response to the low-intensity images and (ii) for others more frequently in response to the high-intensity images because people expect reappraisal to be either less effortful and/or more effective; in response to (i) low-intensity images when regulating their own emotions and (ii) high-intensity images when regulating someone else's emotions. While the findings from Study 3 were not in line with the predictions regarding differences in the anticipated effort

and effectiveness between the two different regulation strategies, they do, the findings provide indirect support for this idea and suggested that the difference in the effect of intensity on ERC between intrapersonal and interpersonal contexts may be due to differences in the anticipated effort and/or the anticipated effectiveness of emotion regulation. In short, theories and models that point to the interplay between driving and restraining influences on decision making may provide a useful theoretical context within which to interpret the findings of the research presented in this thesis.

When taking the findings of the thesis together as a whole, it could be suggested that the differences in how people expect others to react to the images presented to them highlighted in Studies 2a and 2b could partly explain the differences in the anticipated effort and effectiveness identified in Study 3. For example, for the low-intensity images, people provided higher negativity ratings for other people than themselves, suggesting that people think that others would react more negatively (i.e., more strongly) than they would themselves. Thus, it could be suggested that because of this difference in the anticipated reaction, that people will anticipate regulating their own emotions to be less effortful and more effective than regulating other people's emotions in response to low-intensity stimuli. However, for the high intensity images, the findings suggest that another person would find these images more negative than themselves, but would find regulating their emotions less effortful and more effective than it would be for themselves. Therefore, the findings regarding the anticipated reactions to the high-intensity images do not parallel the differences anticipated effort and effectiveness of regulating others' emotions and thus do not seem to potentially explain the differences in the anticipated effort and effectiveness associated with ERC in response to high-intensity images. That said, the work presented in this thesis suggests that there is possibly a complex interplay between judgements about others'

emotions, and the anticipated effort and effectiveness of regulatory strategies, but further work is needed to disentangle their effects.

### 6.2. Implications of the Present Work

There are a number of important theoretical and applied implications of the work presented in this thesis. Firstly, the proposed framework for understanding ERC highlights the limits of the research to date and thus possible directions for future research. For example, very limited research has investigated the influence of the social and social and cultural context on intentions to regulate and ERC (e.g., Ma et al., 2018; Mehta et al., 2017, Study 3). Similarly, there is limited research examining the factors that influence whether people choose to regulate their emotions (i.e., intentions to regulate). Therefore, based on the proposed framework future research should examine (i) the influence of factors on how people choose to regulate their emotions, and (ii) what influences whether people decide to regulate their emotions in the first instance (see Section 6.4 for further details).

A second important theoretical contribution of the review presented in Chapter 2 is to distinguish between measures that reflect the use of different regulation strategies (e.g., the Emotion Regulation Questionnaire, Gross & John, 2003) and measures that reflect the choice of different regulation strategies (e.g., the ERC task, Sheppes et al., 2011). As highlighted in Chapter 2, when the strategies that people use have been measured, it cannot be determined whether participants actively chose to use these strategies in that particular situation. This is because people may have used these strategies simply because it is what they usually do, or because the response was triggered by aspects of the environment (Bargh & Chartrand, 1999). By distinguishing between measures of emotion regulation strategy use and emotion regulation strategy choice, it became apparent that a number of both lab-based (e.g., Pauw et al., 2019) and field-based studies (e.g., English et al., 2017; Wilms et al., 2020) that have purportedly examined ERC have examined what strategies have been used in a particular

situation. Therefore, future research into ERC should ensure that methods accurately reflect how people choose to regulate their emotions, which in turn will ensure that appropriate conclusions are drawn. This also needs to be considered in work regarding interpersonal ERC, as illustrated in the method employed which explicitly examined choice of strategies in Study 1.

Additionally, the work presented in the current thesis broadens the definition of "ERC". Prior to this work being conducted, ERC was largely used to the choice between different regulation strategies (e.g., Sheppes et al., 2011, 2014). However, the current work identified a number of different measures of ERC, and also suggested that people can also choose how to regulate their emotions within different strategies, not just between them. The findings from the studies presented in Chapter 4 and Chapter 5 contribute to our understanding of emotion regulation and emotion regulation choice as direct comparisons are made between intrapersonal and interpersonal ERC. These findings extend previous research into intrapersonal ERC by highlighting that there is also an effect of intensity on how people choose to help others to regulate their emotions (i.e., interpersonal ERC) and that the effect of intensity differs in magnitude between intrapersonal and interpersonal contexts.

Furthermore, the findings illustrate that, while there are similarities between how people choose to regulate their own emotions and how people choose to help others to regulate their emotions, there are also differences. This is in line with the idea that, while both types of regulation are similar (e.g., they are both goal-directed), they are also distinct forms of regulation (Niven, 2017; Nozaki & Mikolajczak, 2020). The present findings suggest that generalisations across these different regulation contexts may not be appropriate. Likewise, alongside the same factors (i.e., intensity) that seemingly have a different effect on the choice of strategy in intrapersonal and interpersonal contexts, there may be other factors that influence interpersonal ERC that are not considered (or at least are not as prominent) in

intrapersonal ERC. For example, the increased psychological distance between the target and the regulator in interpersonal regulation contexts might result in different choices being made, as previously found in research conducted into self-other decision making (Polman, 2012; Polman & Emich, 2011).

The findings from these studies also suggest that motivational frameworks such as CET (Kruglanski et al., 2012) can also be applied in interpersonal contexts to help to understand how people choose to help others to regulate their emotions. This complements research conducted examining the driving and restraining forces associated with intrapersonal ERC (Milyavsky et al., 2019). Furthermore, applying motivational frameworks allowed the examination of a potential explanation for the difference in the effect of intensity on ERC identified between intrapersonal and interpersonal contexts (i.e., anticipated effort and effectiveness of regulation). Further application of these frameworks could help to identify other potential driving and restraining forces associated with ERC. For example, Kruglanski and colleagues (2012) suggested that the importance of a goal is a driving force, and while goals have been found to be associated with intrapersonal ERC – as outlined in Chapter 2 – no work to date has examined how goals influence interpersonal ERC. Therefore, future research may aim to further examine whether driving forces, such as how important goals are, relate not only to intrapersonal ERC, but interpersonal ERC.

Alongside these theoretical contributions and implications, the work presented in this thesis also has possible applied implications. For example, Chapter 2 identified a number of different determinants of intrapersonal ERC and Chapters 4 and 5 provided some preliminary evidence of some of the factors that might influence interpersonal ERC. Therefore, the current findings highlight some contextual factors that could be investigated further to see if they could be adapted to foster environments that facilitate the selection of contextually

adaptive strategies. This might be particularly important in stressful situations, such as the transition to college (Kneeland & Dovidio, 2020).

Finally, participants in the studies reported in this thesis were asked to regulate the emotions of strangers (i.e., people who they had not met previously) and interpersonal emotion regulation does regularly occur in daily life between strangers. For example, interpersonal emotion regulation may occur between an interviewer and interviewee at the start of the interview, and between a health care practitioner and a patient during an appointment. Therefore, the research examining what influences interpersonal ERC may have implications in settings where regulation occurs between strangers, such as workplaces and/or health care environments, by enabling contextually adaptive choices to be made.

## 6.3. Strengths and Limitations of the Present Work

### 6.3.1. Strengths of the Present Work

One of the main strengths of the work presented in this thesis is that it tackles novel research questions regarding how people choose to regulate both their own and other people's emotions. For example, the review presented in Chapter 2 addressed the need for a systematic and comprehensive review of the evidence to date regarding ERC. While a narrative review of the research examining ERC was published at the same time as the present work was being conducted (Sheppes, 2020), that review largely focused on studies using the ERC paradigm (i.e., choice of strategy), whereas the review presented in the thesis identified multiple ways in which ERC has been studied and measured, thus generating a more complete understanding of the state of the field of ERC to date. Furthermore, the present review also meta-analytically examined the effect of multiple factors on intentions to regulate and measures of ERC, which in turn allowed a framework for understanding these emotion regulation decisions to be developed. Therefore, the findings from the present review both complement and extend Sheppes (2020) review and provide a framework (Figure 2.2) for a

systematic and coordinated approach to further research on whether and how people choose to regulate their emotions.

Another strength of the review presented in Chapter 2 is that measures of ERC were separated from those which measure the *use* of emotion regulation strategies (e.g., self-report measures such as the Emotion Regulation Questionnaire, Gross & John, 2003). This distinction ensures that an active choice as to whether and how to regulate, as opposed to habitual use of particular strategies, is measured and, thus, that any conclusions drawn reflect how people choose to control their emotions, as opposed to what they used to do so. This distinction between measuring the use of a regulation strategy and the choice of a regulation strategy was also applied when examining interpersonal ERC by extending Sheppes and colleagues (2011) paradigm in which an active choice between strategies is made. By doing so, this addresses limitations with studies that have started to have examined interpersonal ERC, but upon closer inspection have measured the use of regulation strategies in interpersonal contexts (e.g., Pauw et al., 2019). Such research is still important in developing our understanding of emotion regulation, but caution should be taken as the conclusions that have been drawn do not accurately reflect what has been measured.

Furthermore, there are several strengths associated with the methods employed in this thesis. Namely, Studies 1-3 used an experimental design in which participants were randomly allocated to the conditions. In Study 1, a confederate was recruited which allowed participants to make choices for an actual person with who they could communicate the implementation of the strategies too, while also maintaining a high level of control in the sense that all participants made the choices for the same person. Additionally, when using reappraisal, participants were asked to change the meaning of the image but refrain from saying that it was a fake scene (i.e., to avoid challenging reality) to maximise the ecological validity of the reappraisals, as people are unlikely to benefit from challenging the reality of

the situation when experiencing an emotional situation in daily life (Opitz et al., 2015). Therefore, despite being lab-based and online studies, care was taken to foster ecological validity while maintaining experimental control.

### 6.3.2. Limitations of the Present Work

Despite the research in this thesis providing a valuable step in furthering our understanding of both intrapersonal and interpersonal ERC, some limitations must be taken into consideration. First, while the use of Sheppes and colleagues (2011) ERC task allowed active choices to be examined, there are a number of limitations with the paradigm. For example, participants were only able to choose between two regulation strategies in response to pictorial stimuli. It is likely that in real-life emotional situations people will have a greater range of strategies to choose from when regulating their own and others' emotions and how the strategies will be implemented in real-life regulation situations may also be different. For example, people may behaviourally implement the strategy of distraction by watching television or going out for a walk. Although findings regarding a greater use of reappraisal in interpersonal contexts in response to pictorial stimuli seem to be supported by other studies which examined the spontaneous use of regulation strategies in response to both emotional videos and an interaction with a virtual human (Murry, 2018), the ecological validity of the current findings may be called into question. Consequently, subsequent research might consider offering a greater range of strategies for participants to choose from and/or examine ERC in response to other stimuli, such as videos, and by asking participants to choose between a greater number of strategies. Alternatively (or in addition), López-Pérez and Pacella's (2021) *Emodiscovery* game could be adapted for use with adult samples, as this game provides participants with a choice between 4 strategies. Furthermore, as suggested in Chapter 2, experience sampling methods could be employed if they explicitly asked participants about their *choice* of strategies.

Similarly, the requirement to verbalise the chosen regulation strategy differed between the intrapersonal and interpersonal regulation conditions which could be considered a limitation in the sense that it added a further difference between the contexts. Rather than a limitation, however, it could be argued that this difference is synonymous with the nature of these two contexts. For example, interpersonal emotion regulation outside the laboratory often occurs within live social interactions (Dixon-Gordon et al., 2015; Zaki & Williams, 2013). Likewise, people probably rarely verbalise their regulation strategies to themselves in real life. Therefore, if the requirement to verbalise versus not verbalise the chosen regulation strategy accounts for the different effect of intensity on ERC in the two contexts, then it likely reflects a valid explanation, rather than an unfortunate confound.

Another limitation is the relatively small sample sizes across the studies, especially as our hypotheses primarily concerned three-way interactions and one of the studies (Study 3) was under-powered as determined by power analyses. Although the effects were consistent across the studies, larger samples would increase confidence in the findings, especially with respect to whether the findings can be generalised to other samples and contexts. With this in mind, it is also worth noting that all the participants examined in the studies presented in Chapters 4 and 5 were female and, with the exception of Study 2b, university aged. As research on emotion regulation frequently finds differences as a function of gender and age (e.g., Nolen-Hoeksema & Aldao, 2011) this is something that should be addressed within future studies. That being said, as the work presented here is some of the first to consider interpersonal ERC, therefore the consistency in these samples recruited helps to provide a starting point for future work to build upon and make comparisons with.

In a similar vein, the present research focused on regulation between two strangers, which is in contrast to other studies examining the use of regulation strategies in interpersonal contexts, in which close relationships have been examined, such as romantic relationships

(e.g., Horn et al., 2019; Levy-Gigi & Shamay-Tsoory, 2017) have often been examined. Consequently, this could have shaped the choices that the participants made. For example, people may have more information available to help judge how people might feel and what they might want to feel in that specific situation if they are known to the person. This information might determine which strategy they choose to regulate their emotions. However, when helping a stranger to regulate their emotions, the information available to help choose a strategy might be limited such as empathic forecasts in which the regulator forecasts how they think the other person wants to feel (Pollmann & Finkenauer, 2009). Studies in the future might, therefore, examine interpersonal ERC with different populations forming the dyadic interactions. For example, future studies could examine regulatory choices made between those with different relationships (e.g., familial and romantic) to investigate whether the nature of the relationship between the regulator and the target of the regulation attempt influences interpersonal ERC.

Furthermore, it is also worth noting that the paradigm involved both the regulator and the target seeing the image at the same time, which may have resulted in the regulator trying to control their own response as well as attempting to help the other person to control their response. This situation is ecologically valid in the sense that interpersonal regulation often occurs in a situation where both the regulator and the target share the emotional experience (e.g., two friends watching a film together). However, there are other interpersonal emotion regulation contexts in which people only have to attempt to control the emotions of another person (e.g., a friend describing their bad day at work). Therefore, future research might want to examine the choices made in interpersonal contexts in which the regulator is not directly involved to examine whether and how simultaneous emotion regulation influences how people choose to help others to control their emotions.

Finally, the work in this thesis examined the effect of one factor (i.e., intensity) in isolation, which is something that Chapter 2 revealed to be typical in research examining ERC. However, how people choose to regulate their own and others' emotions is likely to be more complex than this. As suggested by the framework in Chapter 2 (Figure 2.2) it is possible that the factors identified could be more distal determinants (e.g., individual and social-cultural determinants) whereas others could be more proximal determinants (e.g., affective, motivational and cognitive determinants), and that the effect of more distal determinants may be mediated by more proximal determinants. Similarly, there may be interactions both within and across distal and proximal determinants. For example, intrapersonal and interpersonal ERC could depend on an interaction between individual and social-cultural factors. Therefore, to further current understanding of intrapersonal and interpersonal ERC, future research should directly compare the relative impact of different factors that might influence ERC within a single study.

### 6.4. Future Directions

The work presented in this thesis is some of the first to examine both how people choose to regulate their own emotions and how people choose to help others to control their emotions. As such, the research provides a foundation for future research. This section will outline possible future directions for research on both intrapersonal and interpersonal emotion regulation and the different stages of emotion regulation, and also highlight potential implications of this research.

First, as previously suggested, the framework for understanding the potential determinants of ERC proposed in Chapter 2 (Figure 2.2) might provide a useful starting point for future research. The framework - alongside Table 2.2 - highlights gaps in the research to date, such as the limited evidence regarding the influence of culture on whether and how people choose to control their emotions, and how the effect of certain factors (e.g., the

intensity of the emotion) has largely been looked at in relation to one specific measure of ERC (i.e., the choice of strategy). Therefore, for more definitive conclusions to be drawn regarding the influence of certain factors on whether and how people choose to regulate their emotions, future research could focus on the areas identified in Chapter 2 as a starting point. For example, looking at the effect of different factors across different measures of regulation would allow more comparisons to be drawn across measures of choice and in turn, more definitive conclusions to be made. As in Rovenpor et al. (2013), who looked at the choice of stimuli and time spent with stimuli, this could be achieved by including different measures within one study, or between studies.

Second, future research should seek to develop our current understanding of the factors influencing whether people choose to regulate. As outlined in Chapter 2, our understanding of when people choose to regulate their emotions (and when they choose not to) is very limited, but is likely to depend on the outcome of a cost-benefit analysis in which people consider the value, feasibility, and perceived effort required to achieve the emotion regulation goal (Milyavsky et al., 2019; Shenhav et al., 2013, 2017; Tamir, 2020). Therefore, future research may want to examine whether and how factors that shape the relative costs vs. benefits of regulation shape intentions to regulate. For example, injunctive and descriptive norms have been associated with intentions to engage with other behaviours (Borsari & Carey, 2003; Rivis & Sheeran, 2003), and therefore could influence intentions to regulate emotions one's own emotions. For example, people may be more likely to regulate when they believe that others would approve of their doing so and/or that others would regulate in a similar situation. By furthering research regarding intentions to regulate, this would further current understanding of the different regulatory decisions made throughout the different stages of emotion regulation.

In terms of possible implications of continuing to examine whether and how people choose to regulate their own emotions, as outlined in Chapter 1, being able to flexibly choose between regulation strategies is thought to be associated with psychological wellbeing, whereas rigid and overgeneralised regulatory choices have been associated with different forms of psychopathology (Bonanno & Burton, 2013). Thus, continuing to examine ERC and identifying the situations in which healthy individuals select contextually adaptive strategies, will help to understand what determines flexibility. For example, Millgram, Sheppes and colleagues (2019) found that emotion goals influence how people choose to regulate their emotions, with distraction being selected more frequently (over rumination) when the goal was to decrease emotions, and rumination being selected more frequently (over distraction) when the goal was to increase emotions. Furthermore, this pattern of strategy selections has been found to be effective as distraction is more effective to decrease emotions compared to rumination, whereas rumination is more effective to increase emotional reactions compared to distraction. However, Millgram and colleagues also found that depressed participants were less likely to demonstrate this pattern of strategy selection, thus suggesting that individuals who experience emotion dysfunction (i.e., clinically depressed) are less flexible in choosing appropriate strategies for achieving emotion regulation goals. Therefore, continuing to research what influences the selection of contextually adaptive strategies will help to identify when and why people choose less contextually adaptive strategies, which in turn, contribute to understanding different psychopathologies (Sheppes, 2014).

Third, the research presented in this thesis is some of the first to explore how people choose to help others to regulate their emotions (i.e., interpersonal ERC). Therefore, the framework for understanding the potential determinants of ERC proposed in Chapter 2 might be extended to consider the factors that influence interpersonal ERC. For example, the systematic review identified that intrapersonal ERC is influenced by individual/dispositional

factors. In interpersonal settings, however, there are often at least two individuals that the regulation attempt occurs between – both of whom will bring their own individual characteristics to the interaction. Therefore, future research may want to examine whether characteristics relating to both the regulator and the target of the regulation are taken into account when people choose how to help another person to regulate their emotions. For example, it would be interesting to examine whether interpersonal ERC is influenced more strongly by factors associated with the person doing the regulating than factors associated with the target of the regulation.

Similarly, future research might want to extend the consideration of intentions to regulate to interpersonal regulation contexts, to see whether similar factors influence *whether* people choose to help others to regulate their emotions. As highlighted in Chapter 2, relatively limited research has been conducted examining whether people choose to regulate their emotions (i.e., intentions to regulate). However, a small number of factors have been found to be associated with intentions to regulate thus far, including the intensity of an emotional situation (e.g., Mehta et al., 2017), the valence of an emotion (e.g., Wood et al., 2009) and also an individual's cultural background (e.g., Ma et al., 2018). Based on the findings from Study 1 (Chapter 4), which suggest that similar factors influence *how* people choose to regulate others' emotions, it is, therefore, possible that the same factors may also influence *whether* people choose to help others to regulate their emotions. For example, as culture has been found to influence whether people choose to regulate their own emotions (Ma et al., 2018), culture might influence whether people choose to regulate another person's emotions. For instance, East Asian individuals are thought to be more interpersonally sensitive due to their collectivistic backgrounds in which they value social interdependence, which is thought to motivate behaviour (e.g., Cross et al., 2011). Additionally, those from East Asian backgrounds have also been found to use more interpersonal emotion regulation

strategies to regulate their own emotions (i.e., intrinsic interpersonal emotion regulation, Zaki & Williams, 2013) compared to those from Western European backgrounds (Lidell & Williams, 2019). Taken together, it is possible that those from East Asian backgrounds may choose to help others to regulate their emotions more frequently than those from Western European backgrounds. Therefore, examining the influence of culture on intentions to regulate in interpersonal contexts may prove fruitful. That said, the work presented in this thesis also suggests that there are differences between intrapersonal and interpersonal emotion regulation contexts, thus further research should examine this more closely – both independently and simultaneously - to see where both similarities and differences may lie.

Finally, the current work suggests that one explanation for the difference in the effect of intensity on ERC between intrapersonal and interpersonal regulation contexts is differences in how effortful and/or effective people anticipate regulating emotions to be. However, an alternative explanation is that the paradigm used within the current studies could have induced empathy. Specifically, participants were asked to either regulate (Study 1) or provided ratings (Studies 2a – 3) for themselves or another person first across the studies, and the findings suggest that the effects identified within this work depend on the order in which the participants completed the tasks. Therefore, exposing the participants to the negative stimuli and asking them to regulate or provide ratings for another person first, could have induced empathy. This was not explicitly examined within the current work and therefore cannot be ruled out as an explanation for the pattern of findings highlighted within the thesis. Therefore, future work may want to examine whether this paradigm does induce empathy and how this may influence ERC.

## 6.5. Overall Conclusions

The studies presented in this thesis aimed to further our understanding of how people choose to regulate both their own emotions and the emotions of other people. A systematic

review and meta-analysis identified the factors that drive the regulatory choices that people make when controlling their own emotions and a series of studies showed that the intensity of the emotional situation influences how people choose to help others to control their emotions, much as it has been shown to influence how people choose to regulate their own emotions. However, these studies also showed there are differences in the effect of intensity on the choice of strategy in intrapersonal and interpersonal contexts, which may be driven by differences in how effortful and effective people think regulating emotions will be when regulating own and another person's emotions. Work on ERC, particularly in interpersonal contexts is, however, still in its infancy. Therefore, as highlighted above, future work should seek to extend these findings by investigating (i) other factors which might influence how people choose to help others to control their emotions, (ii) the determinants of intentions to regulate in more detail, including (iii) intentions to regulate in interpersonal contexts, and (iv) the costs associated with interpersonal emotion regulation choices. Taken together then, the present research provides a basis not only for further research into how people control their own emotions but also how people help those around them to control theirs.

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## Appendix A: Chapter 2 Supplementary Figures

**Figure A1**

*Funnel Plot for the Association between Intensity and Intentions to Regulate*

(Egger's regression, $p = 0.64$)

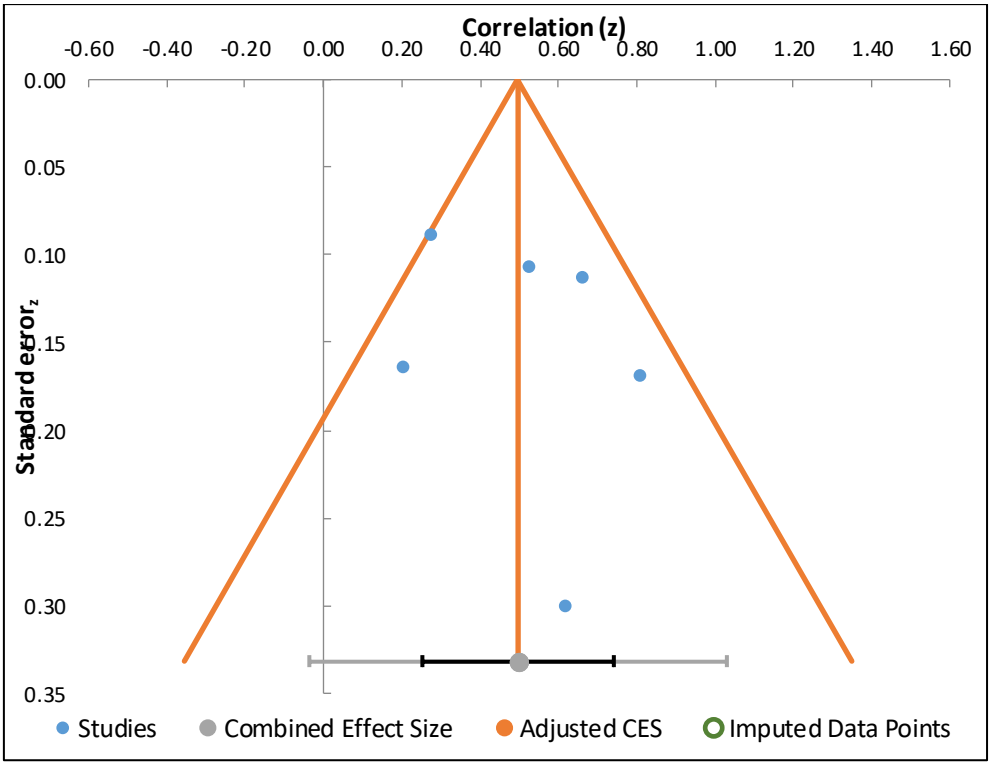


**Figure A2**

*Funnel Plot for the Association between Intensity and Choice of Strategy*

(Egger's regression, $p = 0.22$)

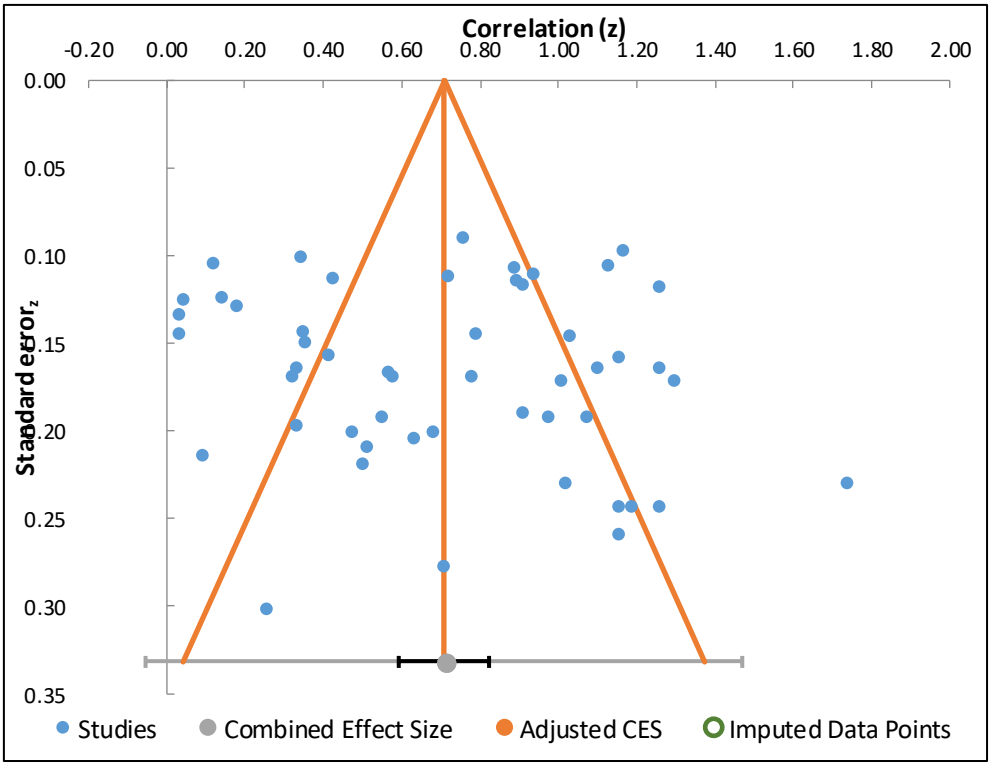


**Figure A3**

*Funnel Plot for the Association between Levels of Arousal and Choice of Stimuli*

(Egger's regression, $p = 0.56$)

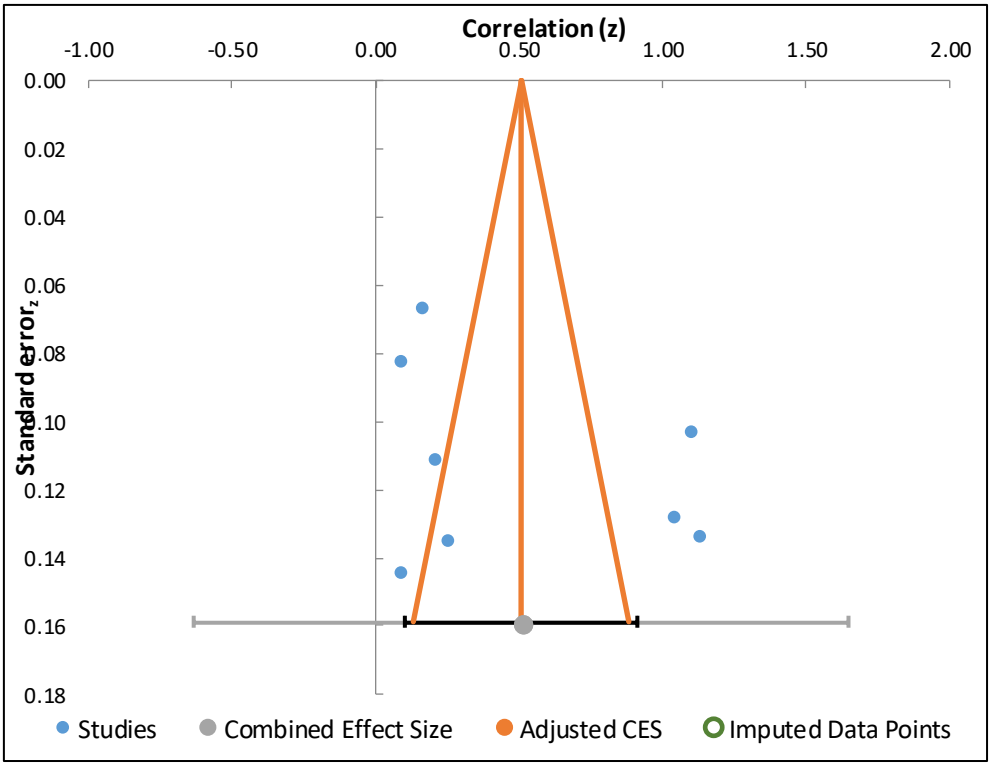


**Figure A4**

*Funnel Plot for the Association between Valence and the Choice of Strategy*

(Egger's regression, $p = 0.30$)

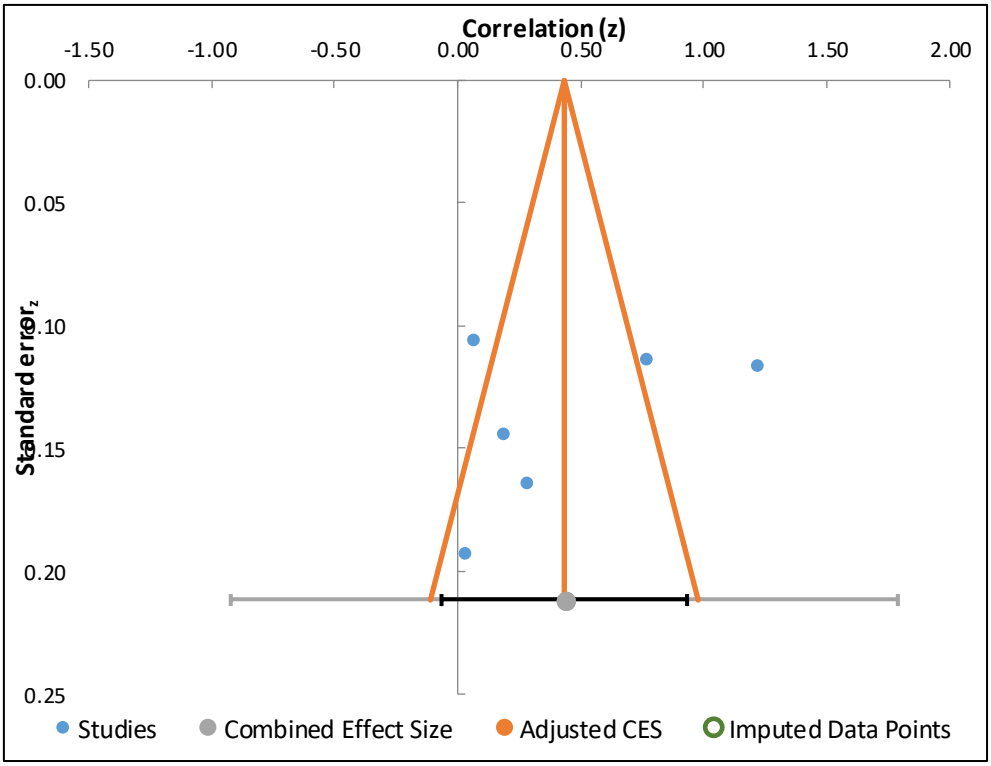


**Figure A5**

*Funnel Plot for the Association between Valence and the Choice of Stimuli*

(Egger's regression, $p = 0.11$)

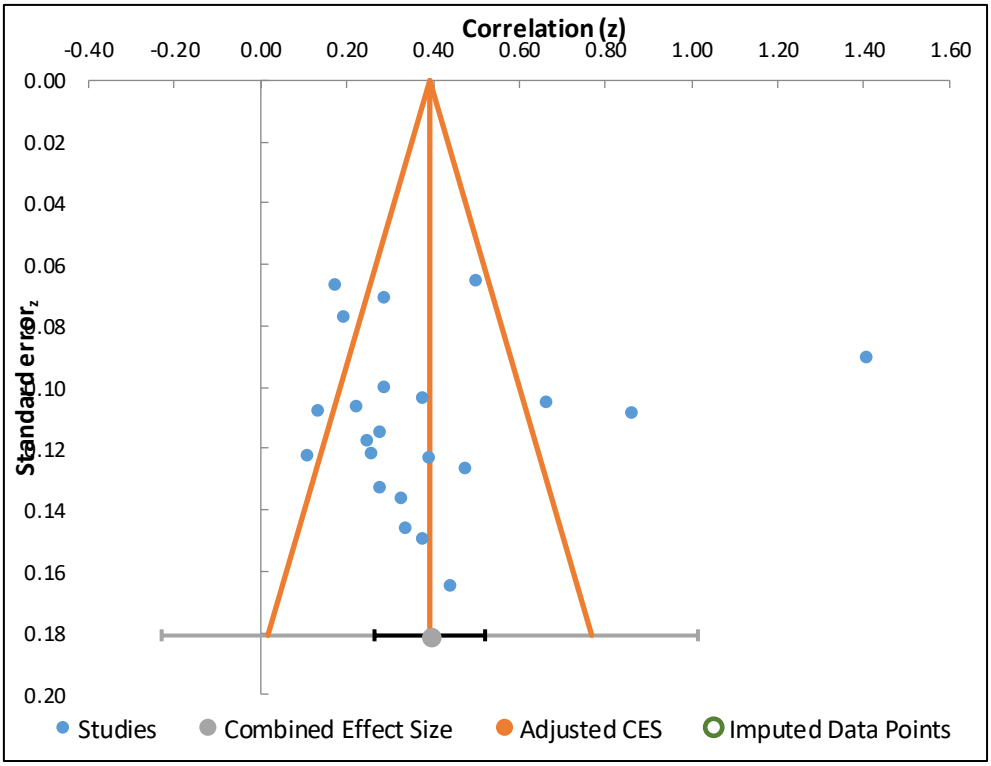


**Figure A6**

*Funnel Plot for the Association between Valence and Time Spent with Stimuli*

(Egger's regression, $p = 0.02$)

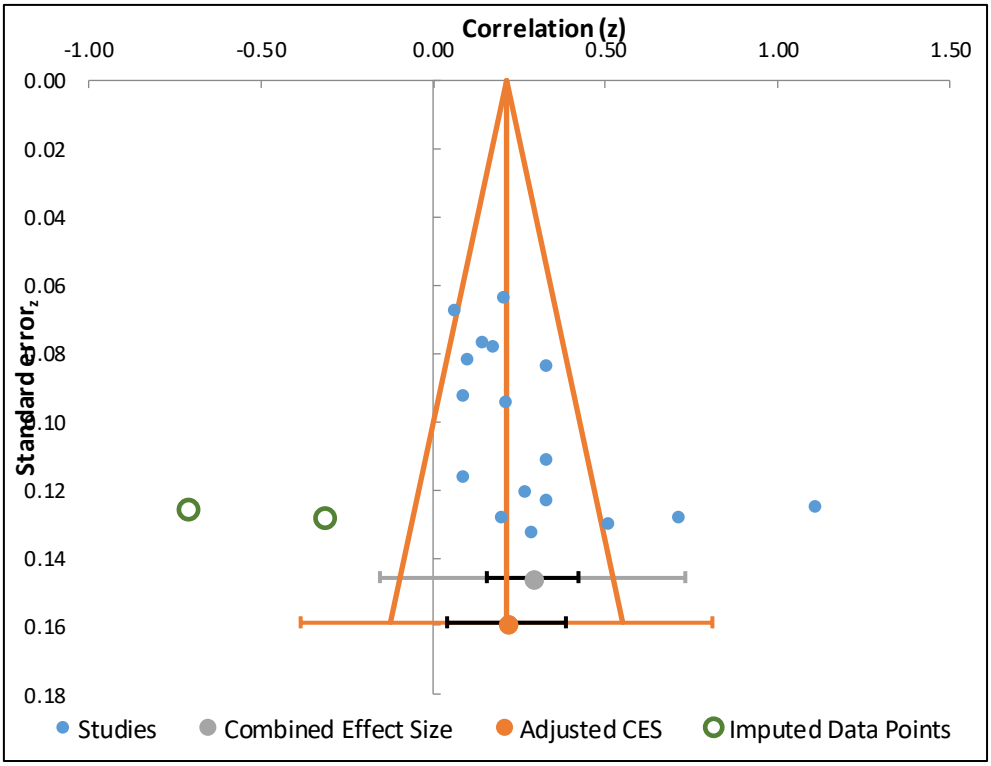


**Figure A7**

*Funnel Plot for the Association between Valence and Preference for Stimuli*

(Egger's regression, $p = 0.03$)

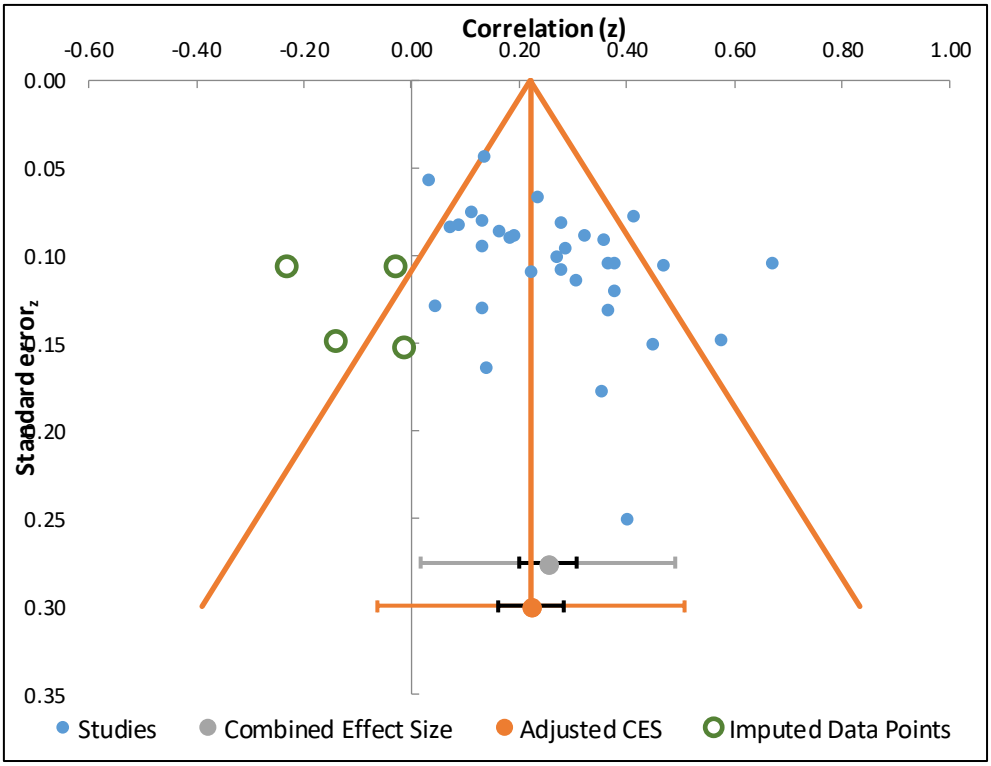


**Figure A8**

*Funnel Plot for the Association between Specific Emotions and Choice of Strategy*

(Egger's regression, $p = 0.43$)

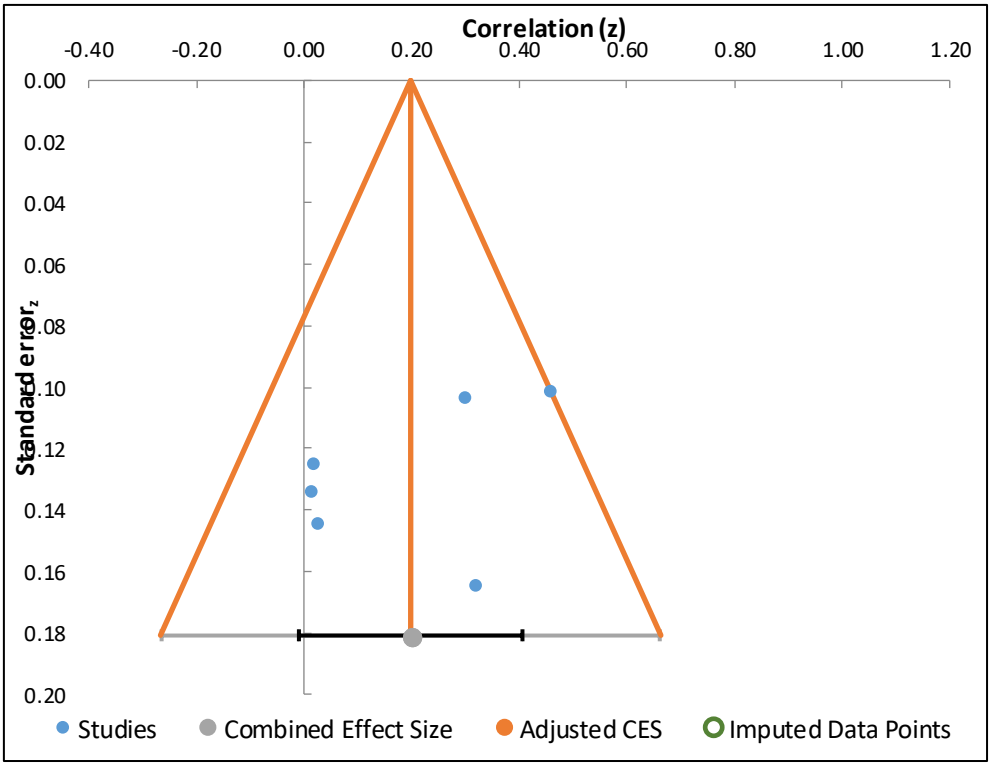


**Figure A9**

*Funnel Plot for the Association between Affordances and Choice of Strategy*

(Egger's regression, $p = 0.55$)

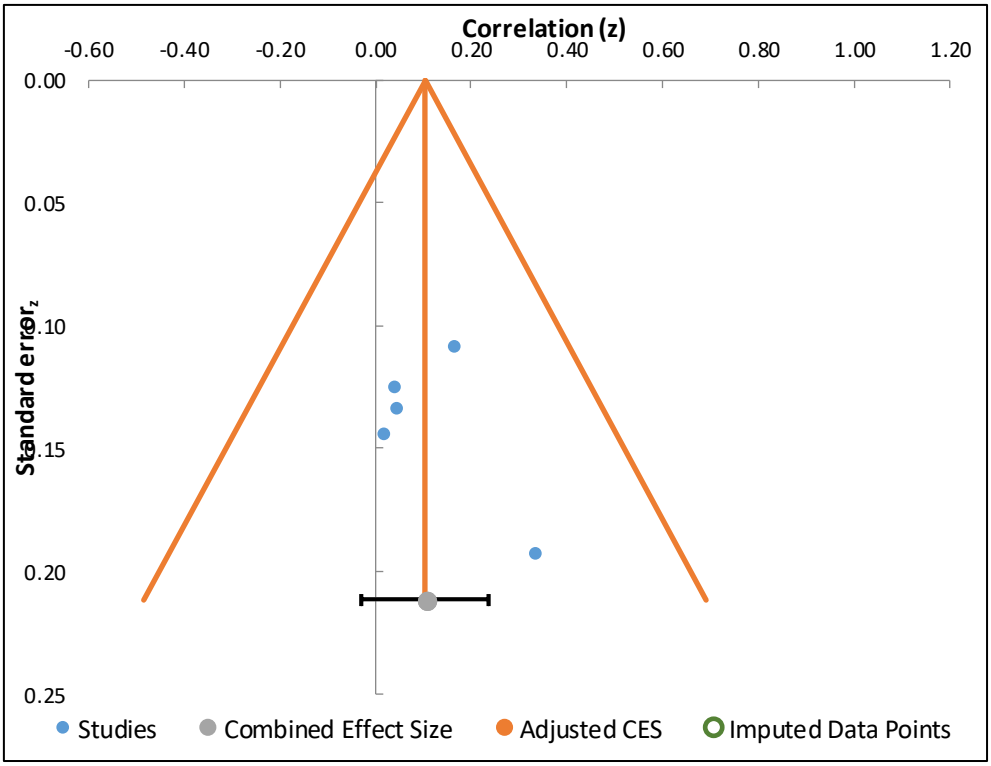


**Figure A10**

*Funnel Plot for the Association between Goal and Preference for Stimuli*

(Egger's regression, $p = 0.99$)

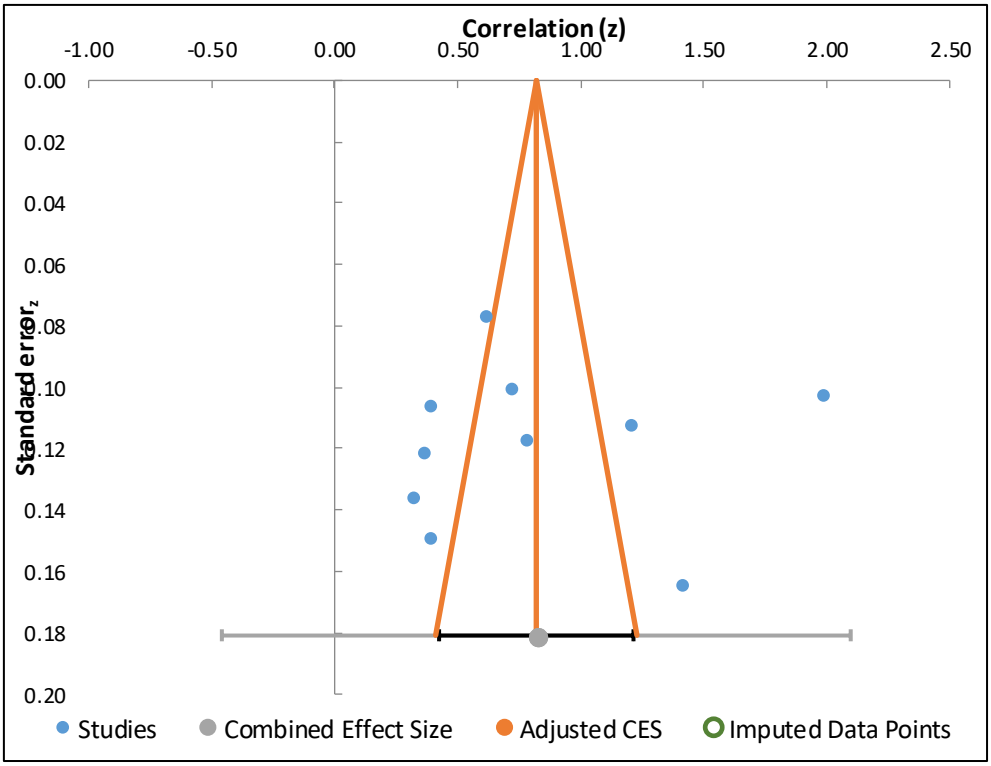


**Figure A11**

*Funnel Plot for the Association between Individual Differences and Choice of Strategy* (Egger's regression, $p = 0.53$)

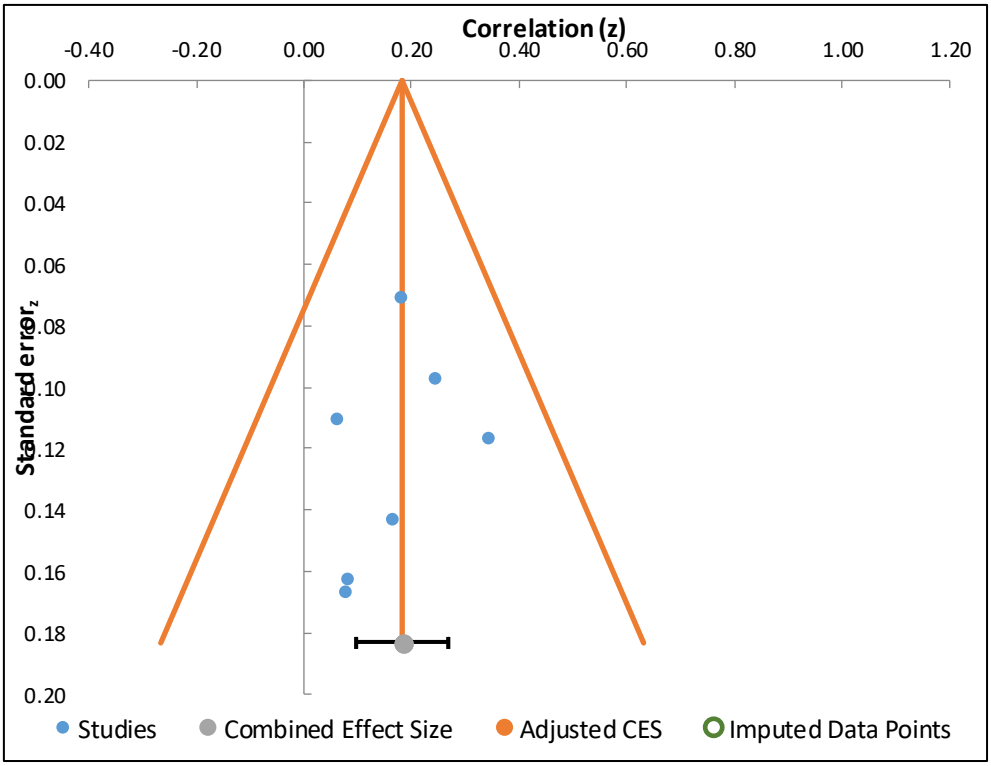


**Figure A12**

*Funnel Plot for the Association between Individual Differences and Choice of Stimuli* (Egger's regression, $p = 0.11$)

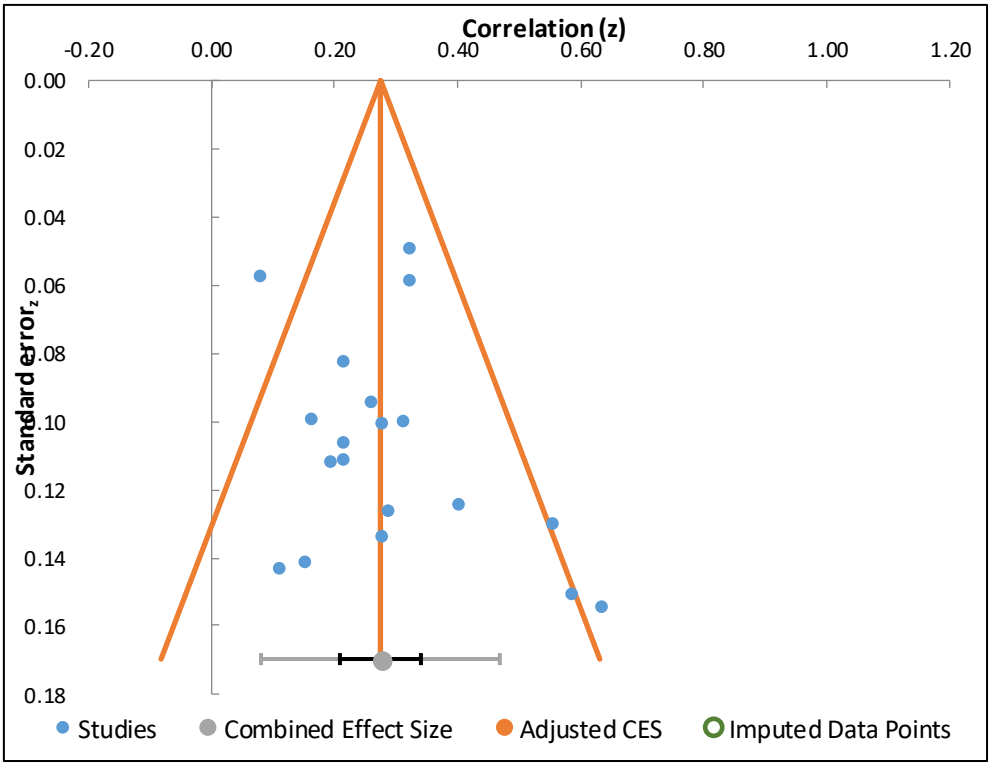


**Figure A13**

*Funnel Plot for the Association between Individual Differences and Time Spent with Stimuli* (Egger's regression, $p = 0.75$)

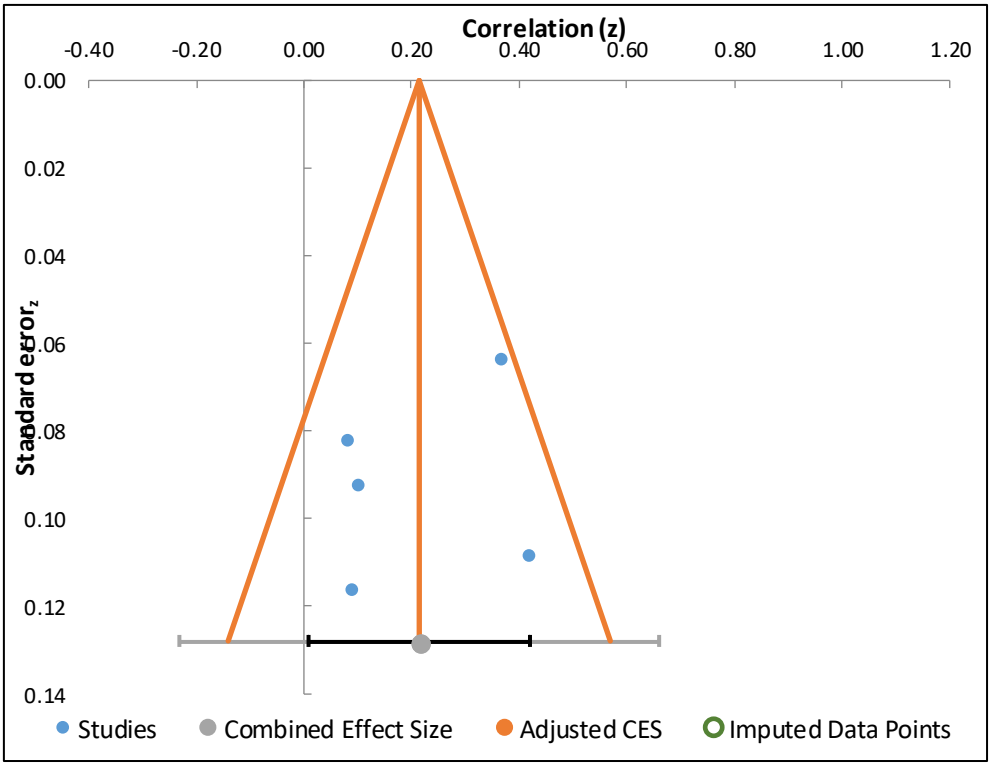


**Figure A14**

*Funnel Plot for the Association between Individual Differences and Preference for Stimuli* (Egger's regression, $p = 0.51$)

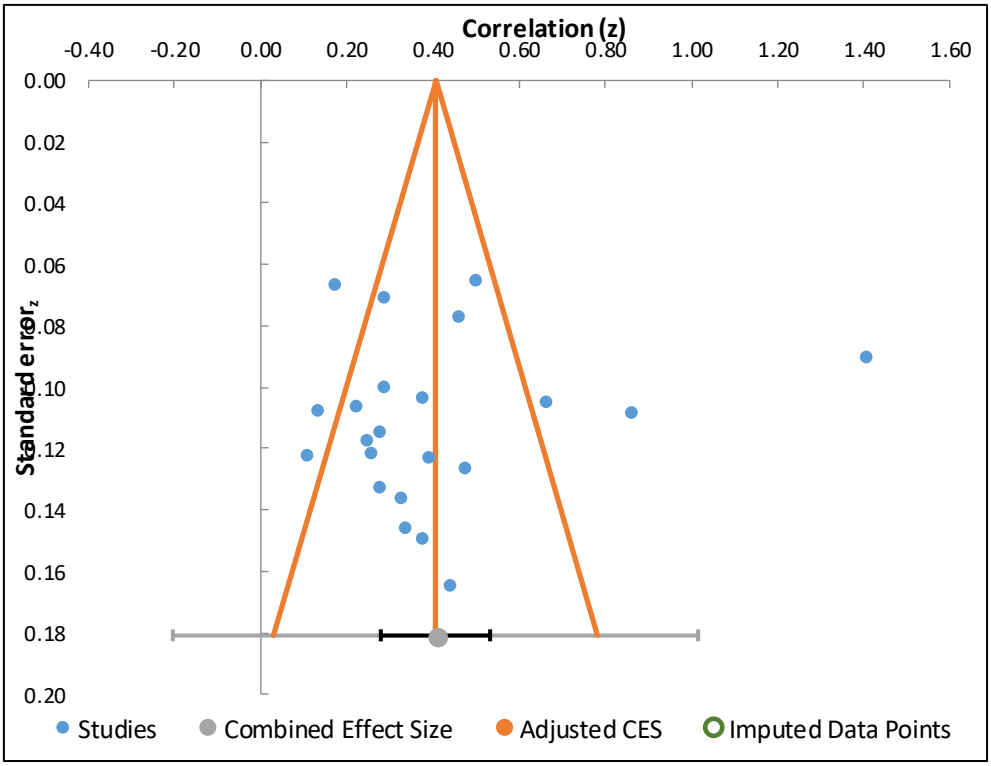


**Figure A15**

*Funnel Plot for the Association between Gender and Choice of Stimuli*

(Egger's regression, $p = 0.71$)

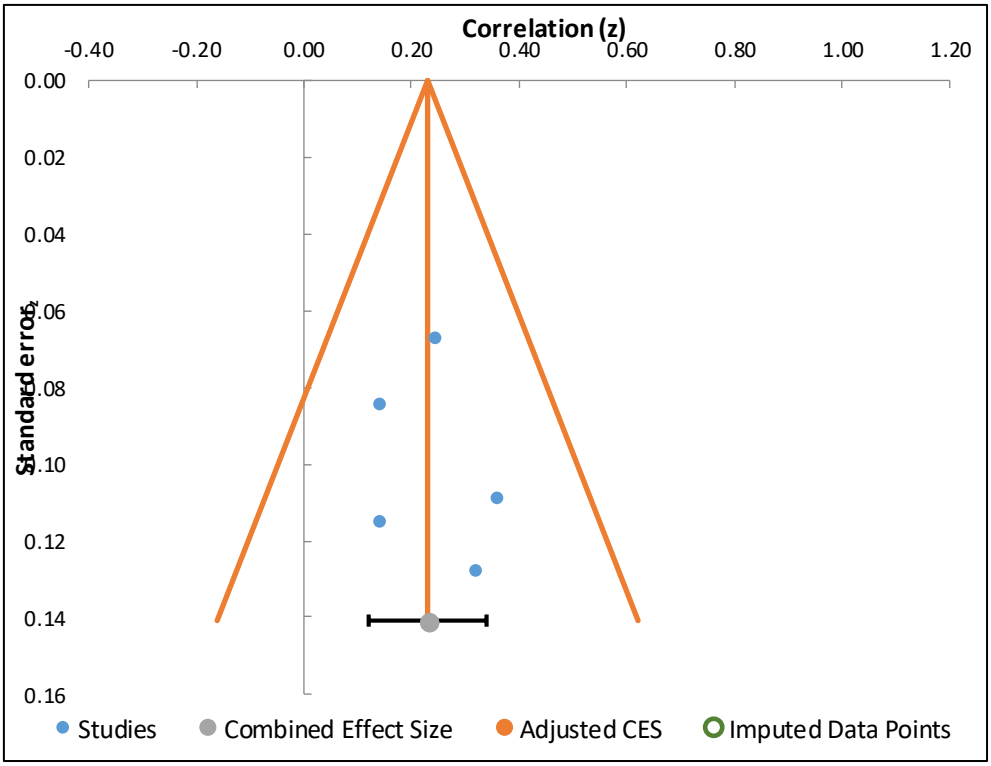


**Figure A16**

*Funnel Plot for the Association between Gender and Preference for Stimuli*

(Egger's regression, $p = 0.02$)

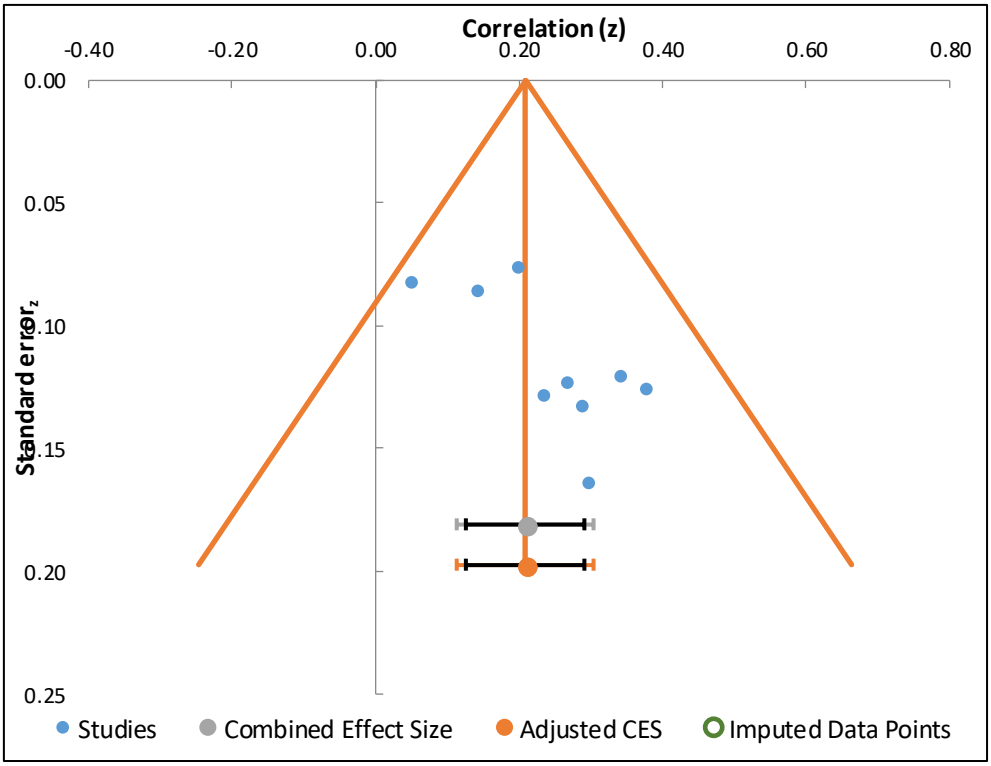


**Figure A17**

*Funnel Plot for the Association between Age and Choice of Stimuli*

(Egger's regression, $p = 0.70$)

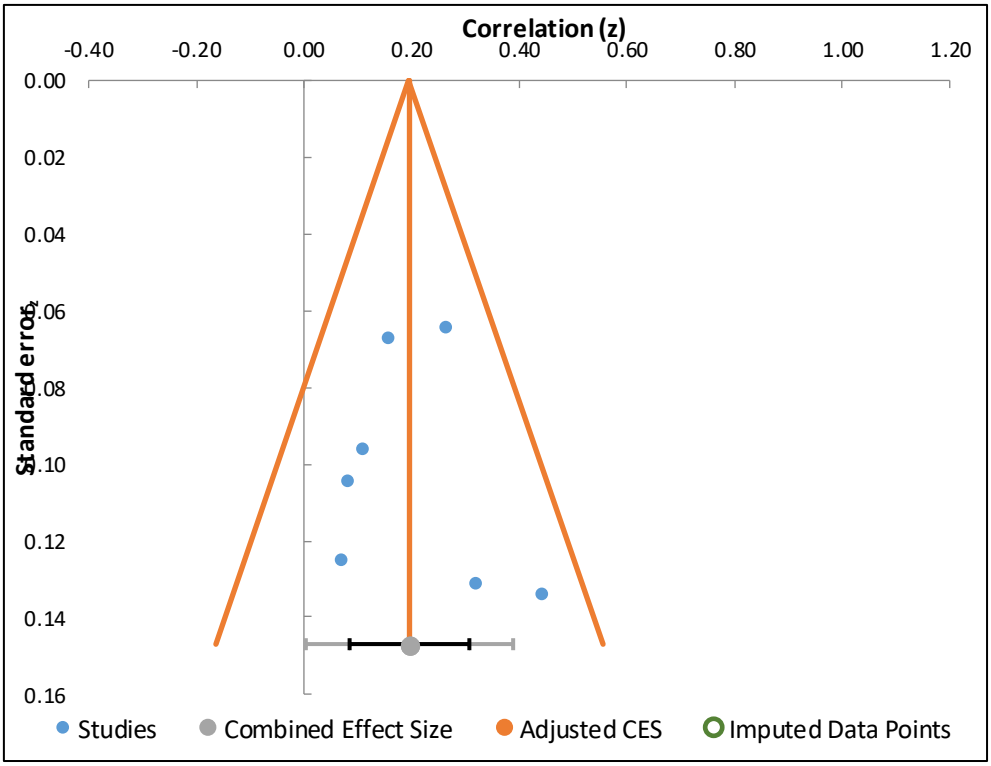


**Figure A18**

*Funnel Plot for the Association between Age and Time Spent with Stimuli*

(Egger's regression, $p = 0.87$)

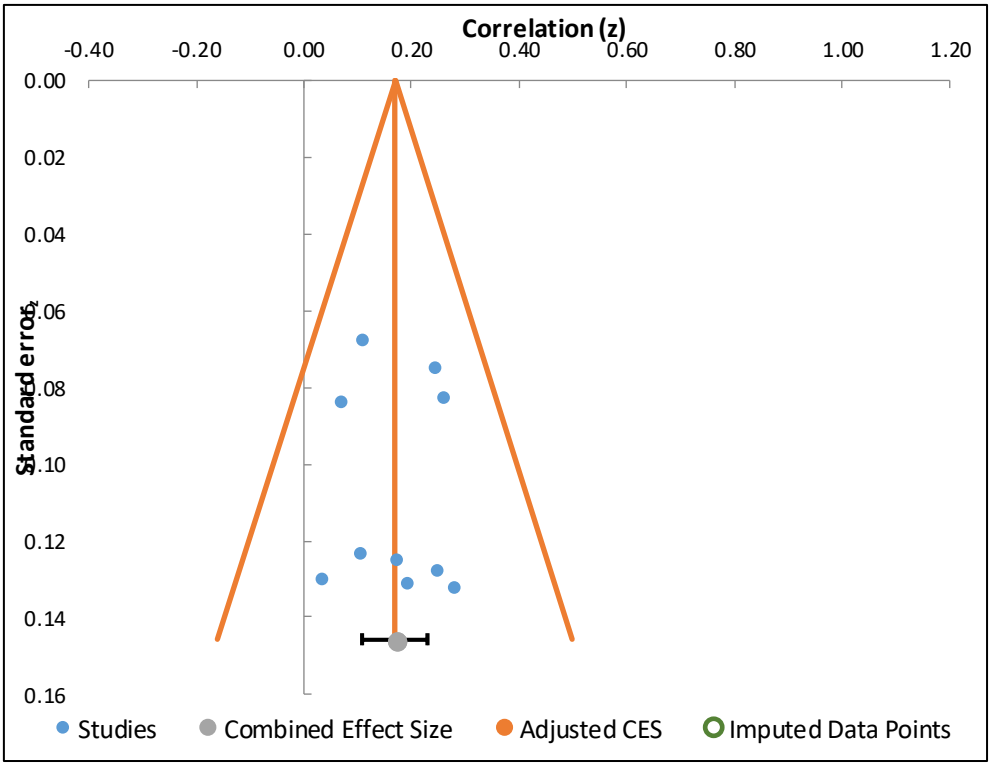


**Figure A19**

*Funnel Plot for the Association between Mental Health and Choice of Strategy*

(Egger's regression, $p = 0.87$)

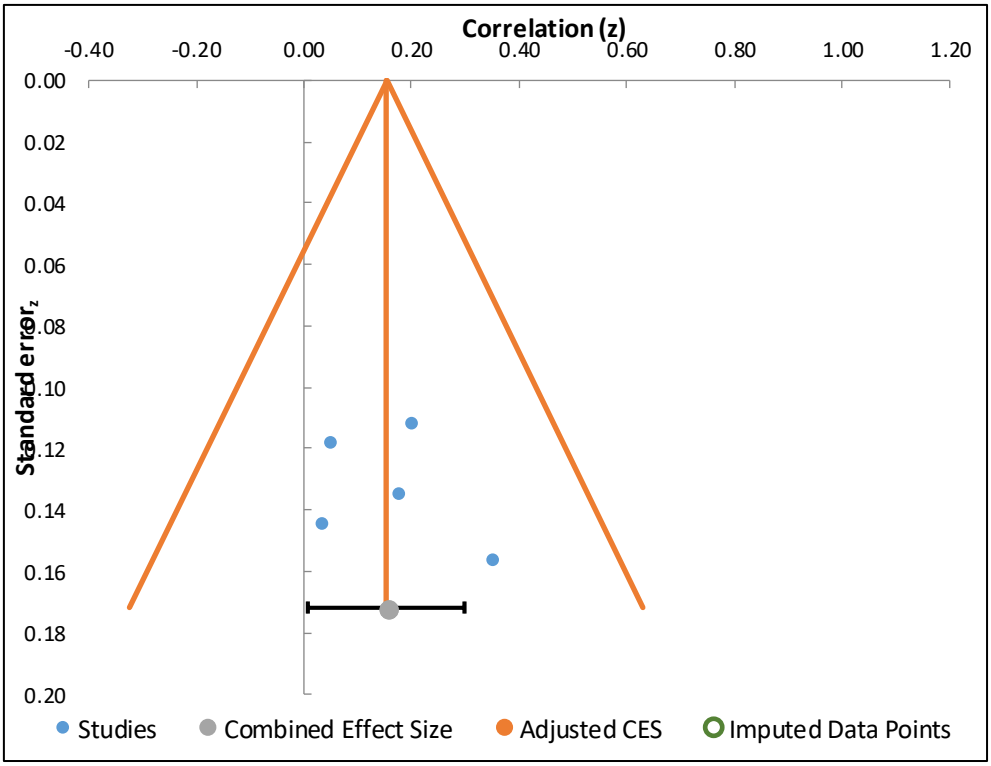
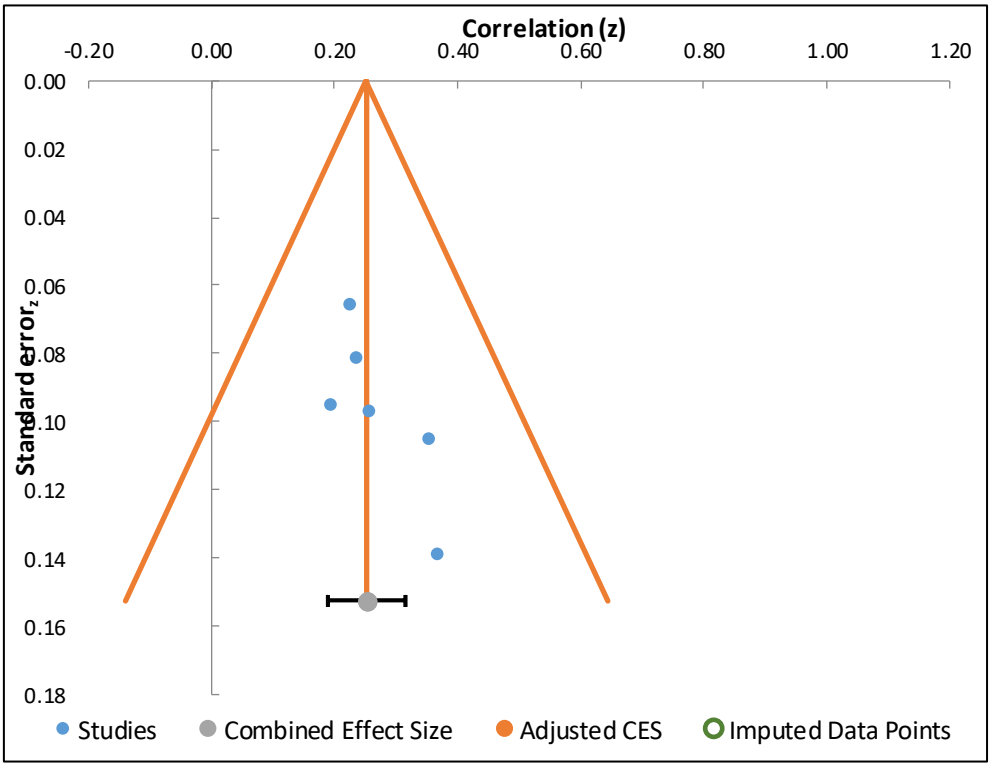


**Figure A20**

*Funnel Plot for the Association between Social Context and Preference for Stimuli*

(Egger's regression, $p = 0.12$)



## Appendix B: Chapter 4 Supplementary Materials, Analyses, and Tables

### Appendix B1 – Individual Differences Measures from Online Questionnaire

**Toronto Empathy Questionnaire (TEQ; Spreng et al., 2009)**

1. When someone else is feeling excited, I tend to get excited too
2. Other people's misfortunes do not disturb me a great deal*
3. It upsets me to see someone being treated disrespectfully
4. I remain unaffected when someone close to me is happy*
5. I enjoy making other people feel better
6. I have tender, concerned feelings for people less fortunate than me
7. When a friend starts to talk about their problems, I try to steer the conversation towards something else*
8. I can tell when others are sad even when they do not say anything
9. I find that I am "in tune" with other people's moods
10. I do not feel sympathy for people who cause their own serious illness*
11. I become irritated when someone cries*
12. I am not really interested in how other people feel*
13. I get a strong urge to help when I see someone who is upset
14. When I see someone being treated unfairly, I do not feel very much pity for them*
15. I find it silly for people to cry out of happiness*
16. When I see someone being taken advantage of, I feel kind of protective towards them

*Participants responded on a scale in which 0 = never, 4 = always; *reverse-scored*

**Revised Self-Monitoring Scale (RSMS; Lennox & Wolfe, 1984)**

1. In social situations, I have the ability to alter my behaviour if I feel that something else is called for
2. I am often able to read people's true emotions correctly through their eyes
3. I have the ability to control the way I come across to people, depending on the impression I wish to give them
4. In conversations, I am sensitive to even the slightest change in the facial expression of the person I am conversing with
5. My powers of intuition are quite good when it comes to understanding others emotions and motives
6. I can usually tell when others consider a joke to be in bad taste, even though they may laugh convincingly
7. When I feel that the image I am portraying isn't working, I can readily change it to something that does
8. I can usually tell when I have said something inappropriate by reading it in the listener's eyes
9. I have trouble changing my behaviour to suit different people and different situations*
10. I have found that I can adjust my behaviour to meet the requirements of any situation I find myself in

11. If someone is lying to me, I usually know it at once from that person's manner of expression
12. Even when it might be to my advantage, I have difficulty putting up a good front*
13. Once I know what the situation calls for, it's easy for me to regulate my actions accordingly

*Participants responded on a scale in which 0 = certainly always false and 5 = certainly always true; *reverse-scored*

**Balanced Inventory of Desirable Responding Short Form (BIDR-16; Hart et al., 2015)**

1. I have not always been honest with myself*
2. I always know why I like things
3. It's hard for me to shut off a disturbing thought*
4. I never regret my decisions
5. I sometimes lose out on things because I can't make my mind up soon enough*
6. I am a completely rational person
7. I am very confident of my judgements
8. I have sometimes doubted my ability as a lover*
9. I sometimes tell lies if I have to*
10. I never cover up my mistakes
11. There have been occasions when I have taken advantage of someone*
12. I sometimes try to get even rather than forgive and forget*
13. I have said something bad about a friend behind their back*
14. When I hear people talking privately, I avoid listening
15. I never take things that don't belong to me
16. I don't gossip about other people's business

*Participants responded on a scale in which 1 = strongly disagree and 7 = strongly agree; *reverse-scored*

**Appendix B2 – Materials from the ERC Task**

**Negative Images – IAPS Numbers (Lang et al., 2008)**

Strategy Practice: 2455, 2278, 2638, 6940, 2055.1, 8485

Intrapersonal Practice: 2100, 9621, 9405, 9495, 9433, 9561, 2694, 9341, 3160

Intrapersonal Test (Low-Intensity): 1090, 9471, 1275, 1301, 9530, 9341, 7361, 2312, 2399, 2722, 2490, 2590, 9001, 7360, 2692

Intrapersonal Test (High-Intensity)*: 129, 252, 108, 6415, 9571, 112, 115, 241, 121, 9921
Interpersonal Practice: 6561, 6836, 3103, 3216, 9040, 9007, 9182, 9190, 9424

Interpersonal (Low-Intensity): 6020, 7380, 2039, 2115, 9404, 2661, 2700, 1270, 9046, 2752, 2795, 3022, 9470, 9584, 7520

Interpersonal (High-Intensity): 2095, 2141, 2703, 2710, 3016, 9183, 202**, 6821, 3225, 3350, 3230, 3530, 6021, 6520, 9653.1

**5 additional high-intensity images were from a different picture set (McRae et al., 2010; Sheppes et al., 2014)*

*** Image from OASIS picture set (Kurdi et al., 2017)*

**Strategy Instructions**

**Reappraisal:** "Reappraisal involves attending to the emotional situation, but trying to change the meaning of it. The idea is to think of something to tell yourself, or another person, about the situation that can help you to feel less negative about it. For example, you could think about the outcome of a situation, such as whatever is going on soon will soon be resolved or that help is on the way. You could also focus on a detail of the situation that may not be as bad as it first seemed. When you use reappraisal, please stay focused on the images that you see, and try not to think of random things that make you feel better, but rather to change something about the picture that helps you to feel less negative about it. Please do not think that the picture is fake or a scene from a movie, but find another way to change the meaning."

**Distraction:** "Distraction involves focusing thoughts and attention on something that is completely unrelated to the emotional situation. The idea is to try and feel less negative by thinking of something that is neutral and completely unrelated. There are a few ways that you can use distraction to change the way that you, or another person, feels. For example, you might imagine yourself doing everyday tasks, such as going for a walk or making a hot drink. When you use distraction, please stay focused on the image and do not avert your gaze. Please do not think of something highly emotional, rather think of something that is emotionally neutral and relatively mundane that will keep your mind distracted from what you can see on the screen."

**Emotion Regulation Choice Instructions**

**Intrapersonal Choice:** We would like you to pick the strategy that will help you to control your emotions - consider which of the strategies will make you feel less negative.

- When you are choosing which strategy to use to change the way that you feel about each picture, please take as much time as you need to make your choice
- Please keep your fingers on the keyboard at all times
- There are no right or wrong answers, so do not be concerned about keeping a balance between your choices. You can choose whatever strategies you want during the task. This is completely your choice
- Consider both strategies and pick the one that you think will make you feel less negative
- It is important that you keep your eyes on the picture and not avert your gaze
- Start controlling your emotions when you see the image
- After some images, you will be asked to type in the name of the strategy that you chose and how you used it

**Interpersonal Choice:** We would like you to pick a strategy to change the way that the other participant feels – consider which of the strategies will make the other participant feel less negative.

- When you are choosing which strategy to use to change the way that you feel about each picture, please take as much time as you need to make your choice
- Please keep your fingers on the keyboard at all times
- There are no right or wrong answers, so do not be concerned about keeping a balance between your choices. You can choose whatever strategies you want during the task. This is completely your choice
- Consider both strategies and pick the one that you think will make the other person less negative
- It is important that you keep your eyes on the picture and not avert your gaze
- Start helping the other person to control their emotions when you see the image by talking aloud to them
- After some images, you will be asked to type in the name of the strategy and how you used it

**Catch Trials (Strategy Description)**

**Intrapersonal Choice Section: "**In the box below, please state the strategy you just used to control your emotions in response to the last image, and also describe how you used this strategy."

**Intrapersonal Choice Section: "**In the box below, please state the strategy you just used to help the other person to control their emotions in response to the last image, and also describe how you used this strategy."

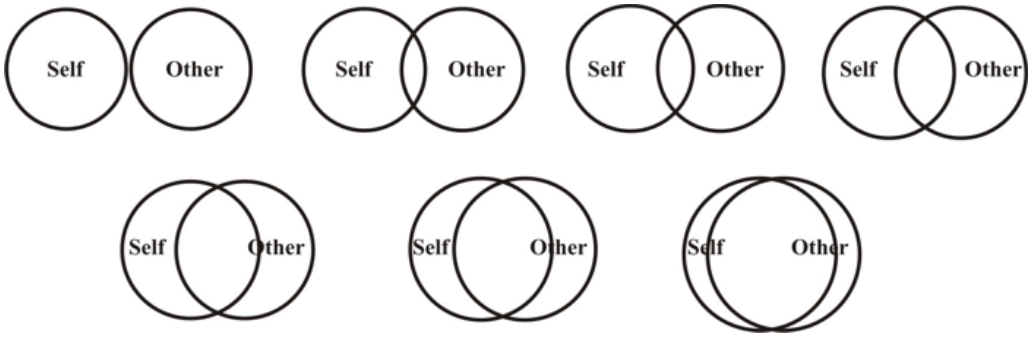
**Negative Rating Scales**

**Intrapersonal Ratings:** "How negative did this picture make you feel? (1 = not negative at all, 3 = a little negative, 5 = moderately negative, 7 = negative, 9 = very negative)"

**Interpersonal Ratings:** "How negative do you think this picture made the other participant feel? (1 = not negative at all, 3 = a little negative, 5 = moderately negative, 7 = negative, 9 = very negative)"

**Inclusion of Other in Self Scale (Aron et al., 1992)**

"Please circle the picture that best describes your current relationship with the other participant."




**Suspicion Question**

"Do you think there is anything suspicious about the study, or anything that the researcher was keeping from you?"

**Appendix B3 – Exploratory Analyses Examining Negativity Ratings**

In order to explore whether there were any differential relationships between choosing reappraisal or distraction and the emotion ratings (1 = not negative at all, 9 = extremely negative), a 4-way ANOVA was conducted looking at the effects of strategy, intensity, nature of regulation, and order of regulation sections on the negativity ratings. However, these results are presented within the confines of several limitations. For example, one possible interpretation of the higher emotion ratings after implementing distraction compared to implementing reappraisal is that distraction is less effective than reappraisal. However, as Scheibe et al. (2015) point out, as distraction is chosen more frequently for high-intensity images, another possible interpretation is that the stimuli that distraction is chosen for were more difficult to regulate responses to than those that reappraisal was chosen for. In short, the effects of strategy are confounded by the effects of intensity. Second, the ratings in the interpersonal condition were based on participants ratings of how the other person is likely to have felt. Given the discrepancies between ratings of emotions for self vs. others (e.g., as shown in Study 2a, Chapter 5) this may not be the best way to measure the effectiveness of interpersonal emotion regulation strategies. Third, as participants only rated their emotions after they had implemented the strategies, the ratings confound choice and use and thus may incorporate dissonance processes, such as people not wanting to admit that a strategy they have chosen has not been effective. Given these challenges, the analyses are reported below for interest, but there is better evidence available on how effective different emotion regulatory strategies are in intrapersonal and interpersonal contexts (e.g., Webb et al.,2012).

A 2 within (strategy: reappraisal vs. distraction) x 2 within (intensity: low vs. high) x 2 within (nature of regulation: intrapersonal vs. interpersonal) x 2 between (order of regulation sections: intrapersonal first vs. interpersonal first) ANOVA was conducted on the ratings of emotion that participants provided after they had implemented the strategy. In

addition to the main effects of strategy, $F(1, 48) = 56.45$, $p = < .001$, $\eta_p^2 = .54$, and intensity, $F(1, 48) = 119.51$, $p < .001$, $\eta_p^2 = .71$, there was a significant two-way interaction between strategy and regulation, $F(1, 48) = 57.67$, $p < .001$, $\eta_p^2 = .55$.

Bonferroni-corrected follow-up analyses indicated that there was a significant main effect of strategy for both intrapersonal, $F(1, 49) = 183.61$, $p < .001$, $\eta_p^2 = .79$ and interpersonal, $F(1, 49) = 35.21$, $p < .001$, $\eta_p^2 = .42$ regulation. Participants provided significantly low ratings of emotion after using reappraisal compared to distraction when regulating both their own (mean difference = -2.05, $p < .001$, 95% CI [-2.36, -1.75]) and another person's (mean difference = -0.61, $p < .001$, 95% CI [-0.81, -0.40]) emotions.

**Table B3.1.**

*Emotion Ratings (out of 9) by the Nature of Regulation, Intensity of the Images, Strategy, and Order of Regulation Section (Study 1)*

| | Order of regulation section and strategy | | | |
|---|---|---|---|---|
| | Regulated own emotions first ($N$ = 26) | | Regulated others' emotions first ($N$ = 24) | |
| **Regulation** and intensity | Reappraisal | Distraction | Reappraisal | Distraction |
| **Intrapersonal regulation** (i.e., ratings of own emotions) | | | | |
| Low Intensity | 2.43 (0.99) | 3.56 (1.73) | 2.48 (0.84) | 3.46 (1.60) |
| High Intensity | 3.42 (1.44) | 4.79 (1.69) | 3.77 (1.73) | 4.90 (1.77) |
| **Interpersonal regulation** (i.e., ratings of other person's emotions) | | | | |
| Low Intensity | 2.89 (1.00) | 2.83 (1.17) | 3.00 (0.93) | 3.19 (1.11) |
| High Intensity | 3.85 (1.35) | 3.91 (1.36) | 4.16 (1.48) | 4.52 (1.38) |

*Note*. Numbers in parentheses are SDs

## Appendix C: Chapter 5 Supplementary Materials, Analyses, and Tables

### Appendix C1 - Studies 2a and 2b Materials

**Negative Images**

Intrapersonal Ratings Practice: 2245, 9495, 9405, 9433

Intrapersonal Test (Low-Intensity): 1090, 9471, 1275, 1301, 9530, 9341, 7361, 2312, 2399, 2722, 2490, 2590, 9001, 7360, 2692

Intrapersonal Test (High-Intensity)*: 129, 252, 108, 6415, 9571, 112, 115, 241, 121, 9921

Interpersonal Practice: 6561, 6836, 3103, 3216, 9040, 9007, 9182, 9190, 9424

Interpersonal Ratings Practice: 9190, 2683, 3103, 9561

Interpersonal (Low-Intensity): 6020, 9930, 2039, 2115, 9404, 2661, 2700, 2717, 9046, 2752, 2795, 3022, 9470, 9584, 7520

Interpersonal (High-Intensity): 2095, 2141, 2703, 2710, 9940, 9183, 9414, 6821, 3225, 3350, 3230, 3530, 6021, 6520, 9653.1

**5 additional high-intensity images were from a different picture set (McRae et al., 2010; Sheppes et al., 2014)*

**Ratings Sections**

**Intrapersonal Ratings:** "You will see each image for approximately 5 seconds, after which you will be asked to rate how the image makes you feel on a scale of 1-9, where 1 is not negative at all and 9 is very negative."

**Interpersonal Ratings:** "You will see each image for approximately 5 seconds, after which you will be asked to rate how you think the image makes another person feel on a scale of 1-9, where 1 is not negative at all and 9 is very negative. This is a photo of another participant who has been randomly chosen from the participants who have taken part so far and uploaded a photo. We would like you to try to estimate how you think the images made this person feel."

**Phobia Question**

"Do you have a phobia of anything that was presented in these images? (e.g., snakes, blood) – Yes/No"

"If yes, what do you have a phobia of?"

## Appendix C2 - Additional Analyses from Study 2a: Phobia

In order to examine whether the inclusion of participants who reported having a phobia ($N$ = 30) affected the findings, these participants were filtered from the dataset and a 2 within (intensity: low vs. high) by 2 within (target: self vs. other) x 2 between (order of regulation sections: self first vs. other first) ANOVA was conducted with the ratings of emotion as the dependent variable ($N$ = 95). The three-way interaction between order of regulation sections, target, and intensity, was not significant ($F(1, 93) = 1.00$, $p = .319$, $\eta_p^2 = .01$), but there was a significant main effect of target ($F(1, 93) = 70.86$, $p < .001$, $\eta_p^2 = .43$) and intensity ($F(1, 93) = 1249.54$, $p < .001$, $\eta_p^2 = .93$), which was qualified by a significant interaction between target and intensity ($F(1, 93) = 32.08$, $p < .001$, $\eta_p^2 = .26$).

Bonferroni-corrected simple main effects revealed that intensity had a significant effect on the participant's ratings of how negative they felt, ($F(1, 94) = 795.28$, $p < .001$, $\eta_p^2 = .89$) and how negative they thought that the other person would feel ($F(1, 94) = 1031.13$, $p < .001$, $\eta_p^2 = .92$). In each case, participants provided significantly higher ratings for both themselves and the other person in response to the high-intensity images compared to the low-intensity images. Additionally, there was a significant effect of target for both the low-intensity images ($F(1, 94) = 140.29$, $p < .001$, $\eta_p^2 = .56$) and the high-intensity images ($F(1, 124) = 11.83$, $p = .001$, $\eta_p^2 = .11$). Participants' ratings indicated that they thought that the other person would feel more negative in response to both the low and high-intensity images than they would and that this difference was especially pronounced for the low-intensity images.

**Appendix C3 - Study 3 Materials**

**Negative Images**

Strategy Practice Images: 2245, 8485, 2683, 6940, 2278, 2055.1

Intrapersonal Low-intensity: 2312, 7361, 7360, 2692, 2590

Intrapersonal High-intensity*: 6451, 9571, 9921

Interpersonal Low-intensity: 9046, 3022, 7380, 9584, 2700, 9470

Interpersonal High-intensity: 6520, 9183, 9365.1, 2141, 202, 3350

** 3 of the high-intensity images were from the alternative picture set as used in Study 1*

**Intrapersonal Rating Section**

We would like you to rate how effortful and how effective you think that using each strategy would be to control your emotions in response to each image. By effortful we mean *how much effort* do you think it would take to either change the meaning of the image (i.e., use reappraisal) or to think of something completely unrelated to the image (i.e., use distraction) to control your emotions. By effective we mean *how successful* do you think using reappraisal or distraction would be in helping you to control your emotions in response to the image.

Each of the questions will be answered on a 7-point scale, as outlined below.

- How much effort do you think it would take to reappraise the image that you just saw? (1 = not effortful, 7 = very effortful)
- How much effort do you think it would take to distract yourself when looking at the image you just saw? (1 = not effortful, 7 = very effortful)
- How effective do you think reappraisal would be at controlling your negative emotions in response to the image that you just saw? (1 = not effective, 7 = very effective)
- How effective do you think distraction would be at controlling your negative emotions in response to the image that you just saw? (1 = not effective, 7 = very effective)

One of these questions will be presented on the screen after each image you see, please read each question carefully.

**Interpersonal Rating Section (Self Help Other)**

For each image, we would like you to **imagine that you are helping another female undergraduate student from this University.** We would like you to rate and rate how effortful you would find using each strategy to control their emotions in response to the

image. By effortful we mean *how much effort* do you think it would take to help the other person to either change the meaning of the image (i.e., use reappraisal) or to think of something completely unrelated to the image (i.e., use distraction) to help them to control their emotions. For each image, we would also like you to rate how effective you would find using each strategy to control the other student's emotions in response to the image. By effective we mean *how successful* you think using reappraisal or distraction would be in helping the other person to control their emotions in response to the image.
Each of the questions will be answered on a 7-point scale, as outlined below.

- How much effort do you think it would take to help the other person to reappraise the image that you just saw? (1 = not effortful, 7 = very effortful)
- How much effort do you think it would take to help the other person to distract themselves when looking at the image you just saw? (1 = not effortful, 7 = very effortful)
- How effective do you think reappraisal would be at controlling the other person's negative emotions in response to the image that you just saw? (1 = not effective, 7 = very effective)
- How effective do you think distraction would be at controlling the other person's negative emotions in response to the image that you just saw? (1 = not effective, 7 = very effective)

One of these questions will be presented on the screen after each image you see, please read each question carefully.

**Interpersonal Rating Section (Other Help Self)**

For each image, we would like you to **imagine another female undergraduate student from this University.** We would like you to rate how effortful you think the other person would find using these strategies if they were controlling their own emotions, without your help. By effortful we mean *how much effort* do you think it would take to help the other person to either change the meaning of the image (i.e., use reappraisal) or to think of something completely unrelated to the image (i.e., use distraction) to help them to control their emotions. For each image, we would also like you to rate how effective you think the other person would find each strategy if they were controlling their own emotions, without your help. By effective we mean *how successful* you think using reappraisal or distraction would be in helping the other person to control their emotions in response to the image.

Each of the questions will be answered on a 7-point scale, as outlined below.

- How much effort do you think it would take the other person to reappraise the image that you just saw? (1 = not effortful, 7 = very effortful)
- How much effort do you think it would take the other person to distract themselves when looking at the image that you just saw? (1 = not effortful, 7 = very effortful)
- How effective do you think the other person would find reappraisal at controlling their negative emotions in response to the image that you just saw? (1 = not effective, 7 = very effective)
- How effective do you think the other person would find distraction at controlling their negative emotions in response to the image that you just saw? (1 = not effective, 7 = very effective)

One of these questions will be presented on the screen after each image you see, please read each question carefully.