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The Role of Self-Focused Cognition in Emotion Regulation

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The present dissertation reports a set of three studies that sought to characterize the effects of self-focused cognition on emotion regulation, specifically, cognitive reappraisal. Across the three studies, I investigated the effects of self-distancing, disengagement of self-focused thought, and changing the content of self-focused thought on multiple measures of emotion regulation success and emotion regulation difficulty. Results broadly suggested that disengaging self-focused cognition provides distinct advantages for emotion regulation, which are independent of effects on emotional reactivity. Specifically, I observed that other-focused cognition resulted in equally successful, but less difficult emotion regulation, the ability to more quickly disengage from self-focused thought was associated with greater emotion regulation success, and a greater tendency towards engaging in self-focused thought was associated with increased emotion regulation difficulty. I discuss the possible mechanisms explaining these effects, their specific implications for the study of emotion regulation, as well as their broader implications for the study of self-regulation.

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THE ROLE OF SELF-FOCUSED COGNITION IN EMOTION REGULATION

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Table of Contents

Chapter One: Theoretical Background

The self has largely been conceptualized as an interface between the environment and the individual, allowing for flexible behavior that goes beyond simple instantiations of stimulus-response associations (e.g. Baumeister, Masicampo, & Vohs, 2010). Several branches of psychology have studied what can generally be termed *self-focused cognition*, oftentimes by contrasting it with *other-focused cognition*. Examples of processes studied under the umbrella of self-focused cognition include: autobiographical memory, self-focused attention, and self-control. Other-focused cognition has emphasized studying processes like: face perception, mentalizing, and social interaction.

The distinction between self-focused cognition and other-focused cognition as different modes of processing information was first established in the domain of memory, where it was observed for the first time that the two had different downstream consequences. Specifically, it has been found that self-focused cognition was associated with better recall on a later memory test, compared to other-focused cognition. This became known as the "self-referential encoding effect" (Rogers, Kuiper, & Kirker, 1977). Memory theorists were swift to suggest that the effect of self-focused cognition in this case was an example of the depth of processing effect, in so far as the self could be conceptualized the most elaborate cognitive schema available to an individual (Klein & Kihlstrom, 1986). More recently, however, social neuroscience has made a fairly strong case against this, suggesting instead that self-focused cognition is a qualitatively different

kind of processing, evidenced by its engaging a different set of brain regions than might be expected from deeper semantic processing alone (Johnson et al., 2002; Kelley, Macrae, Wyland, et al., 2002; Macrae, Moran, Heatherton et al., 2004). Most notably, this kind of cognition has been found to preferentially engage the ventromedial prefrontal cortex (vmPFC) and the posterior cingulate cortex (PCC) close to the precuneus (Johnson et al., 2002; Kelley et al., 2002; Macrae et al., 2004). Interestingly, the vmPFC and PCC are highly metabolically active, even at rest, and part of the so-called "default mode" of brain function (Gusnard, Arbudak, Schuman, & Raichle, 2001; Raichle, McLeod, Snyder et al., 2001). These regions' activity while engaging in self-focused cognition closely mirrors their activity at rest, whereas the same regions appear to deactivate when engaging in other-focused cognition (Kelley et al., 2002). This suggested that engaging in other-focused thought might be a particularly well-suited way of disengaging from self-focused thought, a dichotomy that I will continue to come back to as an important way to characterize self- and other-focused cognition.

A slightly different characterization of self- and other-focused cognition proposes that the two exist on a continuum of distance from the self, and distinguishes between close or more intimate others and distant or less intimate others. According to this account, information about close others is processed in a manner that is similar to the processing of information about the self. This kind of processing has similar (though smaller) effects on memory, and relies on some of the same medial prefrontal brain

regions that are typically associated with self-focused cognition (see Wagner, Haxby, & Heatherton, 2012). Adopting a previous term from research on relationship development in romantic couples (Aaron, Aaron, & Smollan, 1992; Aaron, Aaron, Tudor et al., 1991), this phenomenon has been called "inclusion of other in the self" (see Wang et al., 2011).

To date, a large portion of the literature on self-focused cognition has prioritized investigating the ways in which this type of cognition contributes to memory (see Prebble, Addis, & Tippett, 2013) and goal directed behavior (see Scheier & Carver, 2014). By comparison, fewer studies have focused upon how this type of cognition impacts emotional processes. This dissertation examined how the two phenomena identified above, disengaging from self-focused thought and self-distancing, influence emotional processes. It did so using a series of studies that compared and contrasted the effects of different kinds of self-focused and other-focused cognition on two important (and distinct) concepts in the emotion literature: emotional reactivity and emotion regulation. These effects were investigated in the context of *cognitive reappraisal*, an emotion regulation strategy that involves reinterpreting a situation with a focus on changing one's emotional response to it (Gross, 1998; Giuliani & Gross, 2009).

As a cognitive strategy for regulating emotion, reappraisal provides a conceptually well-suited context for investigating the effects of self-focused cognition on emotion regulation. Considered one of the most effective strategies for changing the experience, expression, psychophysiology, and neural signature of emotional responding

(Gross & Thompson, 2007), cognitive reappraisal is also notably difficult to implement, and there is considerable variability in how well it works (McRae, Jacobs, et al., 2012). These characteristics of cognitive reappraisal warrant exploring: (1) whether there are ways of reappraising that result in more successful and/or less difficult regulation, and (2) whether there are individual differences that influence reappraisal success and difficulty. The studies I report in this dissertation investigated both of these possibilities, specifically as they relate to self-focused and other-focused cognition.

Importantly, whereas other studies of emotion regulation have focused almost exclusively on comparing the success of different strategies in achieving their emotional goal (McRae et al., 2010; McRae, 2013), the present set of studies examined difficulty along with success of emotion regulation, in order to reach a better understanding of the effects of self-focused cognition on emotion regulation. To date, very few studies have looked at differences in difficulty between different kinds of emotion regulation strategies, although a few authors agree that considering the cognitive costs of regulation may be equally as important as considering regulation success (Gruber, Harvey, & Gross, 2012; Mauss & Gross, 2007).

Self-Focused Cognition and Emotional Reactivity

There is a vast theoretical literature that describes the role of the self in emotion generation. This literature affords interesting, more specific hypotheses about the role of the self in emotion regulation. Early cognitive theories of emotion (Arnold, 1960;

Lazarus, 1966) ascribed a monumental role to self-focused cognition in the emotion generation process, suggesting that an emotional response would not arise if a stimulus or situation were not perceived as having some sort of relationship with the self. In Arnold's own words, "to arouse an emotion, an object must be appraised as affecting *me* in some way, affecting *me personally* as an individual, with *my* particular experience and *my* particular aims" (Arnold, 1960, pp.171, italics added). Nonetheless, modern appraisal research has not focused on testing this particular tenet of Arnold's theory.

Some of the most relevant groundwork for examining how self-focused cognition impacts emotion generation was laid down by Duval and Wicklund (1972) in their Objective Self-Awareness theory. The gist of this theory is that attention can be directed not only outward, at the situation, but also inward, at the self. The latter state, termed self-awareness, has been associated with a propensity to more readily process cues in the environment as self-relevant (Hull & Levy, 1979), and to respond emotionally to these cues (Fenigstein, 1979). There is a great deal of support for the notion that self-awareness intensifies emotional responding to experimentally-induced situations (Duval & Wicklund, 1972; Fenigstein, 1979; Scheier, 1976; Scheier & Carver, 1977; Scheier & Carver, 1983; Scheier, Carver, & Gibbons, 1979). The same is true of self-consciousness, a trait that determines people's general propensity to focus attention on themselves (Fenigstein, Scheier, & Buss, 1972). Nonetheless, all of the studies identified above used designs that collapsed across reactivity and regulation, most of them using a global

measure of emotionality, such as the display of anger in response to an experimentally created situation (e.g. Scheier, 1976). It is thus not known to what extent self-focused cognition influences mechanisms of reactivity, and to what extent it influences mechanisms of regulation. This is to a large extent because the notion of separating reactivity and regulation came about more recently, with the advent of emotion regulation theory (e.g. Gross, 1998; Ochsner, Bunge, Gross, & Gabrieli, 2002).

Self-Focused Cognition and Emotion Regulation

Emotion regulation refers to systematic and intentional changes in intensity, duration, or the psychological and psychophysiological processes associated with activated emotions (Gross, 1998; Cole, Martin, & Dennis, 2004). This important concept insists that individuals are not mere witnesses of their own emotional reactions, but they have the remarkable ability to strategically influence which emotion they feel, when, and for how long (Gross, 1998). What is more, this ability is a key aspect of healthy psychosocial functioning (Gross & Muñoz, 1995; Mayer & Salovey, 1995; Gross, 2001; Gross & John, 2003).

To date, emotion regulation has been studied almost exclusively in self-focused cognitive contexts, by asking people to regulate their own emotion (Zaki & Williams, 2013). As a result, the contributions of self-focused cognition to emotion regulation are not well understood. This is because self-focused cognition has never been systematically varied in an experimental paradigm that separates emotional reactivity and emotion

regulation. This kind of experimental paradigm would be a prime avenue to explore when looking to elucidate the role of self-focused cognition in emotion regulation.

More specifically, the question that remains unanswered is whether reliance on self-focused cognition impacts one's ability to regulate emotion, independently of any impact on initial emotional reactivity. The importance of this question is underscored by the known consequences of emotion regulation for both physical and social well-being (see Gross, 2001; Gross & John, 2003; Gross & Muñoz, 1995; Mayer & Salovey, 1995). Furthermore, excessive self-focus and deficient emotion regulation co-occur in numerous affective disorders, for example depression, dysphoria, and social anxiety (see Mor & Winquist, 2002). Based on this, it is reasonable to ask whether self-focused cognition may have undesirable effects on emotion regulation. If this were true, an important follow-up question would be whether those undesirable effects can be mitigated, e.g. by decreasing self-focus or shifting attention away from the self at the moment when regulation occurs.

The few lines of research that have touched upon these notions are those on rumination (Nolen-Hoeksema, 1991; Trapnell & Campbell, 1999), self-distancing (Kross et al., 2009; Kross & Ayduk, 2008; Kross & Ayduk, 2009; Kross, Ayduk, & Mischel, 2005) and mindfulness-based stress reduction (Goldin, Ramel, & Gross, 2009; Goldin & Gross, 2010; Goldin, Ziv, Jazaieri et al., 2012), which are reviewed separately below.

Rumination is an aspect of self-thought that is characterized by repetitive and passive thought about negative emotions, focusing on symptoms of distress (Nolen-Hoeksema, 1991; Nolen-Hoeksema, 2000). Overall, this literature suggests that ruminative components of self-thought often increase or prolong distress and are positively related to depression and other psychopathologies (Nolen-Hoeksema, 1991; Nolen-Hoeksema et al., 2008), particularly in clinical samples, and in response to autobiographical recall (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Self-distancing, or using a third-person perspective when reflecting on one's own emotional state, has been studied primarily in autobiographical contexts, whereby individuals were asked to reflect on past emotions (Ayduk & Kross, 2010). In contrast, mindfulness, a meditation technique thought to foster non-identification with self-views (Kabatt-Zinn, 1990), has been studied primarily in terms of its effects on present-focused emotional states. Together, observations from studies of self-distancing and mindfulness reveal that both of these techniques are effective at reducing negative emotional responses. Overall, these observations align with the notion that reducing reliance on self-focused cognition helps reduce the intensity of emotional responses (see Ayduk & Kross, 2010; Goldin & Gross, 2010).

Nonetheless, neither the rumination literature, nor those on self-distancing or mindfulness-based stress reduction provide a decisive answer to whether or not their effects are specific to the emotion regulation process, as they frequently use designs that

involve global measures of emotionality, and do not often distinguish between reactivity and regulation (see Troy et al., 2013).

Integrative Summary

The extant literature suggests that reliance on self-focused cognition during emotion regulation may have important consequences, and that these consequences may not always be adaptive. However, there are no studies to date that report having manipulated self-focused cognition in a controlled experiment that quantifies its effects on emotion regulation independently from its effects on emotional reactivity. Basic research addressing this gap in the literature could weigh in on the extent to which emotion regulation could benefit from disengaging self-focused thought. Down the road, this could inform therapies that more precisely target the cognitive dynamics of emotion regulation.

If self-focused thought indeed has the effects I hypothesize on emotion regulation, one important question that arises is at what level do these effects operate? One characteristic of self-focused thought that many have postulated is that they can be very hard to escape or disengage from (Duval & Wicklund, 1972). Indeed, some individuals' attempts to escape self-focus go as far as binge eating, alcohol abuse, and deliberate self-harm (Baumeister, 1990; Heatherton & Baumeister, 1991). However, not all individuals find it equally difficult to disengage from self-focused thought, and indeed some can do it relatively easily (see Muraven, 2005). Individual differences in whether one can flexibly

disengage from self-focused thought could be an important determinant of emotion regulation outcomes. If inflexible self-focused cognition affects emotion regulation, then reducing this inflexibility could be a valuable tool for improving emotion regulation.

As mentioned before, a cognitive manipulation that has previously been used to shift attention away from the self has been asking people to focus their attention on another person instead. Studies contrasting self- and other-referent cognitive processing (Kelley et al., 2002; Macrae et al., 2004) have reliably used other-focus as a way to pull attention away from the self in information processing. These studies suggest that brain activity typically associated with self-focused cognition is reduced when engaging in other-focused cognition (Kelley et al., 2002). The effects of adopting an other-focus on the person's own emotion regulation, however, are as of yet unknown. Manipulating self- and other-focus in tightly controlled emotion regulation experiments could provide important insights into the cognitive mechanisms that can be strategically recruited to buffer against the maladaptive effects of excessive or inflexible self-focus.

In this dissertation, I propose that asking people to bring other-focused thoughts online during regulation, specifically during cognitive reappraisal, is an effective tool for disengaging self-focused cognition, and in turn could act as a buffer against the effects of inflexible self-focused cognition on emotion regulation. More generally, comparing the effects of different kinds of self-focused cognition on emotion regulation could deliver important insights for the emotion regulation literature, which has until now not

considered a self vs. other dimension as a determinant of regulation outcomes. The same kind of experiment could also inform the social cognition literature, which does not typically consider self- and other-focused cognition in terms of their effects on emotion.

Chapter Two: General Approach

The present dissertation aimed to make a substantial contribution to the study of self-focused cognition and emotion regulation by: (1) testing the novel hypothesis that bringing online other-focused cognition during emotion regulation buffers against the detrimental effects of self-focus, (2) establishing whether the ability to more easily disengage from self-focused thought is associated with less difficult emotion regulation, and (3) investigating whether changing the content of self-focused thought, without disengaging from it, has any effect on emotion regulation.

Dependent Measures

Across the three studies, the primary dependent measures were emotion regulation success, or the degree to which emotion was changed in accordance with the regulatory goal (McRae, 2013), and emotion regulation difficulty, or the cognitive effort expended during regulation, both of which were assessed using multiple measures. To measure emotion regulation success, I used self-reported emotional experience, in the form of valence (Studies 1-3) and arousal ratings (Study 1) acquired trial-by-trial, in order to infer the extent to which negative emotion had decreased during a regulation condition compared to a non-regulation condition. To measure emotion regulation difficulty, I used self-reported post-task estimates of difficulty (Studies 1-3), as well as performance on a subsequent self-control task (Study 1) as a proxy for the amount effort participants had expended while regulating their emotion.

For each study, I used either a picture- or film-based reappraisal task, the core structure of which has been used by several other laboratories (Gross, 1998; Mauss, Cook, Cheng, & Gross, 2007; Troy, Wilhelm, Shalcross, & Gross, 2010; Ochsner et al., 2002; Sheppes & Meiran, 2007) that relies on carefully controlled visual stimuli that are thought to elicit similar amounts of negative emotion across participants (Gross, 1998), rather than idiosyncratically-chosen self-relevant stimuli which result in greater variance across participants in the amount of negative emotion elicited and may obscure experimental effects (see Salas, Radovic, & Turnbull, 2012). This type of task is well suited for detecting behavioral and psychophysiological differences in emotional responding. Used in a within-participants design (Studies 2 and 3) the task produces robust estimates of reappraisal success, that are separate from estimates of emotional reactivity. Used in a mixed within- and between-participants design (Study 1) the same task allowed me to estimate the mental fatigue or regulatory depletion effects of cognitive reappraisal under different conditions, such as relying on self- and other-focused thought.

Under the assumption that self-control is a limited resource (Muraven & Baumeister, 2000; Muraven, Tice & Baumeister, 1998), studies from the regulatory depletion literature have successfully used performance on subsequent self-control tasks to infer how effortful a previous task was. The task that I chose to use as a proxy for emotion regulation effort was a handgrip endurance test (Baumeister, Bratslavski, Muraven, & Tice, 1998). I predicted that self-reported differences in emotion regulation

difficulty will manifest as differences in performance on a handgrip endurance test administered immediately after the emotion regulation task.

Overview of Studies and Predictions

In Study 1, I used a between-participants experimental design to investigate whether other-focused cognition has an adaptive impact on emotion regulation outcomes, and whether this adaptive effect is more likely to operate via a self-disengagement mechanism, or a self-distancing mechanism.

In order to elicit use of other-focused cognition during emotion regulation, I asked participants to generate reappraisals for negatively-valenced film clips as if they were trying to change how a close other (a good friend) was feeling. I predicted that reappraising an emotional event with a focus on a close other would result in down-regulation of negative emotion that is more successful and/or less difficult, compared to reappraising the same emotional event with a focus on the self. To explore whether or not the benefits of using other-focused cognition arise via disengagement of self-focused thought only, or whether there are additional benefits to self-distancing, I added a third condition where I instructed participants to generate reappraisals with a focus on a distant other (an acquaintance), and assessed how emotion regulation success and difficulty in this condition compared to the other two conditions.

In Study 2, I used a within-participants correlational design to clarify whether the ability to flexibly disengage self-focused cognition is associated with improvements in

emotion regulation. Participants' ability to flexibly disengage self-focused cognition was assessed using a task-based measure. This involved comparing reaction times to an interrupting sound while participants were engaged in self- or other-focused thought. I predicted that participants would experience more successful and/or less difficult emotion regulation the faster they were able to disengage from self-focused thought compared to other-focused thought.

Finally, in Study 3, I again used a between-participants experimental design, and sought to establish whether disengagement of self-focused thought was necessary in order to improve the success and difficulty profile of emotion regulation, or whether changing the content of self-focused thought would be sufficient.

In order to change the content of self-focused thought, participants performed a self-reflection task in which they either wrote about themselves as unique and different from others, wrote about themselves as similar to others, or wrote about a topic that was not meant to be induce self-reflection. I predicted that participants in the self-reflection conditions would experience less successful and/or more difficult emotion regulation than participants in the control condition. Crucially, if changing the content of self-focused thought were sufficient to influence emotion regulation, participants who wrote about themselves as similar to others would experience more successful and/or less difficult emotion regulation than participants that thought about themselves as unique individuals. If, however, changing the content of self-thought were not sufficient to influence emotion

regulation success or difficulty, there would be no significant differences in emotion regulation success or difficulty between the two self-focusing conditions.

Significance

Overall, an examination of the role of self-focused cognition in emotion regulation stands to provide important insights for the emotion regulation literature, which to date has not strongly considered self-focused cognition as a moderator of regulation outcomes. Although studies on rumination, self-distancing, and mindfulness have provided some evidence for the existence of such a link, it is unclear whether their effects on emotion regulation (beyond not always controlling for reactivity) are necessarily mediated via elicitation of strong, self-relevant emotion, that predisposes to rumination, or whether a more general aspect of self-focused cognition might be at play. If the latter is correct, insights from the current set of studies could be more broadly extended to negative emotion in the general population, rather than being restricted to clinical samples.

More generally, the set of studies using the general paradigm described above stand to provide meaningful insights for the social cognition literature, which has traditionally studied self-focused and other-focused cognition independently of emotion. If hypotheses are correct, there may be important applications of the phenomena I describe for improving emotion regulation in various populations that currently struggle with it (Joorman & Gotlib, 2010).

My main predictions for this set of studies are about emotion regulation difficulty, or the cognitive effort required to regulate emotion. These are novel predictions, in so far as studies have not typically considered difficulty when comparing emotion regulation strategies, but instead have focused on success. This is a case where the emotion regulation literature and the broader self-control literature really diverge. Even though success is important, the effort with which success is achieved could have important consequences. For example, difficulty could affect the frequency with which a self-control strategy is attempted in daily life. A strategy that is perceived as too difficult to implement is unlikely to be employed very often, however successful it may be. From this perspective, manipulating a process like cognitive reappraisal in a way that makes it less difficult to implement has the potential to increase the use of this strategy, and be particularly beneficial for individuals for whom cognitive or regulatory resources are limited, for example adolescents (Blakemore & Choudhury, 2006; Steinberg, 2005) or in situations in which these resources are likely already depleted, such as high stress or mental fatigue (Baumeister, Gailliot, DeWall, & Oaten, 2006; Troy et al., 2010; Grillon, Quispe-Escudero, Mathur, & Ernst, 2015)

The effects of self-focused cognition on emotion regulation success, if any, will aid in the interpretation of any difficulty findings. The distinction between self- and other-focused cognition could be important for emotion regulation success as well as difficulty, in which case the adaptive effects of other-focused cognition would be

convincing, but difficulty and success would be confounded with one another. Significant effects of self-focused cognition on emotion regulation difficulty, in the absence of any effects on emotion regulation success, would actually rule out this important confound, suggesting that participants do not merely use difficulty and success interchangeably in self-report, and do not over-report difficulty as an after-the fact justification for failing at the task. Instead, this kind of success-difficulty profile would give credence to the notion that the two are indeed separable constructs, and that a difficulty-success tradeoff (see Locke & Latham, 2002) is not impossible to bypass. So far, the most convincing way to bypass this tradeoff for acts of self-control (including emotion regulation) has been habit formation to a point where these highly controlled processes become automatic (Muraven, Baumeister, & Tice, 1999; Mauss et al., 2007). There is a considerable time investment in achieving this automaticity, in practice. By comparison, achieving a similar effect (for emotion regulation at least) using a simple framing manipulation requires very little time investment.

Beyond the direct implications it has for emotion regulation theory and applications, the proposed set of studies could also have important implications for theories of self-control more broadly. Although the precise mechanism responsible for mental fatigue or depletion effects is not known (Berkmann & Miller-Ziegler, 2012), an often-overlooked tenet of extant self-control theories postulates that resources getting

depleted during acts of self-control are caused by an inherent aspect of self-focused cognition, hence the term “ego” depletion (Baumeister et al., 1998).

Chapter Three: Study 1

For Study 1, I hypothesized that reinterpreting a negative event as if to decrease a close other's negative emotion would result in: (1) successful emotion regulation for the participant generating these reinterpretations, as indicated by a significant decrease in self-reported negative emotion in a regulation condition compared to a condition where regulation wasn't attempted; and (2) either more successful or less difficult regulation of negative emotion, compared to reinterpreting in order to decrease one's own negative emotion.

Furthermore, I also sought to explore whether the mechanism responsible for such an effect was likely to be a self-distancing mechanism, or a self-disengagement mechanism. I did so by examining whether the effect of interest, i.e. more successful or less difficult emotion regulation when reappraisal is focused on another compared to self, depends on whether the other person is a Close Other (a friend) or a Distant Other (an acquaintance). Emotion regulation success that increases the more distant the other person is from the self, or emotion regulation difficulty that decreases in the same manner, would suggest a self-distancing mechanism might be responsible for any improvements in emotion regulation. However, emotion regulation outcomes that do not further improve with increased distance from the self would instead support a disengagement mechanism as more like

Participants and Design

A total of N=96 student volunteers (66 female) from the University of Denver between the ages of 18 and 35 years old took part in the study in exchange for extra credit towards an introductory psychology course.

The primary measure in the study was performance on an emotion regulation task that used a 3x3 mixed design, with Condition ('Self', 'Close Other', and 'Distant Other') varied between participants, and Trial Type ('Look Neutral', 'Look Negative', and 'Change Negative'), varied within participants. Continuous measures of psychophysiological responding were collected during each trial, and self-report measures of negative emotion and arousal were collected after each trial. After the emotion regulation task, all participants completed a handgrip endurance test (Baumeister, Bratslavski, Muraven, & Tice, 1998), which served as a proxy measure for the amount of effort they had expended during the emotion regulation task. At the end, participants filled out a detailed debriefing survey that included questions about the emotion regulation task, as well as several questionnaires that assessed individual differences in emotional responding, which were used in exploratory analyses.

Procedure

The study relied on a film-based variation of the main reappraisal task described under General Approach. This was preferred due to the extended stimulus presentation time of film stimuli (compared to pictures), which is well-suited for detecting differences

in psychophysiological responding. However, data on psychophysiological responding will not be reported here. The stimuli consisted of 3 film clips that were 2 minutes and 40 seconds long, one for each Trial Type ('Look Neutral', 'Look Negative', 'Change Negative'). These film clips were selected from a previously validated library for emotion elicitation using films (Gross & Levenson, 1995). The 'Look Neutral' film clip was part of a documentary about Denali National Park, whereas the 'Look Negative' and 'Change Negative' film clips were extracted from the movies 21 Grams, and The Champ, respectively. The latter two film clips were matched in valence and intensity based on ratings acquired in previous studies (Gross & Levenson, 1995; Ray, 2007).

Participants watched the 'Look Neutral' film first, followed by the 'Look Negative' film, and, finally, the 'Change Negative' film. In order to maximize interpretability of comparisons between conditions, this order was kept the same for all participants, without counterbalancing. Immediately after seeing each film (and having followed the instruction it was paired with), participants were asked to indicate how much negative emotion they felt ('How NEGATIVE do you feel right now?') on a scale from 0 ('not at all negative') to 9 ('extremely negative'), as well as their general arousal ('How CALM or EXCITED do you feel right now?') on a scale from 0 ('completely calm') to 9 ('extremely excited'). Because effects of regulation may lag behind the stimulus presentation period in the case of film stimuli, participants were instructed to rest for one minute after each film presentation, after which they were asked again to rate

their negative emotion and general arousal, using the same scales, before proceeding to the next trial.

Each participant was randomly assigned to and completed the emotion regulation task above in one of three experimental conditions: 'Self'(n=31, 21 female), Close Other'(n=33, 23 female), or 'Distant Other'(n=32, 22 female). Participants in the Self condition received reappraisal training typical of previous investigations and were told that they would see a variety of short films preceded by an instruction to either allow themselves to react naturally (Look) or think about ways of reinterpreting the events depicted so they feel less negative (Change). Participants in the Close Other and Distant Other conditions received a modified reappraisal training and were told to first identify a close friend (or an acquaintance) by name, then imagine throughout that this person is viewing the films at the same time as they are. For the 'Look' instruction, participants were told to let themselves and their friend or acquaintance react naturally. For the 'Change' instruction, participants were told to think about ways of reinterpreting the events depicted so their friend/acquaintance feels less negative emotion. Negative emotion and arousal ratings immediately after the films as well as after the break all referred to how the participant felt (not their friend or acquaintance).

Immediately after the emotion regulation task, participants completed a handgrip endurance test, which has been used in the past as a measure of regulatory effort expended on the previous task (Baumeister et al., 1998). For this test, participants were

given a hand exerciser consisting of two handlebars connected via a metal spring, and were instructed to pull the two handlebars together and maintain that grip for as long as they could. Based on a model in which self-control is viewed as a limited resource, the more effort participants expended on the previous task, the shorter the amount of time they maintain the grip on the hand exerciser should be. Crucially, this test always followed the 'Change Negative' trial, which was always last in the sequence, in order to most closely reflect the amount of cognitive effort expended during regulation.

At the very end, participants completed a detailed debriefing questionnaire. This started with open-ended questions about the task instructions participants remembered receiving (*'What were you instructed to do during the LOOK trials?', 'What were you instructed to do during the CHANGE trials?)*. Each participant's answers to these questions were evaluated for instruction compliance by two independent raters in order to determine whether any exclusions were necessary.

After each open-ended instruction recall question, participants were asked to make ratings of task difficulty, which was assessed separately for the Look and Change instructions (*'How difficult was it for you to follow this instruction?*, accompanied by a 9-point Likert scale anchored at *'1' = 'not difficult at all'* and *'9' = 'very difficult'*). Participants in the Close Other and Distant Other conditions also indicated how close they felt to the person they had thought of during the emotion regulation task, using the

Inclusion of Other in the Self Scale (Aaron, Aaron, & Smollan, 1992). A diagram of this scale is depicted in *Figure 1*.

Finally, participants filled out a set of questionnaires assessing individual differences in emotional responding: mood over the previous 2 weeks (PANAS; Watson, Clark, & Tellegen, 1988), emotion regulation in daily life (ERQ; Gross & John, 2003), empathy (IRI; Davis, 1983), and depression (BDI; Beck, Ward, & Mendelson, 1961). Each participant's summary scores on these scales (and relevant subscales) were used in exploratory analyses in order to gage their association with emotion regulation success and emotion regulation difficulty.

Data Analysis Approach

Instruction Compliance. Each participant's answers to each of the two instruction recall questions were coded for compliance by two independent raters, using a binary code for compliance vs. non-compliance. Participant's answers were coded as compliant if they suggested there was a separation between the 'Look' and 'Change' instructions, and if they aligned with their respective condition (Self, Close Other, or Distant Other). Any answers indicative of having used emotion regulation for the 'Look' instruction, having used techniques other than reappraisal during the 'Change' instruction, or not having thought of the Self, a Close Other, or a Distant Other (depending on condition), were to be coded as non-compliant, and eliminated from all subsequent analyses.

Manipulation Check. Closeness ratings from the Inclusion of Other in Self question were submitted to a General Linear Model (GLM) with Condition (Close Other, Distant Other) as an independent variable. Evidence of a difference between the two conditions, such that participants in the Close Other condition would rate themselves significantly closer to the person they thought of during the emotion regulation task than participants in the Distant Other condition, would indicate a successful manipulation of distance from self in the two conditions.

Negative Emotion and General Arousal. Participants' subjective ratings of negative emotion and general arousal immediately after each film, as well as after the break, were submitted to repeated measures GLMs. Due to the larger amounts of missing data for the two questions after the break, answers to each question were submitted to separate analyses.

Condition (Self vs. Close Other vs. Distant Other) was manipulated between participants, therefore it applied to each of the 'Look Neutral', 'Look Negative', and 'Change Negative' trials. I examined the main effects of Trial Type and Condition, as well as interactions that would indicate Condition has a different impact in the context of reactivity ('Look Negative' vs. 'Look Neutral' contrast for each condition) and regulation ('Change Negative' vs. 'Look Negative' contrast for each condition).

Subjective Difficulty. Ratings of task difficulty were collected separately for each Instruction ('Look' and 'Change'). These single ratings were also submitted to

repeated measures GLMs. Using the same logic as the analyses for negative emotion and general arousal ratings, I examined main effects of the experimental manipulation, as well as interactions indicating that the manipulation had a different impact in the context of reactivity ('Look' instruction) and regulation ('Change' instruction).

Handgrip Endurance. In order to more objectively compare emotion regulation difficulty across the three conditions (Self, Close Other, Distant Other), I used the performance indices from the handgrip endurance test as a proxy for the amount of regulatory effort expended during the (previous) emotion regulation task. This measure was collected only once, immediately after the emotion regulation task. Because endurance could be heavily influenced by individual differences in grip strength, I first examined whether there were any outliers, defined as participants whose handgrip endurance times were more than 2 standard deviations away from the overall mean. After removing outliers, participants' endurance times were submitted to a simple GLM with Condition as an independent variable, in order to determine whether reappraisal required different amounts of effort in the three conditions.

Associations Between Emotion Regulation Success and Difficulty. Using the same criteria as above for outlier exclusion for the handgrip endurance measure, I performed a set of correlation analyses in order to determine whether there was any association between handgrip endurance and self-reported difficulty following the Look or Change instructions, emotion regulation difficulty scores based on differences in self-

reported difficulty for the Change and Look instruction, and emotion regulation success scores based on differences in self-reported negative emotion (or self-reported arousal) after the Look Negative and Change Negative films.

Exploratory Correlations with Individual Differences. After reversing relevant items, average scores were calculated for each of the following scales and subscales: positive and negative mood over the previous 2 weeks (PANAS; Watson, Clark, & Tellegen, 1988), frequency of using reappraisal, expressive suppression, and situation selection in daily life, as well as frequency of emotion regulation in general (ERQ; Gross & John, 2003), fantasy, perspective taking, empathic concern, and personal distress (IRI; Davis, 1983), and depression (BDI; Beck et al., 1961). After investigating the internal consistency for each scale and subscale, using Crohnbach's α, each individual difference was entered as a covariate in a repeated measures GLM in order to determine whether it interacts with Condition in predicting either negative affect, arousal, or subjective difficulty ratings. Those individual differences that did not interact with condition in predicting either negative emotion, general arousal, or subjective difficulty, were submitted to exploratory correlation analyses to determine their association with task-based measures of emotion regulation success and emotion regulation difficulty, calculated as difference scores.

Hypotheses

With respect to emotion regulation success, I hypothesized that other-focused reappraisal would result in greater decreases in negative emotion than self-focused reappraisal. Specifically, I predicted a Trial Type and Condition interaction, such that differences in negative emotion between the Look Negative and Change Negative trials would be smaller in the Self condition, compared to both the Close Other and Distant Other conditions. I expected the same to be true of the difference between Look Negative and Change Negative trials for the general arousal ratings.

With respect to emotion regulation difficulty, I predicted that reappraisal in the Close Other and Distant Other conditions would be perceived as less difficult than reappraisal in the Self condition. For the Distant Other condition, I tested two competing mechanisms for the effects of other-focused thought: a self-distancing mechanism and a self-disengagement mechanism. If reappraisal in the Distant Other condition is significantly less difficult than reappraisal in the Close Other condition, this would be consistent with a distancing mechanism. If, however, there are no differences in difficulty between the Distant Other and Close Other conditions, this would in turn support a self-disengagement mechanism. Predictions about handgrip endurance, interpreted as a measure of effort, mirrored those about difficulty.

Results

Instruction Compliance. All participants were rated as having complied with the instructions corresponding to their respective conditions (Self, Close Other, or Distant Other, with unanimous agreement between the two raters. Therefore, no exclusions were deemed necessary. All following analyses are based on a total of 96 participants, out of which 31 were in the Self condition, 33 were in the Other condition, and 32 were in the Distant Other condition. Any deviations from these numbers are due to missing data.

Manipulation Check. On the Inclusion of Other in Self measure, participants in the Close Other condition rated themselves significantly closer (M=5.34, SD=1.47) to the person they thought of during the emotion regulation task, compared to participants in the Distant Other condition (M=2.32, SD=.87), indicating that the Close vs. Distant Other manipulation was successful, $F(1,61)=97.42$, $p < .001$. This effect is illustrated in *Figure 2*.

Self-Reported Negative Emotion. All participants rated their negative emotion immediately after the video, however a total of 9 out of the 96 participants did not also provide a rating for their negative emotion after each break. Results are reported below. All significance tests are 2-tailed, and fractional degrees of freedom indicate Greenhouse-Geisser adjustments for significant differences in error variance between the three conditions, suggested by results of Mauchly's test of sphericity. Results of post-hoc tests have not been corrected for multiple comparisons.

Immediate Effects of Reappraisal. There was a significant main effect of Trial Type, $F(2, 186)=483.77$, $p < .001$. Thus, there was an overall difference in the amounts of negative emotion participants felt after the Look Neutral, Change Negative, and Look Negative films. Post-hoc paired samples *t*-tests indicated that there was a significant reactivity effect, $t(95)= -29.85$, $p < .001$. Across conditions, participants reported feeling more negative emotion after the Look Negative film (M=5.97, SD=1.79) compared to the Look Neutral film (M=.18, SD=.60). There was also a significant effect of regulation, $t(95)=3.72$, $p < .001$. Across conditions, participants reported feeling significantly less negative emotion after the Change Negative film (M=5.24, SD=1.98) compared to the Look Negative film (M=5.97, SD=1.79).

There was no significant effect of Condition, $F(2,93)=1.43$, $p > .245$, thus there was no sufficient evidence to indicate that, across Trial Type, there were differences in the amount of negative affect participants reported in the three conditions.

There was also no interaction between Trial Type and Condition, $F(4,186)=1.58$, $p > .183$. Thus, there was no sufficient evidence to indicate that the effect of Trial Type was different between the three conditions.

Overall, I did not find sufficient evidence that using other-focused cognition results in more successful down-regulation of negative emotion than using self-focused cognition. These results are illustrated in *Figure 3*. I was unable to reject the null hypothesis that generating cognitive reappraisals with a focus on a Close Other or a

Distant Other results in equally successful emotion regulation as generating those cognitive reappraisals with a focus on the Self. There was also no significant difference between the Close Other and Distant Other conditions in emotion regulation, thus I failed to find conclusive evidence that further distance from self would result in a significant increase in emotion regulation success.

Delayed Effects of Reappraisal. A significant effect of Trial Type was still present one minute after the films, $F(1.86, 155.90)=132.26$, $p < .001$. Thus, across conditions, there were differences in the amount of negative emotion participants reported after the Look Neutral, Change Negative, and Look Negative films. Post-hoc paired samples *t*-tests indicated significant emotional reactivity, $t(86)= -13.51$, $p < .001$, in that participants reported more negative emotion after the Look Negative film (M=3.16, SD=1.98) than the Look Neutral film (M=.21; SD=.65). A significant regulation effect was also present, $t(86)=2.47$, $p < .016$, in that participants reported significantly less negative emotion after the Change Negative film (M=2.75, SD=1.81) compared to the Look Negative film (M=3.16, SD=1.98).

There was no significant effect of Condition, $F(2,84)=2.05$, $p > .136$, thus there was no sufficient evidence to indicate that, across Trial Type, there were differences in the amount of negative affect participants reported in the three conditions.

There was also no significant interaction of Trial Type and Condition, $F(3.71,155.90)=.82$, $p > .505$, thus I was unable to assert that the effect of Trial Type was different in any of the three conditions.

Overall, these results suggest that the reactivity and regulation effects endured for at least one minute after the films. Even though participants were instructed to just rest, the effects of reappraisal could still be observed at this time, as participants felt less negative emotion after the Change Negative film, than they did after the Look Negative film. Although this is not a novel result with respect to generating cognitive reappraisals for the Self, it does help exclude any delayed costs of generating reappraisals with a focus on a Close Other or Distant Other, such as a rebound in negative emotion after participants have stopped reappraising.

Self-Reported General Arousal. A total of 16 out of the 96 participants did not provide a rating for their general arousal immediately after each film. Results for *Immediate effects of Reappraisal* below are thus based on data from 80 participants, out of which 22 were in the Self condition, 28 were in the Close Other condition, and 30 were in the Distant Other condition. Similarly, a total of 7 participants did not provide arousal ratings after the break. Results for *Delayed Effects of Reappraisal* below are thus based on a total of 89 participants, out of which 28 were in the Self condition, 31 were in the Close Other condition, and 30 were in the Distant Other condition. In a similar vein to the previous negative affect analyses, significance tests are 2-tailed, and fractional

degrees of freedom indicate Greenhouse-Geisser adjustments for significant differences in error variance between the three conditions, suggested by results of Mauchly's test of sphericity. Results of post-hoc tests have not been corrected for multiple comparisons.

Immediate Effects of Reappraisal. There was a significant effect of Trial Type, $F(1.69,129.92)=53.90$, $p < .001$, indicating there was an overall difference in the amounts of negative emotion participants felt after the Look Neutral, Change Negative, and Look Negative films, respectively. Post-hoc paired samples *t*-tests indicated that a significant reactivity effect was present, $t(79)= -8.69$, $p < .001$. Participants reported higher levels of general arousal after the Look Negative film (M=4.29, SD=1.82) compared to the Look Neutral film (M=1.65; SD=2.10). However, there was no significant effect of regulation, $t(79)=1.58$, $p < .119$, even though participants reported lower levels of general arousal after the Change Negative film (M=3.95, SD=1.88) compared to the Look Negative film (M=4.29, SD=1.82).

There was no significant effect of Condition, $F(2,77)=.35$, $p > .710$, thus there was no sufficient evidence to indicate that, across Trial Type, there were differences in the amount of general arousal participants reported in the three conditions.

There was also no significant interaction of Trial Type and Condition, $F(3.37,129.92)=.78$, $p > .519$, thus no sufficient evidence to indicate that the effect of Trial Type was different in the three conditions.

I did not find sufficient evidence that using other-focused cognition results in more successful down-regulation of general arousal, compared to using self-focused cognition, thus I was unable to reject the null hypothesis that generating cognitive reappraisals with a focus on a Close or Distant Other results in equally successful down-regulation of general arousal as generating those cognitive reappraisals with a focus on the Self.

Delayed Effects of Reappraisal. A significant main effect of Trial Type, $F(1.73,148.70)=31.91$, $p < .001$, was still present after a one minute delay. Post-hoc paired samples *t*-tests indicated a significant reactivity effect, $t(88)= –6.91$, $p < .001$, whereby participants still reported higher levels of general arousal after the Look Negative film (M=2.54, SD=1.81) compared to the Look Neutral film (M=1.03; SD=1.82). There was also a significant effect of regulation, $t(88)=2.69$, $p < .01$, as participants reported lower levels of general arousal after the Change Negative film (M=2.13, SD=1.58) compared to the Look Negative film (M=2.54, SD=1.81).

There was no significant effect of Condition, $F(2,86)=.30$, $p > .740$, thus once again there was no sufficient evidence to indicate that, across Trial Type, there were differences in the amount of general arousal participants reported in the three conditions.

There was no significant interaction between Trial Type and Condition, $F(3.46,148.70)=.63$, $p > .617$, thus not enough evidence to suggest that the effect of Trial Type was different in any of the three conditions.

Even though participants were instructed to just rest, there were effects of reappraisal on general arousal that could be observed at this time, as participants felt more calm after the Change Negative film, than they did after the Look Negative film. These results suggest that there are delayed effects of reappraisal on general arousal, while also helping to exclude any delayed costs of generating reappraisals with a focus on a Close Other or Distant Other, such as a rebound in general arousal after participants have stopped reappraising.

Emotion Regulation Difficulty. Participants' subjective estimates of task difficulty provided after the emotion regulation task were submitted to a 3 X 2 Repeated Measures ANOVA with Instruction (Look, Change) as a within-participants factor and Condition (Self, Close Other, Distant Other) as a between-participants factor.

There was a significant main effect of Instruction, $F(1,93)=94.87$, $p < .001$. Participants reported having experienced significantly more difficulty when following the Change instruction (M=3.65, SD=2.07), compared to the Look instruction (M=1.42, SD=.95). Thus, across conditions, generating reappraisals for self or other was more difficult than not generating any reappraisals at all.

There was no significant main effect of Condition, $F(2,93)=1.52$, $p > .224$, however there was a significant interaction between Instruction and Condition, $F(2,93)=3.28$, $p < .043$, indicating that the effect of Instruction was different in the three conditions. Follow-up GLMs indicated that difficulty ratings for the Look instruction did

not differ by Condition, $F(2,93)=.64$, $p > .531$. This suggests that following an instruction to watch a film and keep another person in mind while doing so (without generating reappraisals) is not significantly more difficult than following an instruction to simply watch a film, without keeping another person in mind. However, a trend-level effect of Condition was present when comparing difficulty ratings for the Change instruction only, $F(2,93)=2.79$, $p < .067$, suggesting that there were slight differences in how difficult it was to follow this instruction for the Self, Close Other, and Distant Other conditions. Post-hoc independent samples *t*-tests indicated that participants in the Self condition (M=4.29, SD=2.33) found it significantly more difficult to follow the Change instruction, $t(62)=2.30$, $p < .026$, compared to participants in the Close Other condition (M=3.09, SD=1.83), but not compared to participants in the Distant Other condition (M=3.59, SD=1.93), $t(61)=1.30$, $p > .20$. However, although difficulty ratings for Change instruction in the Distant Other condition were slightly increased compared to the Close Other condition, this difference was not significant, $t(63)= -1.08$, $p < .285$.

In line with these hypotheses, keeping a Close Other in mind and generating reappraisals as if one was trying to decrease how negatively that person was feeling, was less difficult for participants than simply generating those reappraisals in order to decrease one's own negative emotion. This, however, was not the case when the other person was a Distant Other. Keeping a Distant Other in mind and generating reappraisals

as if one was trying to get them to feel better was comparable in difficulty to generating reappraisals with a focus on changing one's own feelings.

A different way to follow-up on the same Instruction by Condition interaction is using a set of follow-up independent samples *t*-tests with the difference score between participants' difficulty ratings following the Change and the Look instructions as a dependent variable, and Condition as an independent variable. Conceptually, these difference scores are equivalent to a measure of difficulty generating reappraisals, above and beyond simply looking at a negative image, and above and beyond having to keep another person in mind. The results are illustrated in *Figure 4*. Comparisons indicated that participants in the Self condition experienced significantly greater difficulty generating reappraisals compared to participants in the Close Other condition, $t(62)=2.54$, $p < .015$, but not compared to participants in the Distant Other condition, $t(61)=1.61$, $p < .113$ (although the latter could be considered a trend-level effect), and there were no significant differences between emotion regulation difficulty in the Close Other and Distant Other conditions, $t(63)= -.89$, $p > .458$.

This latter pattern of results suggests that cognitive reappraisal is less difficult when using other-focused cognition, however the effect is less robust when focusing on a Distant Other rather than a Close Other. Thus, I was able to reject the null hypothesis that generating cognitive reappraisals with a focus on the Self, a Close Other, and a Distant Other is equally difficult. Furthermore, there was no convincing evidence that further

distance from the self would result in any further decrease in emotion regulation difficulty. In other words, disengagement of self-focused cognition appeared to be the more likely mechanism responsible for generating cognitive reappraisals with less difficulty, rather than a mechanism based on self-distancing.

Handgrip Endurance. Participants' handgrip endurance times ranged between 0 and 75.43 seconds (M=22.18, SD=19.21), and had a positive skew. In order to make sure comparisons between conditions are not affected by outliers, I excluded data points that were more than 2 standard deviations away from the mean. Because the data still presented a positive skew after the first iteration of exclusions, this procedure was performed twice. The total number of excluded data points was 12, which amounted to 12.5% of the total. The final set of scores included 84 data points ranging from 0 to 47.07 seconds (M=16.36, SD=11.78). Of the final 84 data points, 26 were in the Self condition, 32 in the Close Other condition, and 26 in the Distant Other condition.

Data without outliers were submitted to a GLM with Condition (Self, Close Other, Distant Other) as an independent variable. There was a significant main effect of Condition, $F(2,81)=3.87$, $p < .026$, indicating that participants' handgrip endurance times were significantly different in the three conditions. Post-hoc independent samples *t*-tests indicated that participants in the Close Other condition (M=19.52, SD=13.48) had significantly longer handgrip endurance times, $t(56)= -2.72$, $p < .010$, than participants in the Self condition (M=11.35, SD=8.04). Participants in the Distant Other condition

(M=17.49, SD=11.43) also exhibited longer handgrip endurance times compared to participants in the Self condition, $t(50)= –2.24$, $p < .031$, however there were no significant differences between participants' endurance times in the Distant Other and Close Other conditions, $t(56)=.61$, $p > .544$. These results are illustrated in *Figure 5*.

Overall, this pattern of results is very similar to that obtained using the difference score between subjective difficulty for the Change and Look instruction above, and suggests that cognitive reappraisal was significantly less effortful using other-focused cognition, particularly when focusing on a Close Other rather than a Distant Other. Thus, I was again able to reject the null hypothesis that generating cognitive reappraisals with a focus on the Self, a Close Other, and a Distant Other requires equal amounts of effort. And in the absence of any evidence that further distance from self would result in any further decrease in effort when generating reappraisals, disengagement of self-focused cognition appears to be sufficient for generating cognitive reappraisals with less effort.

Associations Between Emotion Regulation Success and Difficulty. There was a significant negative correlation between handgrip endurance times and subjective estimates of difficulty following the Change instruction, $r(84)= -.20$, $p < .033$, such that greater handgrip endurance was associated with lower ratings of difficulty for the Change instruction. In contrast, there was no significant correlation between handgrip endurance and subjective estimates of difficulty following the Look instruction, $r(83)= –.04$, $p > .733$. Emotion regulation difficulty above and beyond simply watching a film and above

and keeping or not keeping another person in mind, as measured by the difference score between ratings for the Change and Look instructions, was not correlated with handgrip endurance, $r(83) = -.15$, $p > .170$. This pattern of results suggests that performance on the handgrip endurance test may have been representative of the total effort expended during reappraisal, rather than a pure measure of reappraisal effort independent of keeping another person in mind.

Emotion regulation success based on differences in negative emotion ratings after the Look Negative and Change Negative films, was not significantly correlated with either difficulty following the Look instruction, difficulty following the Change instruction, or handgrip endurance ($p > .450$ in each instance). Emotion regulation success based on differences in arousal ratings was also not significantly correlated with either difficulty following the Look instruction, difficulty following the Change instruction, or handgrip endurance ($p > .384$ in each instance). The two emotion regulation success scores were, however, significantly correlated with one another, $r(75)=.38$, $p < .001$.

The pattern of correlations between these four measures provides good convergent and discriminant validity for emotion regulation success and emotion regulation difficulty, and supports the idea that each of them are valid constructs.

Exploratory Correlations with Individual Differences. All individual difference scales and subscales exhibited high internal consistency (Crohnbach's $\alpha > .75$

in each instance). None of the eleven individual differences interacted with Condition to predict negative emotion, general arousal, or subjective difficulty ($p > .325$ in each instance), thus all were used in exploratory correlational analyses, which collapsed across Condition. Statistics are reported separately for emotion regulation success and emotion regulation difficulty measures. As all analyses were exploratory, *p*-values are not corrected for multiple comparisons, and represent 2-tailed significance tests.

Individual Differences Related to Emotion Regulation Success. Reappraisal success scores based on negative emotion and arousal ratings, respectively, calculated as differences between the ratings provided immediately after the Look Negative and Change Negative films, were submitted to an exploratory correlational analysis with all sixteen individual differences listed above. Although there was a significant correlation between the two emotion regulation success scores, $r(96)=.40$, $p < .001$, they exhibited entirely different patterns of associations with individual differences.

Successful down-regulation of negative emotion did not exhibit any significant or trending correlations, positive or negative, with any of the eleven individual differences.

Successful down-regulation of arousal, however, exhibited trend-level correlations with two individual differences, and significant correlations with another two (out of eleven total). Specifically, participants who experienced more complete down-regulation of arousal immediately after the film also tended to report more positive mood over the previous two weeks, $r(86)=.19$, $p < .088$, and that they used expressive

suppression more frequently in their daily lives, $r(86)=.20$, $p < .078$. The same participants were significantly more likely to report that they regulated their emotion more frequently in their daily lives, $r(86)=.27$, $p < .013$, and that they experienced more empathic concern towards others, $r(85)=.24$, $p < .032$.

Together, these results suggest that a measure of emotion regulation success based on self-reported arousal may be rooted in individual differences in mood, and the frequency of using various emotion regulation tactics in daily life. Interestingly, experiencing more empathic concern towards others also seemed to be related to better subjective downregulation of arousal, which in turn suggests that better regulators may allow themselves to experience more empathic concern. Nonetheless, it should be noted that none of these results would survive correction for multiple comparisons for confirmatory hypothesis testing.

Individual Differences Related to Emotion Regulation Difficulty. Emotion regulation difficulty scores, calculated as differences in subjective difficulty ratings when following the Change and Look instructions, were also submitted to an exploratory correlational analysis with the same eleven individual differences used in the previous analysis.

Emotion regulation difficulty was correlated with three out of the eleven individual differences. Participants who reported more difficulty generating reappraisals also reported more empathic concern towards others, $r(95)=.26$, $p < .013$, greater

susceptibility to fantasize and daydream, $r(95)=.21$, $p < .039$, and greater personal distress in emergency situations, $r(95)=.24$, $p < .023$.

Given that the elicitation of negative emotion in the task used was dependent on participants empathizing with the characters in the film clips, it is likely that these associations reflect the nature of the stimuli used for this task, and may not apply in the same manner to the regulation of other types of negative emotion, or to the regulation of positive emotion.

Discussion

The results of this study confirmed that it is possible to recruit other-focused cognition in service of regulating one's own emotion. In the absence of an explicit instruction to down-regulate their own emotion, the amount of negative emotion participants reported after Change Negative, Look Negative, and Look Neutral trials was comparable between the three conditions of the experiment. This is a novel result, as no experiments to date have shown effects of other-focused cognition on the emotion of the person reappraising, or that it could function as an equally effective variation of the typical self-focused cognitive reappraisal.

The study also suggests that the detrimental effects of self-focused cognition on emotion in general, strongly implied in the extant literature, may be in part due to the way this type of cognition impacts emotion regulation. Specifically, participants' use of self-focused cognition did not have any observable effects on emotional reactivity, but did

have effects on emotion regulation, namely it increased emotion regulation difficulty. This supports the tenet that, in addition to success, difficulty or effort is a useful way of characterizing emotion regulation (Gruber, Harvey, & Gross, 2012; Mauss & Gross, 2007; McRae et al., 2010). Although the previous literature generally established cognitive reappraisal as a difficult process (Gross, 2002), susceptible to showing mental fatigue or depletion effects on subsequent self-regulation tasks (Hagger, Wood, Stiff, & Chatzisarantis, 2010), few studies have focused on comparing the amount of difficulty that characterizes particular emotion regulation strategies. Study 1 exemplifies two ways in which one might do so, the first one using a self-report measure of difficulty, and the second one using a handgrip endurance test administered right after the regulation trial. The fact that the two measures of difficulty were significantly correlated, and showed the same pattern across the three experimental conditions, suggests that emotion regulation difficulty, although not correlated with success in this task, is a valid theoretical construct. In fact, difficulty and success not being related in this task provides good divergent validity, and may help explain other counterintuitive observations in the emotion regulation literature, for example how clinically depressed individuals experience lower emotion regulation success than normal controls, despite investing considerable more effort in regulation (Johnstone, vanReekum, Urry, Kalin, & Davidson, 2007; Gruber, Harvey, & Gross, 2012).

Aside from delivering insights about self-focused cognition, Study 1 also illustrated that using other-focused cognition when regulating emotion resulted in equal emotion regulation success, that was being achieved with less effort (or difficulty). This highlights a specific way to improve emotion regulation, and opens the door for direct applications of this type of cognitive framing, for example in therapy. An emotion regulation strategy that is perceived to be less difficult might be more likely to be adopted, increasing its use, and in turn having positive effects on personal well-being (see McRae et al., 2012).

Other-focused cognition may not be the only way to buffer against the effects of self-focus, and indeed other techniques seem to achieve adaptive outcomes for emotion regulation, such as spatial distancing (D'Argembeau, 2007; Koenigsberg et al., 2010) or temporal distancing (D'Argembeau & Van der Linden, 2006). However, none of these studies have focused upon the importance of a continuum of distance from the self for emotion regulation outcomes, as they most typically have compared only one "distancing" and "non-distancing" condition (Berkman & Lieberman, 2009). In Study 1, because I used more than one "distancing" condition, and because increased distance from Self did not result in a further decrease in emotion regulation difficulty, I am able to make an important suggestion that the mechanism at play is likely to be disengagement of self-focused cognition, rather than a mechanism based on distance.

The astute reader may have also noticed that, in so far as other-focused reappraisal is less difficult than self-focused reappraisal, this bears a certain similarity to an emotion regulation strategy called distraction, which also appears to be less difficult when compared to self-focused reappraisal, and is effective in the moment but is frequently associated with a rebound in negative emotion in the longer term (Nolen-Hoeksema, 1991; Kross & Aiduk, 2008). Although the re-assessment of negative emotion in Study 1 could still be considered relatively short-term, the effects of other-focused reappraisal on negative emotion persisted for at least one minute, whereas its effects on general arousal emerged at the one-minute mark, with no differences between other-focused reappraisal and self-focused reappraisal at either point in time. Because of this, one should be disinclined to conclude that other-focused reappraisal has hidden costs relative to self-focused reappraisal.

Interestingly, across conditions, cognitive reappraisal had significant effects on self-reported negative emotion right away, whereas its effects on self-reported general arousal were only significant after a delay. This may dissuade researchers from asking participants about their general arousal level in favor of negative emotion, especially if time is a constraint and only immediate assessment is involved. Nonetheless, I found that estimates of emotion regulation success based on the amount of downregulation of general arousal participants experienced right away (rather than those based on negative emotion) were more robustly associated with individual differences in emotion regulation

frequency in daily life, and also tended to be associated with how often participants reported suppressing their emotions in daily life. In contrast, estimates of emotion regulation success based on immediate reports of negative affect were not associated with any of the individual differences assessed. Although a positive association between emotion regulation frequency in daily life and emotion regulation success on laboratory tasks is generally expected, this is not always the case when the measure of success involves subjective estimates of negative emotion (e.g. Troy et al., 2010). The present study in turn suggests that there may be more variability, and more opportunity for intervention, when it comes to the effects of reappraisal on self-reported arousal, which may be worthwhile for future studies to explore (see McRae, 2013).

Overall, Study 1 provided good evidence that other-focused reappraisal results in equally successful, but less difficult emotion regulation, and suggested that the mechanism for these effects is a disengagement of self-focused cognition. Nonetheless, the evidence in favor of this mechanism was indirect, based on the exclusion of a more nuanced, self-distancing mechanism. Future studies should focus on examining more direct evidence in favor of self-disengagement, for example whether the ability to spontaneously disengage from self-focused thought is associated with reduced emotion regulation difficulty. If this is correct, there may be additional opportunities to improve emotion regulation via re-training self-focused thought, in a manner similar to mindfulness-based stress reduction (Kabatt-Zinn, 1990) but focused on specific

characteristics of self-focused thought, as suggested by other researchers (e.g. Bishop, 2002; Shapiro, Carlson, Astin, & Freedman, 2006).

Chapter Four: Study 2

Study 1 broadly suggested that the advantages of other-focused reappraisal may rely on disengagement of self-focused thought, which in turn would facilitate emotion regulation. This conclusion, however, was based on the absence of a difference in emotion regulation difficulty when other-focused cognition involved a Distant Other, compared to a Close Other. In Study 2, I aimed to conceptually replicate the results of Study 1 by performing a direct test of the disengagement hypothesis.

Using a task-switching paradigm to measure the relative ease or difficulty with which participants disengage from self-focused thought compared to other-focused thought (Muraven, 2005), I then examined whether individual differences in performance on this task were related to either emotion regulation difficulty, or emotion regulation success.

Previous studies have suggested that the ability to disengage from self-focused thought is inversely related to depression and anxiety (Ingram, 1987, 1990; Muraven, 2005). However, the relationship between the ability to disengage from self-focused thought and the ability to regulate emotion has not yet been investigated using a paradigm that separates emotion regulation from emotional reactivity. Based on results from Study 1, I predicted that participants will be less successful at down-regulating negative emotion, or they will find it more difficult, or both, the harder it is for them to disengage from self-focused thought.

Participants and Design

Study 2 employed a correlational design, and used a combined sample of 89 young adults from the Denver area. There were two subsamples of participants, one of which consisted of theatrical and studio artists(N_1=40) originally recruited for a larger study investigating individual differences in mentalizing and emotional processing. The second subsample consisted of undergraduate students who were attending the University of Denver (N_2=46).

The larger study that the theatrical and studio artists were recruited for included several additional tasks, all of which came before the emotion regulation task, and are not part of this dissertation. In addition, participants had to fulfill quite stringent criteria in order to be eligible for this larger study, which included being eligible for magnetic resonance imaging, and either having a college-level degree in art, or having been a union member for their specific artistic profession for over 3 years. These participants received monetary compensation at a rate of $20 for every hour of their participation.

Conversely, participants from the student subsample completed only the tasks and questionnaires relevant for this study, and did not have to fulfill any eligibility criteria other than being at least 18 years old. As compensation for their time, these participants received extra credit towards an introductory psychology course.

Across the two subsamples, the measures of interest for Study 2 were: an emotion regulation task and a post-task debriefing questionnaire similar to those used in Study 1,

followed by a task-based measure of participants' ability to disengage from self-focused thought (Muraven, 2005).

Procedure

All participants completed a picture-based emotion regulation task. Those from the artist subsample completed this task while undergoing MRI, as the last of a series of four tasks. The previous three tasks included imitating or opposing facial expressions, answering mentalizing or non-mentalizing questions about people depicted in photographs, and recalling positive and negative emotional experiences. The emotion regulation task consisted of a series of photographs that were meant to induce either negative emotional states, or fairly neutral ones, each photograph being preceded by an instruction to either respond naturally ('Look'), or use cognitive reappraisal to down-regulate the amount of negative emotion they experienced ('Change'). Analogous to Study 1, the instruction prompts appeared for 2 seconds before each picture, which was subsequently bordered by a color-coded frame, to serve as a reminder of the instruction. During the experiment, participants alternated between 'Look Neutral', 'Look Negative', and 'Change Negative' trials (20 of each type) consisting of the 2-second instruction, the photograph presented for an 8-second interval, and a question asking for an estimate of participants' momentary level of negative affect ("How negative do you feel right now?") on an 8-point Likert scale ('1'='not at all negative'; '8'= 'extremely negative').

The stimuli were matched using the normative I.A.P.S. ratings (Lang, Bradley, & Cuthbert, 2008) for valence (1 "unpleasant" to 8 "pleasant") and arousal (1 "calm" to 8 "excited"). The 'Look Negative' and 'Change Negative' images were chosen in such a way that they normatively rated as negative (M=2.37, SD=.68 for 'Look Negative'; M=2.41, SD=.72 for 'Change Negative') and moderately arousing (M=5.86, SD=1.24 for 'Look Negative'; M=5.84, SD=1.16 for 'Change Negative'). The 'Look Neutral' images were chosen in such a way that they normatively rated as neutral (M=4.94, SD=.20) and low arousing (M=3.49, SD=1.35). Crucially, the 'Look Negative' and 'Change Negative' images were not significantly different on either valence, $t(78) = -.19$, $p > .849$, or arousal, $t(78) = .06$, $p > .957$.

Responses from participants' who completed this task in the scanner were collected using a modified scale adapted for collecting responses using an MRI-compatible 4-button box.. The instructions for using the scale stressed that if participants felt more negative emotion than a '1', but not quite a '2', they should press the '1' button twice, with the same rule applying for the remaining buttons. Their responses were later transformed to the same 1 to 8 scale used by participants in the student subsample.

After the emotion regulation task, participants completed a detailed debriefing questionnaire analogous to that used in Study 1. This started with open-ended questions about the task instructions participants remembered receiving (*'What were you instructed to do during the LOOK trials?', 'What were you instructed to do during the CHANGE*

trials?). After each open-ended instruction recall question, participants were asked to provide ratings of how difficult it was to have followed the Look and Change instructions (*'How difficult was it for you to follow this instruction?*, accompanied by a 9-point Likert scale anchored at *'1' = 'not difficult at all'* and *'9' = 'very difficult'*).

The second task of interest measured participant's ability to flexibly disengage from self-focused thought. This task was based on a version previously validated by Muraven and colleagues (2005), in which they asked their participants to answer whether a series of traits applied to themselves or not ('Self') and whether they applied to their best friend or not ('Other'). Participants alternated between 'Self' and 'Other' blocks, consisting of 20 traits each. Within each block, presentations of adjectives (5 seconds) were interrupted with 6 random presentations of short-duration sounds (1 second) timed 500 milliseconds after the onset of a trait. Participants were instructed that, for trials on which they heard a sound, they were not to make a decision about the adjective, but instead press the space bar as soon as they heard the sound. The average reaction time to the sounds in each block measured participants' ability to disengage from self-focused and other-focused thought, respectively.

Finally, participants completed a series of individual difference questionnaires. Those in the student subsample filled out the questionnaires at the very end of their study session, whereas those in the artist subsample had already filled out a much larger set of questionnaires at home, several days before their laboratory appointment. The specific

individual difference measures collected across subsamples for this study were: emotion regulation (ERQ; Gross & John, 2003), empathy (Davis, 1983), rumination and reflection (RRQ; Trapnell & Campbell, 1999), self-consciousness (SCS-R; Scheier & Carver, 1985), and depression (DSM-V level 1 cross-cutting symptom measure; Narrow et al., 2013). Each participant's summary scores on these scales (and relevant subscales) were used in exploratory analyses in order to gage their association with emotion regulation success and emotion regulation difficulty.

Data Analysis Approach

Inclusion Criteria. Inclusion criteria for the emotion regulation task were based on participants' answers about what they were asked to do for the Look and Change trials, respectively, from the post-task debriefing questionnaire. Each participant's answers to these questions were evaluated for instruction compliance by two independent raters. There was unanimous agreement between raters that all participants correctly recalled the instructions corresponding to the Look and Change trials, thus no exclusions were made based on instruction compliance.

Due to technical difficulties, negative emotion ratings were not collected from 4 participants from the artist subsample (10%) and 1 participant from the student subsample (2%), thus these participants were excluded across all analyses.

For the self-absorption measure, average reaction times to the sounds in the Self and Other blocks were computed for each participant who responded to at least three out

of the six sounds in each block. This criterion resulted in an additional 14 participants being excluded from the artist subsample (35%), and 8 participants being excluded from the student subsample (17%).

Together, exclusions resulted in a 45% decrease in the number of participants from the artist subsample, and a 19% decrease in the number of participants from the student subsample. All analyses are based on a final number of N=60 participants, out of which N_1=22 were artists and N_2=38 were students. Slight deviations from these numbers in the degrees of freedom for the various analyses employed are due to missing data.

Comparisons Between Subsamples. In order to investigate whether the two subsamples were similar enough to be combined, or whether the interpretation of associations based on the combined sample should be qualified by subsample, I investigated whether any of the primary measures (self-absorption, negative emotion, or emotion regulation difficulty) were different among the two subsamples. These analysis procedures are detailed below.

Self-Absorption. In order to determine whether the magnitude of the self-absorption effect was different in the two subsamples, mean reaction times were submitted to a repeated measures GLM with Block (Self, Other) as a within-participants factor and Subsample as a between-participants factor. A main effect of Block was expected, such that participants would be overall slower to disengage from self-focused thought compared to other-focused thought. While not necessarily expecting a main

effect of Subsample, or an interaction between Block and Subsample, I did plan to follow-up on any significant results or trends in order to inform conclusions about the association of self-absorption and emotional reactivity, emotion regulation, and emotion regulation difficulty.

Negative Emotion. Average values for each participant, and each Condition by Trial Type combination, were computed for self-reported negative affect. As a manipulation check for having elicited emotional reactivity and emotion regulation successfully using the picture-based task, and whether the two subsamples could be combined, these average ratings were submitted to a repeated measures GLM with Trial Type (Look Neutral, Look Negative, Change Negative) as a within-participants factor and Subsample (Artist, Student) as a between-participants factor. Significant main effects and interactions were followed up as necessary, in order to determine whether there were significant effects of reactivity, regulation, and whether any of these were different in the two subsamples. While not necessarily expecting a main effect of Subsample, or an interaction between Trial Type and Subsample, I did plan to follow-up on any significant results or trends in order to inform conclusions about the association between emotional reactivity, emotion regulation, and self-absorption.

Emotion Regulation Difficulty. To compare emotion regulation difficulty between the two subsamples, difficulty ratings were submitted to a repeated measures GLM with Instruction (Look, Change) as a within-participants factor, and Subsample

(Artist, Student) as a between-participants factor. While not necessarily expecting a main effect of Subsample, or an interaction between Instruction and Subsample, I did plan to follow-up on any significant results or trends in order to inform conclusions about the association between emotion regulation difficulty and self-absorption.

Self-Absorption and Negative Emotion. In order to examine the effects of self-absorption on reactivity and regulation, I computed difference scores between the average RT in the Self and Other blocks (self-absorption), average negative emotion ratings for the Look Negative and Look Neutral trials (reactivity), and average negative emotion ratings for the Look Negative and Change Negative trials (regulation), for every participant. These difference scores were then used as dependent variables in regression analyses.

Self-Absorption and Emotion Regulation Difficulty. Using a similar logic, in order to examine the effects of self-absorption on emotion regulation difficulty, I submitted the difference scores between the average RT in the Self and Other blocks (self-absorption), and the difference scores between the difficulty ratings for the Look and Change instruction (emotion regulation difficulty) to a separate regression analysis.

Exploratory Correlations with Individual Differences. After reversing any negatively-phrased questions, average scores were calculated for each of the following scales and subscales: frequency of using cognitive reappraisal, expressive suppression, and situational control in everyday life, as well as frequency of emotion regulation in

general (ERQ; Gross & John, 2003), empathy (Davis, 1983), rumination and reflection (RRQ; Trapnell & Campbell, 1999), private and public self-consciousness (SCS-R; Scheier & Carver, 1985), as well as depression (DSM-V L1 CCSM; Narrow et al., 2013). After determining the internal consistency of each scale and subscale, participant's summary scores were submitted to exploratory correlational analyses in order to gage their association with emotion regulation success and emotion regulation difficulty across the two subsamples, and as necessary, within each subsample.

Hypotheses

I hypothesized that the ability to disengage from self-focused thought, as measured by self-absorption scores, would be associated with more adaptive emotion regulation, as evidenced by either higher emotion regulation success, lower emotion regulation difficulty, or both.

Results

Comparisons Between Subsamples. A detailed account of the comparisons between subsamples on each of the dependent variables detailed under Data Analysis Approach appears below.

Self-Absorption. There was a significant main effect of Block, $F(1,58)=15.22$, $p < .001$, such that, across subsamples, participants exhibited slower reaction times when reacting to the sounds in the Self (M=764.86, SD=190.31) compared to Other (M=682.19, SD=133.39) blocks. There was also a significant main effect of Subsample,

$F(1,58)=4.44$, $p < .041$, such that participants in the Student subsample had slower reaction times to the sounds (M=752.07, SD=157.58) than participants in the Artist subsample (M=674.25, SD=158.70). No significant interaction between Block and Subsample was observed, $F(1,58)=.51$, $p > .479$, indicating that the effect of Block (or self-absorption effect) was not significantly different between the two subsamples. Nonetheless, upon visual inspection, it was apparent that a greater proportion of participants from the student sample (39%) compared to the artist sample (23%) did not actually show a self-absorption effect, i.e. they were not slower to react to the interrupting sounds in the Self compared to Other blocks. On the contrary, these participants were slower to react to the interrupting sounds during the Other blocks compared to the Self blocks. Although the presence or absence of a self-absorption effect was not a significant moderator of the relationship between self-absorption and emotion regulation success or difficulty ($p > .18$), we explored whether the association between self-absorption and emotion regulation might have been more apparent in those participants who showed a self-absorption effect in the first place. The results of these analyses appear in Appendix A – Supplementary Analyses.

Negative Emotion. There was a significant main effect of Trial Type, $F(2,116)=306.77$, $p < .001$. Thus, there was an overall difference in the amounts of negative emotion participants felt after the Look Neutral, Change Negative, and Look Negative trials. Post-hoc paired samples *t*-tests indicated that there was a significant

reactivity effect, $t(59) = -22.97$, $p < .001$. Across conditions, participants reported feeling more negative emotion after the Look Negative trials (M=5.65, SD=1.27) than after the Look Neutral trials (M=1.56, SD=.50). There was also a significant effect of regulation, $t(59)=10.35$, $p < .001$. Across conditions, participants reported feeling significantly less negative emotion after the Change Negative trials (M=4.18, SD=1.19) than after the Look Negative trials (M=5.65, SD=1.27). There was no significant effect of Subsample, $F(1,58)=2.38$, $p > .128$, however there was a significant interaction between Trial Type and Subsample, $F(2, 116)=5.75$, $p < .005$, suggesting the effect of Trial Type (Look Neutral, Change Negative, Look Negative) was different between the two subsamples (Artist, Student). In order to follow-up on this interaction, I compared the effects of reactivity (Look Neutral vs. Look Negative) and regulation (Change Negative vs. Look Negative) between subsamples.

To compare the reactivity effect between subsamples, negative emotion ratings were submitted to a repeated measures GLM with Trial Type (Look neutral, Look Negative) as a within-participants factor, and Subsample (Artist, Student) as a between-participants factor. There was a significant Trial Type by Subsample interaction, $F(1,58)=9.96$, $p < .004$, the latter confirming that reactivity was different between the two subsamples. A comparison of the difference score between negative emotion in the Look Neutral and Look Negative trials by Subsample indicated that there was a larger amount

of emotional reactivity in the Student subsample (M=4.49, SD=1.34) than in the Artist subsample (M=3.41, SD=1.17).

To compare the effect of regulation between the two subsamples, negative emotion ratings were submitted to a separate repeated measures GLM with Trial Type (Change Negative, Look Negative) as a within-participants factor, and Subsample (Artist, Student) as a between-participants factor. There was no significant Trial Type by Subsample interaction, $F(1,58)=2.22$, $p > .141$, indicating that the effect of regulation was not significantly different between the two subsamples.

Emotion Regulation Difficulty. There was a significant effect of Instruction, $F(1,57)=64.99$, $p < .001$, such that, across subsamples, participants found it more difficult to follow the Change instruction (M=5.58, SD=1.63) compared to the Look instruction (M=2.34, SD=1.89). There was no significant main effect of Subsample, $F(1,57)=1.57$, $p > .215$, and no significant interaction of Instruction and Subsample, $F(1,57)=.05$, $p > .823$. This suggested that emotion regulation difficulty was not different in the two subsamples.

Self-Absorption and Emotional Reactivity. Across subsamples, there was a significant negative association between self-absorption and emotional reactivity, $r(60)= –.28$, $p < .033$, such that participants who took longer to disengage from self-focused thought were less emotionally reactive. Analyses within each subsample indicated a significant association for the artist subsample, $r_I(22)= –.45$, $p < .038$, and a non-

significant association for the student subsample, $r_2(38) = -.16$, $p > .331$. This suggested that the association between self-absorption and emotional reactivity was driven by the participants in the artist subsample.

Self-Absorption and Emotion Regulation. Across subsamples, there was a trending negative association between self-absorption and emotion regulation, $r(60) = -.24$, $p < .072$, such that participants who took longer to disengage from self-focused thought tended to down-regulate their negative emotion less successfully. Analyses within each subsample indicated a significant association in the artist subsample, $r_1(22) = -.527$, $p < .013$, and a non-significant association in the student subsample , $r_2(38) = -.004$, $p > .983$, suggesting that the trending association above was driven by participants in the artist subsample.

Self-Absorption and Emotion Regulation Difficulty. There was no significant association between self-absorption and self-reported difficulty following the Change relative to the Look instruction in the combined sample, $r(59) = -.10$, $p > .435$, the artist sample $r_1(21) = -.02$, $p > .929$, or the student sample, $r_2(38) = -.17$, $p > .320$.

Emotion Regulation Difficulty and Emotion Regulation Success. In the combined sample, there was no significant correlation between emotion regulation difficulty and success (calculated as difference scores), $r(59) = -.10$, $p > .435$. A separate analysis for each subsample suggested that this association was absent in the artist

subsample, $r_1(21)= .03$, $p > .900$. However, there was a trending association in the student subsample, $r_2(38)=.30$, $p < .073$.

Exploratory Correlations with Individual Differences. All individual difference scales and subscales exhibited high internal consistency (Crohnbach's $\alpha > .82$ in each instance). Statistics are reported below, separating emotion regulation success and emotion regulation difficulty. As all analyses were exploratory, *p*-values have not been corrected for multiple comparisons, and all significance tests are 2-tailed.

Individual Differences Related to Emotion Regulation Success. Emotion regulation success scores, calculated as differences between the ratings provided immediately after the Look Negative and Change Negative trials, were submitted to an exploratory correlational analysis with the nine individual differences listed above. Emotion regulation success was correlated with a total of two out of nine individual differences. Participants who reported more complete down-regulation of negative emotion during the task also reported significantly greater use of cognitive reappraisal in everyday life, $r(55)=.30$, $p < .025$, as well as being marginally less depressed, $r(55)= -.24$, $p < .074$, although the latter was only a trend.

Individual Differences Related to Emotion Regulation Difficulty. Emotion regulation difficulty scores, calculated as differences in subjective difficulty ratings when following the Change and Look instructions, were also submitted to an exploratory correlational analysis with the same nine individual differences used in the previous

analysis. Emotion regulation difficulty was correlated with a total of three out of the nine individual differences. Specifically, participants who reported more difficult emotion regulation during the task also reported using expressive suppression less in their daily lives, $r(54) = -.27$, $p < .047$, tended to use emotional control less in their daily lives, $r(54) = -.22$, $p < .106$, and were more depressed, $r(54) = .31$, $p < .029$.

Individual Differences Related to Self-Absorption. Self-absorption scores, calculated as differences in reaction time when responding to interrupting sounds in the Self compared to Other blocks, were also submitted to an exploratory correlational analysis with the same thirteen individual differences used in the previous analysis. Self-absorption was only correlated at a trend level with public self-consciousness, $r(55) = .23$. $p < .084$, specifically greater self-absorption tended to be associated with greater public self-consciousness.

Discussion

The results of Study 2 confirmed that a greater ability to disengage from self-focused thought tends to be associated with greater emotion regulation success, with the same association being stronger and actually significant when selecting for self-absorbed participants (see *Appendix A*). The same ability was also associated with lower emotional reactivity, although this effect was weaker and did not reach significance when selecting for self-absorbed participants. Although Study 2 employed a correlational design, the presence of an association between disengagement of self-focused thought and emotion

regulation, despite a concurrent association with emotional reactivity, together with the results of Study 1 (which employed an experimental design), strengthen the conclusion that emotion regulation can benefit in important ways from disengagement of self-focused thought.

Interestingly, while Study 1 found that disengaging self-focused cognition (using other-focused cognition) had robust effects on emotion regulation difficulty, but not success, Study 2 found that disengaging self-focused cognition was associated with emotion regulation success, but not difficulty. Nonetheless, similar to Study 1, emotion regulation difficulty and emotion regulation success were not significantly correlated with one another in Study 2.

Because the Study 1 and Study 2 relied on different methods of emotion elicitation, with Study 1 using films, and Study 2 using pictures, there may be reason to believe that the precise association between emotion regulation success and difficulty may depend on the nature of the emotion elicitation. Specifically, it is possible that, for the task used in Study 1, there was less variability in emotion regulation success and more variability in emotion regulation difficulty, whereas in Study 2 this may have been reversed. Performing a face-level comparison between the two tasks: in Study 1 participants had more time to reappraise, i.e. 2 minutes and 40 seconds compared to 10 seconds, they had only one stimulus to reappraise rather than 20, and had to engage in the task for only 12 minutes compared to 20 minutes. Furthermore, in Study 2, about half of

the participants (Artist subsample) engaged in the emotion regulation task after having completed 4 other tasks, and these same participants exhibited a stronger negative association between self-absorption and emotion regulation success (despite a concurrent negative association with emotional reactivity). With these differences in mind, it is interesting to note that, in a study in which emotion regulation may have been more challenging, may have inadvertently been operating under mental fatigue, and after which participants actually reported greater emotion regulation difficulty (Study 2), there was an association between disengaging self-focused cognition and emotion regulation success.

Overall, converging evidence from two studies using different measures of emotion elicitation, with a different operationalization of disengaging self-focused cognition, and in slightly different populations, suggests that disengagement of self-focused thought improves emotion regulation outcomes. Specifically, in the Study 1, disengagement of self-focused thought resulted in comparable emotion regulation success that was achieved with less difficulty or effort, while in Study 2 disengagement of self-focused thought resulted in greater emotion regulation success that was achieved with comparable difficulty.

More broadly, the fact that measures of emotion regulation difficulty and emotion regulation success were not correlated in either Study 1 or Study 2, but were differentially predicted by self-absorption at different levels of task difficulty, indicates that emotion regulation difficulty should not be thought of as completely inconsequential

with respect to emotion regulation success. The idea of a tradeoff between success and difficulty of emotion regulation is hardly a new one (see Mauss & Gross, 2007), and this tradeoff has lead researchers to control for difficulty when comparing the success of different emotion regulation strategies (e.g. McRae et al., 2010). These first two studies further highlight the idea that there is important information to be gained about emotion regulation as a process, that may not be captured by either success or difficulty in absence of one another.

Chapter Five: Study 3

The purpose of this study was two-fold: 1) establishing whether there might be a causal link between an increase in self-focused thought and emotion regulation outcomes, and 2) testing whether disengagement of self-focused thought was necessary in order to improve either the success or difficulty of emotion regulation, or whether changing the content of self-focused thought might be sufficient to alleviate some of the detrimental effects of self-focused thought on emotion regulation.

Before completing the emotion regulation task, participants completed a self-reflection task, for which they were randomly assigned to one of three priming conditions: an 'Individuation' condition in which they reflected on aspects of themselves as unique and different from others, a 'Deindividuation' condition in which they reflected on aspects of themselves as similar to others, or a 'Control' condition in which self-thought was not interfered with.

I predicted that engaging in self-reflection before the emotion regulation task would result in less successful and/or more difficult emotion regulation compared to the control condition. However, if changing the content of self-thought before engaging in emotion regulation was sufficient to influence its outcomes, participants in the Deindividuation condition should experience down-regulation of negative emotion that is more successful and/or less difficult, compared to participants in the Individuation condition. If, however, changing the content of self-thought was insufficient in order to

influence emotion regulation success or difficulty, there should be no differences on these measures between participants in the Deindividuation and Individuation conditions.

Participants and Design

The experiment used a 3 x 3 Repeated-Measures design with Condition (Individuation, Deindividuation, Control) varied between-participants, and Trial Type (Look Neutral, Look Negative, Change Negative) varied within-participants. For the between factor, participants were randomly assigned to complete a picture-based emotion regulation task either under a state of increased focus on unique qualities of themselves (Individuation), increased focus on themselves as similar to others (Deindividuation), or a Control condition in which self-focus was not manipulated.

The study in its entirety took place online and relied on an initial sample of 278 participants. Out of these, 200 participants were recruited using the Amazon Mechanical Turk platform and were compensated $4.50 for their participation, while the other 78 participants were recruited from the University of Denver and were compensated with extra credit towards a psychology course of their choosing.

Procedure

The experiment was conducted using Qualtrics software, which facilitates the collection of a variety of self-report data online, and allows controlled timing of stimulus presentation, as well as random assignment to conditions. Participants ostensibly signed

up for a study about “Personality and Emotion”. Informed consent as well as all study manipulations and measures were administered online.

The situational manipulation of self-reflection took place at the start of the experiment, after consent and immediately before the emotion regulation task. This manipulation was achieved using a previously validated writing task, adapted from Silvia and Eichstaedt (2004). Participants were asked to either list ways in which they are unique and different from their family, friends, and other people in general (Individuation), list ways in which they are alike or similar to their family, friends, and other people in general (Deindividuation), or respond to questions that shouldn’t have been self-focusing at all, namely write about a humanities class they recently took, a science class, and the last time they went out to eat (Control). Participants had 6 minutes to perform this writing task and they were instructed to answer all 3 questions using at least 5000 characters. In order to validate the manipulation, after excluding any non-responses, I compared the total number of first-person singular pronouns participants used in their writing in each condition, with the expectation of a linearly decreasing trend between the Individuation, Deindividuation, and Control condition.

After the situational self-focus manipulation, participants were given instructions for and completed a picture-based emotion regulation task. During this task, they saw a series of photographs that had previously been validated to induce either a negative, or fairly neutral emotional state, while following prompts to either respond naturally

('Look'), or use cognitive reappraisal to down-regulate their negative emotion ('Change'). Before starting this task, participants went through a brief training, using detailed instructions and examples as to what they should do for each prompt. During the task, prompts appeared for 2 seconds before each photo. In addition, each photo was bordered by a color-coded frame, which served as a reminder of the prompt. The 'Look' prompt was paired with both negative and neutral photos, whereas the 'Change' prompt was only paired with negative photos. During the experiment, participants alternated between 'Look Neutral', 'Look Negative', and 'Change Negative' trials (15 for each type), presented for 10 seconds each, and afterwards estimated their momentary level of negative affect ("How negative do you feel right now?") on a 10-point Likert scale ('0'='not at all negative'; '9'= 'extremely negative').

Similar to Study 2, The stimuli were matched using the normative I.A.P.S. ratings (Lang, Bradley, & Cuthbert, 2008) for valence (1 "unpleasant" to 8 "pleasant") and arousal (1 "calm" to 8 "excited"). The 'Look Negative' and 'Change Negative' images were chosen in such a way that they normatively rated as negative (M=2.33, SD=.41 for 'Look Negative'; M=2.23, SD=.33 for 'Change Negative') and moderately arousing (M=5.73, SD=.72 for 'Look Negative'; M=5.73, SD=.71 for 'Change Negative'). The 'Look Neutral' images were chosen in such a way that they normatively rated as neutral (M=4.95, SD=.21) and low arousing (M=2.86, SD=.39). The 'Look Negative' and

'Change Negative' images were not significantly different on either valence, $t(30) = .75$, $p > .458$, or arousal, $t(30) = -.01$, $p > .994$.

After the emotion regulation task, participants completed two measures of self-focused thought, which served as manipulation checks. The first measure was a sentence completion task modeled after Wegner and Giuliano (1980), which is displayed in *Figure 8*. This task involved completing a series of five sentences with the one of three pronouns that were provided, one of which was a first person singular pronoun. The second measure was a self-report questionnaire developed by Govern and Marsch (2001), which specifically asked participants about their current attention to private aspects of themselves, their attention to public aspects of themselves, and their attention to the environment.

At the end of the study, participants again filled out a detailed debriefing questionnaire. This included open-ended questions about instruction compliance (e.g. "What were you instructed to do during the 'Look' trials?"; "What were you instructed to do during the 'Change' trials?"), as well as pointed questions about task difficulty ("How difficult was it for you to carry out the 'Look' instruction?"; "How difficult was it for you to carry out the 'Change' instruction?"), using a 10-point Likert scale ('0'='not at all difficult'; '9'= 'extremely difficult'). This was followed with a series of individual difference questionnaires which included: emotion regulation in daily life (ERQ; Gross &

John, 2003), rumination and reflection (RRQ; Trapnell & Campbell, 1999), and self-consciousness (SCS-R; Scheier & Carver, 1985).

Data Analysis Approach

Inclusion Criteria. Because the study was conducted online, a set of predefined inclusion criteria were used to ensure that participants in the final sample performed the tasks the way they were intended. A total of 7 'catch' questions were interspersed throughout the questionnaire sections of the study in order to determine whether participants were engaged in the study and not mindlessly progressing through the study procedures in order to receive compensation. These questions specifically instructed participants to pick a particular response on the scale provided, e.g. "For this particular item, pick the rightmost response option on the scale". Additional inclusion criteria were set based on adherence to instructions for the Self-Reflection and Emotion Regulation tasks, which are detailed below.

Self-Reflection Task. Participants who did not answer one or more of the three questions for their respective condition in a satisfactory manner were excluded from the final sample. Examples included participants who either did not answer the questions at all, seemingly answered different questions, or inserted spaces and/or other fillers to reach the 5000-character minimum.

Emotion Regulation Task. Participants had to answer two open-ended questions about the instructions they had followed during the emotion regulation task ('What were

you instructed to do during the CHANGE trials?'; 'What were you instructed to do during the LOOK trials?'). Their answers to these two questions were coded by independent raters to determine whether there was sufficient separation between the 'Look' and 'Change' conditions. Participants for whom this separation was not clear, e.g. they reported trying to change how they were feeling during 'Look' trials, or indicated they did not recall the instructions, were to be removed from the final sample.

Manipulation Checks. Data from three separate tasks were used in order to determine whether the amount of self-focused thought participants exhibited was different based on their assigned condition for the Self-Reflection task. The analysis approach for each of these is detailed below. Specifically, the manipulation checks included the number of first person pronouns participants used during the Self-Reflection Task (before the Emotion Regulation Task), the number of first person pronouns participants used on a Sentence Completion Task (administered after the Emotion Regulation Task), and the scores obtained from participants' answers to the Situational Self-Awareness Questionnaire administered immediately after the Sentence Completion Task, with the expectation that all of these would show differentiation based on the Individuation, Deindividuation, and Control conditions. These expectations are consistent with documented effects of individuation and deindividuation priming on self-awareness (Diener, 1979; Phemister & Crewe, 2004; Silvia & Eichstaedt, 2004; Wicklund, 1975), as well as the effects of self-awareness on the subsequent use of first person pronouns and

vice-versa (Davis & Brock, 1975; Schaller, 1979; Silvia & Eichstaedt, 2004; Wegner & Giuliano, 1980).

Number of First Person Pronouns used in Self-Reflection Task. The number of first-person pronouns participants used in their answers to the self-reflection questions was submitted to a simple GLM with Condition as an independent variable. A significant effect of Condition was expected, such that participants in the Individuation condition would use the greatest number of first person singular pronouns, followed by participants in the Deindividuation condition, and the participants in the Control condition. I expected all pairwise comparisons between conditions to be significant.

Number of First Person Pronouns used in Sentence Completion Task. The number of first-person singular pronouns that each participant used for sentence completion was submitted to a simple GLM with Condition as an independent variable. A significant effect of Condition analogous to the one for the initial manipulation check was expected, with participants in the Individuation condition using the greatest number of first person singular pronouns, followed by participants in the Deindividuation and Control condition, respectively, and all pairwise comparisons between conditions significant.

Situational Self-Awareness Scores. After reversing negatively-phrased questions, each participant's answers to the questions from the Situational Self-Awareness Scale were averaged to produce two separate self-awareness scores: private self-awareness, and

public self-awareness. Internal consistency was computed for each of these subscales using Crohnbach's α procedure. A significant effect of Condition analogous to the one for the initial manipulation check was expected for private self-awareness, with participants in the Individuation condition being most self-aware, followed by participants in the Deindividuation and Control condition, respectively, and all pairwise comparisons between conditions significant. No differences between the three conditions were expected for public self-awareness.

Negative Emotion Ratings. Average values for each participant, and each Condition X Trial Type combination, were submitted to a repeated measures general linear model. Condition was manipulated between participants, thereby applying to each of the 'Look Neutral', 'Look Negative', and 'Change Negative' trials. Therefore, I examined both main effects of these manipulations, and interactions that would indicate the manipulations have differential impact in the context of reactivity ('Look Negative' vs. 'Look Neutral' contrast for each condition) and regulation ('Change Negative' vs. 'Look Negative' contrast for each condition).

Difficulty Ratings. Difficulty ratings were collected once per Instruction at the end of the experiment. These ratings were submitted to a simple GLM with Instruction (Look, Change) as a within-participants factor, and Condition (Individuation, Deindividuation, Control) as a between-participants factor. Using the same logic as the analyses for negative emotion and general arousal ratings, I examined main effects of the

experimental manipulation, as well as interactions indicating that the manipulation had a different impact in the context of reactivity ('Look' instruction) and regulation ('Change' instruction).

Hypotheses

With respect to emotion regulation success, I hypothesized that participants in the Individuation condition would experience less emotion regulation success than participants in the Deindividuation and Control conditions. Specifically, I predicted a Trial Type and Condition interaction, such that differences in negative emotion between the Look Negative and Change Negative trials would be smaller in the Individuation condition, compared to both the Deindividuation and Control conditions.

With respect to emotion regulation difficulty, I predicted that reappraisal in the Deindividuation and Control conditions would be perceived as less difficult than reappraisal in the Individuation condition. Specifically, I predicted an Instruction by Condition interaction, such that differences in difficulty between the Look and Change instruction would be smaller in the Deindividuation and Control conditions, compared to the Individuation condition.

Results

Inclusion Criteria. A total of 40 out of the initial 278 participants failed the 'catch' questions, by either not answering one or all of the questions, or not answering them correctly, and were excluded from the final sample. Of the remaining 238, another 8

participants were excluded for failing to complete the Self-Reflection task in a satisfactory manner, i.e. not writing anything at all, or their answers not matching the questions they had been asked. Finally, 16 participants were excluded based on the independent rater's estimate of not having adhered to the Look and Change instructions during the emotion regulation task, i.e. not recalling what they were instructed to do, reappraising during "Look" trials, or not reappraising during 'Change' trials.

The final sample included N=214 participants, out of which N_1=164 were from the Mechanical Turk sample, and N_2=50 were students. Because of the steep difference in the number of participants from each subsample, and the uneven distribution of participants to condition for the student subsample, all analyses were only performed on the combined dataset with 214 participants. The final numbers of participants in each condition were: 74 for the Individuation condition, 78 for the Deindividuation condition, and 62 for the Control condition. Any deviations from these numbers would be due to missing data, and any fractional degrees of freedom in F-tests denote Greenhouse-Geisser adjustments for differences in error variance, as suggested by a significant Mauchly's sphericity test.

Manipulation Checks. For the Self-Reflection Task, there was a significant effect of Condition on the number of first-person singular pronouns participants used in the self-reflection task, $F(2,211)=49.10$, $p < .001$, suggesting that there were significant differences between conditions in the amount of self-focused thought participants

engaged in. Participants in the Individuation condition used more first-person singular pronouns, $t(151)=7.50$, $p < .001$, than participants in the Deindividuation condition, who in turn also used more first-person singular pronouns than participants in the Control condition, $t(139)=2.26$, $p < .026$. This suggests that, at least initially, the self-reflection manipulation was successful.

For the Sentence Completion Task, there was no significant effect of Condition on the number of first-person singular pronouns each participant used for the sentence completion task, $F(2,211)=.52$, $p > .595$, and none of the pairwise comparisons between the three conditions were significant ($p > .327$ for each). This suggests that any effects of self-reflection on the amount of self-focused thought participants engaged in had dissipated by the end of the emotion regulation task.

On the Situational Self-Awareness Questionnaire, there was no significant effect of Condition on private self-awareness, $F(2,211)=.20$, $p > .821$, or public self-awareness, $F(2,211)=1.94$, $p > .146$. Post-hoc pairwise comparisons indicated only a marginally-significant difference in public self-awareness between the Deindividuation and Control condition, $t(139)=1.96$, $p < .052$, such that participants in the Deindividuation condition reported higher public self-awareness (M=3.21, SD=1.66) than participants in the Control condition (M=2.69, SD=1.43). This suggests that only Deindividuation had an effect on situational self-awareness that persisted until the end of the emotion regulation task, and

this effect was an increase in the amount of public self-focused thought, or an awareness of how an individual appears to others.

Negative Emotion Ratings. Only a significant main effect of Trial Type was present, $F(1.80, 380.68)=1410.37$, $p < .001$. Across conditions, participants reported different amounts of negative emotion after Look Neutral trials, Change Negative trials, and Look Negative trials. This main effect included a significant reactivity effect, $t(213)= –46.38$, $p < .001$, such that participants reported feeling more negative emotion after the Look Negative trials (M=7.15, SD=1.65) compared to the Look Neutral trials (M=1.67, SD=.96). There was also a significant effect of regulation, $t(213)=9.37$, $p < .001$, as participants reported feeling less negative emotion after the Change Negative trials (M=6. 30, SD=1.76) compared to the Look Negative trials (M=7.15, SD=1.65).

There was no significant effect of Condition, $F(2,211)=.89$, $p > .414$, meaning there were no overall effects of this manipulation on the amount of negative emotion participants felt across conditions. There was also no significant interaction between Trial Type and Condition, $F(3.61,380.68)=.60$, $p > .646$, meaning there were no differences in the effects of Trial Type between conditions. Thus, there was no evidence that changing the content of self-focused thought influenced emotion regulation success.

Emotion Regulation Difficulty. There was a significant main effect of Instruction on participants' difficulty ratings, $F(1,211)=493.56$, $p < .001$. Across conditions, participants reported experiencing significantly more difficulty carrying out

the Change instruction (M=6.62, SD=2.17) compared to the Look instruction (M=2.37, SD=2.10). There was no significant main effect of Condition, $F(2,211)=.91$, $p > .405$, thus no were no overall effects of the manipulation on the amount of difficulty participants experienced across instruction. There was no significant interaction between Instruction and Condition, $F(2,211)=.33$, $p > .718$, thus no evidence that changing the content of self-focused thought had any effect on emotion regulation difficulty.

Exploratory Analyses Using Subjective Ratings of Self-Focused Thought. There was no consistent effect of the experimental manipulation of self-focused thought on emotion regulation success or difficulty, thus there was no evidence that changing the content of self-focused thought influences emotion regulation outcomes. However, there were also no consistent differences in the content of self-focused thought after the emotion regulation task, suggesting that any effects of the manipulation had dissipated at that time.

Fortunately, measures of the amount of self-focused thought people experienced during the experiment (situational self-awareness) as well as on a regular basis in their everyday lives (trait self-consciousness) were available, and the study was well-powered enough to explore whether, independently of experimental manipulations, the amount of self-focused thought that participants reported engaging in (situational or trait-level) was associated with emotion regulation success or emotion regulation difficulty. Results of these exploratory correlation analyses are reported below.

Situational Self-Awareness and Emotion Regulation. There were marginally-significant associations between emotion regulation success (Look Negative – Change Negative) and both private self-awareness and, $r(214)=.13$, $p < .052$, and public self-awareness, $r(214)=.13$, $p < .055$. Participants high on private self-awareness experienced more negative emotion after 'Change Negative' trials, $r(214)=.20$, $p < .004$, and after 'Look Negative' trials, $r(214)=.32$, $p < .001$. Participants high on public self-awareness in turn did not experience either more or less negative emotion after 'Change Negative' trials, $r(214)= -.01$, $p > .874$, or after 'Look Negative' trials, $r(214)=.09$, $p > .169$.

Higher levels of private self-awareness were in turn associated with significantly greater emotion regulation difficulty (Change - Look), $r(214)=.22$, $p < .002$. The source of this latter association was a correlation between private self-awareness and difficulty carrying out the 'Change' instruction, $r(214)=.29$, $p < .001$, but not the 'Look' instruction, $r(214)= -.01$, $p > .990$. Higher levels of public self-awareness were in turn not associated with emotion regulation difficulty, $r(214)=.08$, $p > .265$

Trait Self-Consciousness and Emotion Regulation. There were no significant associations between emotion regulation success (Look Negative – Change Negative) and either private self-consciousness, $r(214)= -.07$, $p > .285$, or public self-consciousness, $r(214)= -.02$, $p > .769$, suggesting that elevated levels of self-focused thought in general in everyday life were unrelated to greater success of emotion regulation on the task.

Greater emotion regulation difficulty (Change - Look) was associated with higher levels of private self-consciousness, $r(214)=.18$, $p < .010$. The source of this association was a significant correlation between private self-consciousness and difficulty carrying out the 'Change' instruction, $r(214)=.17$, $p < .013$, but not the 'Look' instruction, $r(214)= –.06$, $p > .396$. Greater emotion regulation difficulty was also associated with higher levels of public self-consciousness, $r(214)=.16$, $p < .017$. The source of this association was a significant positive correlation between public self-consciousness and difficulty carrying out the 'Change' instruction, $r(214)=.15$, $p < .035$, but no correlation between public self-consciousness and difficulty carrying out the 'Look' instruction, $r(214)= –.05$, $p > .478$.

Other Individual Differences Associated with Emotion Regulation. Of the remaining six individual differences participants reported on, emotion regulation success was negatively associated with self-reflection, $r(214)= –.16$, $p < .025$, such that participants who reflected about themselves more often experienced less success on the emotion regulation task. Emotion regulation difficulty, in turn, tended to be associated with greater use of situational control in daily life, $r(214)=.12$, $p < .085$, and lesser use of expressive suppression in daily life, $r(214)= –.12$, $p < .085$, such that participants who employed situational control more often, and those who employed expressive suppression less often, found it more difficult to regulate their emotion on the task. Emotion

regulation success and emotion regulation difficulty were once again not significantly correlated with one another, $r(214)=.02$, $p > .784$.

Discussion

In the absence of any effects of the manipulation on the amount of self-focused thought participants engaged in after the emotion regulation task, causal effects of either the amount or the content of self-focused thought on emotion regulation could not be established. Nonetheless, exploratory analyses uncovered that levels of self-focused thought in the moment (situational self-awareness) as well as in general (trait self-consciousness) were both associated with emotion regulation difficulty. Specifically, greater amounts of self-focused thought were associated with greater emotion regulation difficulty. This is a novel result, in so far as these individual differences have yet to be related to aspects of emotion regulation in a paradigm that controls for emotional reactivity. Furthermore, their association with emotion regulation difficulty has not been investigated before.

Together with results from the previous two studies, the present study adds converging evidence to support the notion that self-focused cognition does have important consequences for emotion regulation outcomes. Specifically, increased levels of self-focused thought are associated with increased emotion regulation difficulty (Study 3), while disengaging from self-focused thought may either decrease emotion regulation difficulty (Study 1) or increases emotion regulation success (Study 2).

This last study also revealed that emotion regulation difficulty was more strongly associated with private rather than public self-awareness, suggesting that a self-focus manipulation that involves placing a mirror in front of the participant (Carver & Scheier, 1978) might be particularly useful for testing whether there is a causal effect of private self-awareness on emotion regulation difficulty. This manipulation also has the advantage of having continuous effects throughout the task that it is employed for, making it less likely for effects to dissipate by the end of a lengthy task. Such an experiment would help exclude the alternative explanation whereby experiencing difficulty when regulating emotion leads to an increase in self-focused thought.

Emotion regulation success and difficulty in this study were again not related to one another, and exhibited different patterns of correlations with individual differences. These results mirrored those of Study 1 and Study 2 and provided further confirmation that, in addition to success, difficulty is an important dimension to consider with respect to emotion regulation (Gruber, Harvey, & Gross, 2012; Mauss & Gross, 2007). One detail that is worth mentioning from Study 2, provides an interesting clue about the way that self-focused thought, emotion regulation success, and emotion regulation difficulty co-vary. Namely, in the student subsample, where emotion regulation success and emotion regulation difficulty were marginally related to one another, there was no association between either of the two measures and engagement or disengagement from self-focused thought.

Finally, one result from the exploratory individual difference analyses is particularly intriguing. While one might expect that participants who report using situational control more often in daily life do so because they have difficulty regulating emotion in general, which is in turn reflected in difficulty on the emotion regulation task. Several authors have proposed that emotion regulation frequency in daily life is related to emotion regulation success on laboratory tasks (see McRae, 2013). However, it is not clear why engaging in expressive suppression more often would be associated with less difficult emotion regulation on a task where participants are asked to use cognitive reappraisal. Studies typically find a positive association between expressive suppression in daily life and reappraisal difficulty in the lab (e.g. Che, Luo, Tong, et al., 2015). This correlation might lead one to suspect that participants used expressive suppression on the task, even though they were not instructed to (see McRae et al., 2010). However, when carefully scrutinizing participants' descriptions for strategies they employed to regulate their emotion, there was no evidence that any of the participants had spontaneously used this technique.

Chapter Six: General Discussion

Early studies implied that self-focused cognition may have important consequences for emotional responding (Duval & Wicklund, 1972; Scheier & Carver, 1983; Scheier, Carver, & Gibbons, 1979). Most of these studies had suggested that self-focused cognition affects emotional reactivity, however, the measures of emotion they employed did used a global measure of emotion without distinguishing between reactivity and regulation. Thus, it remained unclear whether self-focused cognition influenced mechanisms of emotional reactivity, emotion regulation, or both. Cognitive reappraisal may be uniquely suited to support a manipulation involving a non-self perspective, without changing the intrinsic nature of the self-regulatory process. This permitted a causal probing of the association between self-focused cognition and emotion regulation outcomes, independently of emotional reactivity (Study 1).

Seeing how emotion regulation contributes a great deal to personal and interpersonal well-being (Gross & John, 2003, McRae et al., 2012), if indeed disengaging self-focused cognition could be flexibly manipulated in order to increase the success of emotion regulation, or decrease its difficulty, this information would have direct applicable value for emotion regulation and related fields. There may also be additional implications of this effect, beyond the emotional domain. In other words, there may be other self-regulatory processes that could stand to benefit from a non-self perspective in

adaptive ways, such as negotiation (see Mnookin & Susskind, 1999) or decision-making (see Vohs, Baumeister, Schmeichel et al., 2014).

Together, the three studies in this dissertation provided converging evidence that, largely independent of emotional reactivity, relying on self-focused cognition may have several important consequences for the outcomes of emotion regulation. Specifically, the use of self-focused cognition during cognitive reappraisal may lead to more difficult emotion regulation, without increasing its success (Study 1), an inability to disengage from self-focused thought may be associated with less successful emotion regulation in the absence of any effects on difficulty (Study 2), whereas momentary self-focused thought, as well as a general propensity to engage in self-focused, thought may be associated with more difficult emotion regulation (Study 3).

Furthermore, the same studies help establish that measures of emotion regulation difficulty and emotion regulation success may be significantly related to one another (Study 2), this is not always the case (Studies 1, 2, & 3). Interestingly, the relative amount of emotion regulation difficulty reported in each task and the presence or absence of an association between success and difficulty, seem to have facilitated the detection of different patterns of associations between success, difficulty, and self-awareness, as well as correlations with individual differences (Studies 1-3). This lends continued support to the notion that, in addition to success, difficulty is an important way of characterizing emotion regulation. The previous literature has continued to suggest that emotion

regulation in general and cognitive reappraisal in particular are difficult processes, which tend to show mental fatigue effects on subsequent self-regulation tasks (see Wagner & Heatherton, 2013). Vice-versa, studies have revealed that mental fatigue impairs emotion regulation (e.g. Grillon et al., 2015). In contrast, very few studies seem to have focused on comparing the amount of difficulty that characterizes different emotion regulation strategies (Mauss, Bunge & Gross, 2007; Gruber, Harvey, & Gross, 2012). This may reflect a true gap in the literature, however it is also possible it merely reflects the "file-drawer problem", whereby null results are not represented in the published literature (Simonsohn, Nelson, & Simmons, 2014). In either case, the data from the present set of studies adds to this incipient literature, and at the same time advocates for the utility of including measures of difficulty and measures of mental fatigue in studies that seek to compare emotion regulation strategies, rather than limiting comparisons to emotion regulation success.

Possible Mechanisms

This dissertation as a whole made important strides in establishing the existence and nature of effects of self-focused cognition on emotion regulation, and the boundary conditions of these effects. However, there is an important question that remains unanswered, and that is how does self-focused cognition exert its influence on emotion regulation outcomes? Below, I will outline three possible mechanisms: one that suggests self-focused thought adds cognitive load in the reappraisal process, one that suggests that

self-focused cognition leads to increased emotional reactivity, and one that suggests self-focused cognition causes participants to forget the task at hand and ruminate about the initial appraisal.

Before moving on to discussing how self-focused thought might influence reappraisal, it is important to clarify whether the effects of other-focused cognition are likely to be due to other-focus providing a way to disengage self-focused cognition, or whether other-focused cognition may have benefits independently of helping disengage self-focused cognition. In this dissertation, I argue that the former theory is correct. The data from Studies 2 and 3 provide some important clues towards this.

One inconsistency that should be explored further is that between self-focused cognition and emotion regulation success. In Study 2, disengagement of self-focused cognition was associated with greater emotion regulation success, however, in Study 3, stronger engagement in self-focused cognition was associated with marginally more successful emotion regulation. While this result stands out as different from the other two studies, the idea that self-focused cognition is beneficial for goal attainment is well-represented in the broader self-regulation literature, and is thought to be mediated by an increased salience of goal states in working memory (Carver & Scheier, 1988). This raises an interesting possibility with respect to the mechanism behind effects of self-focused cognition on emotion regulation. Could goal salience be simultaneously

responsible for increasing emotion regulation success and increasing emotion regulation difficulty, when the goal has to do with one's own emotional state?

Regulating one's own emotion may be very different from self-regulation in general, which is typically used to refer to regulation of goal-directed behavior. Most notably, intentionally using cognitive reappraisal to down-regulate negative emotion presents a self-deception paradox (Greenwald, 1997). In order to change the emotion, one tries to replace the initial appraisal about a stimulus or situation with a new appraisal, and forget this initial appraisal. Self-focused thought might make one particularly aware of this initial appraisal (Silvia, 2002), and in turn create a situation in which, because one is aware of the deception before it's been attempted, additional effort is necessary in order to convince oneself that the old appraisal is not correct, adding cognitive load as one generates new appraisals. Generating reappraisals with a focus on another person, in turn, might result in suspending this initial appraisal from working memory, which in turn would allow participants to generate new appraisals without additional cognitive load, resulting in an experience of less difficulty. This could also facilitate self-deception overall, as the reappraisal would seem more believable to the person, in absence of their own initial appraisal acting as a constant reminder of the deception.

One specific way future studies could test this cognitive load mechanism is by comparing the effects of self-focused and other-focused cognitive reappraisal with and without extraneous cognitive load. If self-focused reappraisal is already functioning

under cognitive load from keeping the initial appraisal in mind, then replacing that with another form of cognitive load should have no effect on the outcome of emotion regulation. A previous study by Richards and Gross (2000) suggests that this may be true. However, adding the same amount of cognitive load to other-focused reappraisal should in turn increase the difficulty of emotion regulation in this condition, and close the difficulty gap between self-focused and other-focused reappraisal.

Although the data from neither of the three studies presented here provide direct evidence for a cognitive load mechanism, they do help exclude the two competing mechanisms mentioned above. The first of these mechanisms is the one whereby self-focused thought, via increased awareness of the initial appraisal, acts to increase the intensity of emotional experience, while regulatory processes, which also rely on the self, act to decrease it, resulting in the experience of more difficulty compared to a case where regulation is outsourced to other-focused cognition. This could have been a viable mechanism if there was conclusive evidence that self-focused cognition increases emotional reactivity simultaneous to a decrease in emotion regulation. However, in Study 1 there was no observable causal relationship between self-focused thought and emotional reactivity, whereas in Study 2 there was evidence to the contrary: that an inability to disengage from self-focused thought was associated with decreased emotional reactivity. Thus, in so far as the present studies are concerned, there is no evidence for this mechanism.

The data from the present set of studies also help exclude the third possible mechanism mentioned above, originally proposed in the self-distancing literature (Kross, Ayduk, & Mischel, 2005), which maintains that self-focused cognition predisposes participants to rumination, and self-distancing prevents or reduces a tendency to ruminate (Kross et al., 2009; Kross & Ayduk, 2008; Kross & Ayduk, 2009). While this literature presents valid evidence to make a case for a rumination mechanism, the procedure used for emotion elicitation in this case involves autobiographic recall of emotional experiences. The procedures used for emotion elicitation in the studies included in this dissertation do not involve autobiographic recall, and data from neither of the three studies support the assertion that rumination is significantly associated with emotion regulation success or emotion regulation difficulty. Rather, individual differences in reflection, but not rumination, were negatively associated with emotion regulation success in Study 2. This suggests that, although rumination may have an effect on emotion regulation, it is not a necessary mediator for the effects of self-focused cognition on emotion regulation.

Limitations

Although results of the present set of studies are encouraging, they each have important limitations. In Study 1, the order of the Look Neutral, Look Negative, and Change Negative trials, and which film stimuli they were each paired with was not counterbalanced. This choice was made for two reasons. The first one was to ensure

comparability between conditions for the emotion regulation effect, by having each participant employ cognitive reappraisal for the same film. The second reason was related to the practicalities of obtaining a sensitive measure of mental fatigue, by ensuring that the handgrip endurance test took place immediately after the regulation trial. The latter made it necessary for this regulation trial to be at the end of the trial sequence. Although film stimuli are generally considered more ecologically valid than picture stimuli (Ray, 2007), future studies should ensure that conclusions about emotion regulation in general are not limited by the order of regulation and non-regulation trials across tasks, or idiosyncrasies in the stimuli used for emotion elicitation and emotion regulation.

Study 2 was limited by the use of two arguably very different convenience samples (professional artists, and college students) that were combined in order to maximize power. Even though the same tasks were performed by all participants, in roughly the same order, the contexts in which participants from the two samples completed the study were very different. Participant recruitment for the two subsamples was different, with artists having to fulfill very stringent criteria to qualify for the study, including MRI compatibility. This may have contributed to a selection bias whereby the most motivated and conscientious volunteers, who were willing to go through all of the screening procedures, ended up being invited to participate in the study. The experimental context was also very different between the two subsamples - artists completed the procedures relevant to Study 2 at the end of a 2-hours and 30-minutes

battery of questionnaires and tasks, which included 1 hour of MRI scanning. This may have inadvertently resulted in mental fatigue, in the absence of which there may not have been as strong an effect of self-absorption on emotion regulation success (see McRae et al., 2010). Indeed, this aforementioned effect was weaker in the student subsample.

The decision to add the second subsample was made after analyzing the data obtained from the artist subsample, where, despite significant effects in the hypothesized direction, a great number of participants had to be excluded due to unanticipated missing data on the self-absorption task. Even though a total of 12 sounds were played throughout the task, some participants reacted to less than half of the sounds, and some volunteered that they had not heard most of the sounds. For these participants, the validity of any self-absorption scores obtained was questionable. Even though the decision to exclude these participants from analyses was made a priori, it did result in a smaller than anticipated sample size. This problem was not present for the student participants, most of which were able to hear and react to most of the sounds. However, a large number students had negative self-absorption scores, which were difficult to interpret the context of the study hypothesis, and lead to a decision to run exploratory analyses selecting for the overall presence or absence of a self-absorption effect (although it did not emerge as a significant moderator of the relationship between self-absorption and either emotion regulation success or difficulty). The aforementioned negative self-absorption scores came about because a greater number of students (as opposed to artists) had greater reaction times

when disengaging from other-focused thought, compared to self-focused thought. This may have been due to the fact that, by some standards, college students could still be considered as undergoing adolescence, a period that is characterized by increased salience of social and peer interaction (Blakemore, 2008). Future studies seeking to measure self-absorption that use adolescent samples should plan ahead for larger numbers of participants, in order to ensure that they are well-powered enough to detect the effects that they are hypothesizing.

Finally, Study 3 perhaps suffered from the greatest number of methodological limitations. Even though collecting the data for this study online facilitated access to a large and diverse sample, increasing power to detect the effects of interest, manipulation checks indicated that the effects of the self-reflection priming on self-focused thought were not strong enough to last throughout the emotion regulation task. Although individual differences provided correlational evidence that was in line with our general hypotheses, causal conclusions could not be drawn. Future studies that aim to manipulate self-focused thought in order to observe its effects on other tasks are likely best carried out in a well-controlled laboratory environment, and would be compelled to include manipulations that are known to exert a continuous influence throughout those tasks, such as the presence of a mirror or video camera (Carver & Scheier, 1978).

A more general aspect that may be viewed as a limitation is that, although the three studies generally converge towards the same conclusion, there is a fair amount of

method variance across them in terms of manipulations and measurements of emotion and self-focused cognition. Although such variance provides an opportunity for conceptual replication and may increase the generalizability of findings, it also carries the danger of having increased the probability of observing significant effects (Type I error). Although methods variance is unlikely to completely invalidate research findings, especially when conclusions are drawn based on all available data from each study rather than selective underreporting of acquired measures, and when and patterns of significant and null effects rather than individual significant effects converge towards the same general conclusion, this variance may bias the observed relationships among constructs up to 26% according to some authors (see Doty & Glick, 1998). Future studies could benefit from limiting the variance of manipulations and measurements across studies, as this variance preempts formal comparisons between studies until enough data has been collected for a meta-analysis. Instead, varying manipulations and measures within the same study would permit a formal comparison of their effects.

Future Directions

With respect to mechanism, although the three studies provide evidence for an effect of self-focused cognition on emotion regulation outcomes, they do not eliminate the intriguing possibility that other-focus might have benefits that are unrelated to disengaging self-focus. While it would be difficult to gather any evidence against this latter theory using only behavioral data, as the two make the same prediction with respect

to emotion regulation outcomes when comparing self-focused and other-focused cognition, one comparison that might be informative is that between other-focused cognition and spatial distancing (D'Argembeau, 2007; Koenigsberg et al., 2010) or temporal distancing (D'Argembeau & Van der Linden, 2006). If other-focused cognition has unique benefits, it should result in less difficult or more successful emotion regulation than both spatial and temporal distancing. If, however, they are all merely providing a way to disengage self-focused cognition, they should be equally beneficial.

More generally, elucidating the mechanism that is responsible for the effects of other-focused cognition on emotion regulation may result in important breakthroughs for the self-regulation literature. So far, the best alternative for decreasing the difficulty of self-regulatory acts, and improving their success has been habit formation to a point where these highly controlled processes become automatic (Muraven, Baumeister, & Tice, 1999; Mauss et al., 2007), which involves a considerable initial investment of time and effort. In contrast, a decrease in emotion regulation difficulty was obtained in Study 1 using a simple framing manipulation, which was effective right away, without any costs for emotion regulation success. Tempting as it may be to apply the same framing manipulation to other cognitive processes, it should be noted that cognitive reappraisal may be uniquely suited to support such a frame, unlike other emotion regulation strategies, and unlike other forms of self-regulation. Nonetheless, there are several other self-regulatory behaviors that other authors have proposed could benefit from "hypo-

egoic regulation", or a reduction in the amount of self-focused thought, such as skill learning (see Leary, Adams, & Tate, 2010). The benefit that these self-regulatory behaviors and emotion regulation derive from a reduction of self-focused thought could rely on a common mechanism.

Until recently, emotion regulation has been studied almost exclusively in intrapersonal contexts (Zaki & Williams, 2013). Interpersonal emotion regulation is an exciting new area to readily benefit from the observation that other-focused reappraisal is less difficult than self-focused reappraisal, for example via the study of transactive processes in emotion regulation. Similar to transactive processes in memory (Wegner, 1985), transactive processes in emotion regulation could be viewed as a set of emotion regulation strategies used by groups such as couples and families, that are potentially more effective at a group level than at an individual level. Cognitive reappraisal could be viewed as one such process, in so far groups who make use of other-focused cognitive reappraisal to downregulate negative emotion should be able to thrive with respect to emotion regulation, more than groups who use primarily self-focused strategies. Indeed, Ryan, La Guardia, Solky-Butzel et al. (2005) have proposed that, across various groups, relying on others for emotion regulation is generally associated with greater well-being. This might mean that in general the quality of reappraisals generated for another person surpasses that of reappraisals generated for oneself, however the few studies that have compared interpersonal and intrapersonal cognitive reappraisal do not necessarily support

this assertion (e.g. Hallam et al., 2014). The studies in this dissertation in turn suggest a more intriguing mechanism whereby this association might be mediated by a decrease in regulatory effort or difficulty when reappraisals are generated in service of another person, particularly a close other.

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Appendix A – Supplementary Analyses

Study 2 – Analyses Selecting for Self-Absorption (RT Self > RT Other)

Although the self-absorption effect was not significantly different between subsamples, as Block and Subsample did not interact to determine self-absorption, $F(1,58)=.51$, $p > .479$, upon visual inspection, it was apparent that a greater proportion of participants from the student sample (39%) compared to the artist sample (23%) did not show a self-absorption effect. On the contrary, these participants were slower to react to the interrupting sounds during the Other blocks compared to the Self blocks. Although the presence or absence of a self-absorption effect was not a significant moderator of the relationship between self-absorption and emotion regulation success or difficulty ($p > .18$), we nonetheless explored whether the association between self-absorption and emotion regulation outcomes for those participants who showed a self-absorption effect in the first place (RT Self > RT Other). The results of these analyses for each emotion regulation outcome are detailed below.

Emotional Reactivity. There was a trending negative association between their self-absorption scores and emotional reactivity, $r(40)= –.26$, $p < .110$, such that participants who were more self-absorbed were less emotionally reactive. This is illustrated in *Figure A*. Analyses within each subsample indicated non-significant associations in both the artist subsample, $r_1(17)= –.354$, $p > .165$, and the student subsample, $r_2(23)= –.276$, $p > .202$. For participants who were not classified as self-absorbed (RT Other > RT Self), there was, in turn, no evidence of a significant

association between their self-absorption scores and emotional reactivity, $r(20) = .16$, $p > .508$.

Emotion Regulation. There was a significant negative association between their self-absorption scores and emotion regulation success, $r(40) = -.33$, $p < .038$. The slower participants disengaged from self-focused thought, the less successfully they were able to down-regulate their negative emotion. This is illustrated in *Figure B.* Analyses within each subsample indicated a strong and significant negative association for artists, $r_1(17) = -.53$, $p < .029$, and a weaker association that did not reach significance for students, $r_2(23) = -.31$, $p < .15$. For participants who were not classified as self-absorbed (RT Other > RT Self), there was, in turn, evidence of a significant positive association between their self-absorption scores and emotion regulation success, $r(20) = .48$, $p < .034$, such that the faster participants disengaged from self-focused thought, the less successfully they were able to downregulate their negative emotion.

Emotion Regulation Difficulty. There was no significant association between their self-absorption scores and emotion regulation success, $r(39) = -.07$, $p > .684$. Analyses within each subsample indicated no significant association for artists, $r_1(16) = -.01$, $p > .997$, or students, $r_2(23) = -.10$, $p > .640$. For participants who were not classified as self-absorbed (RT Other > RT Self), there was also no evidence of a significant positive association between their self-absorption scores and emotion regulation success, $r(20) = .07$, $p > .773$, such that the faster participants disengaged from self-focused thought, the less successfully they were able to downregulate their negative emotion.

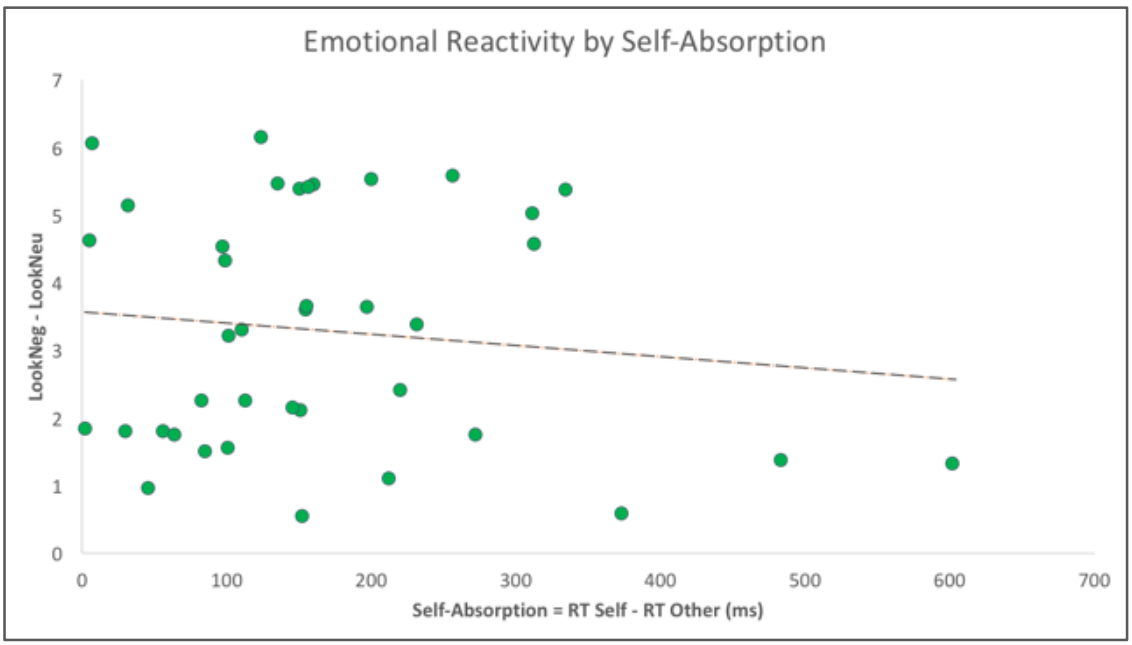


Figure A. Emotional reactivity difference scores by self-absorption in Study 2. Of those participants who showed a self-absorption effect, the more self-absorbed they were, the less emotionally reactive to the negative film, $r(40) = -.264$, $p < .110$.

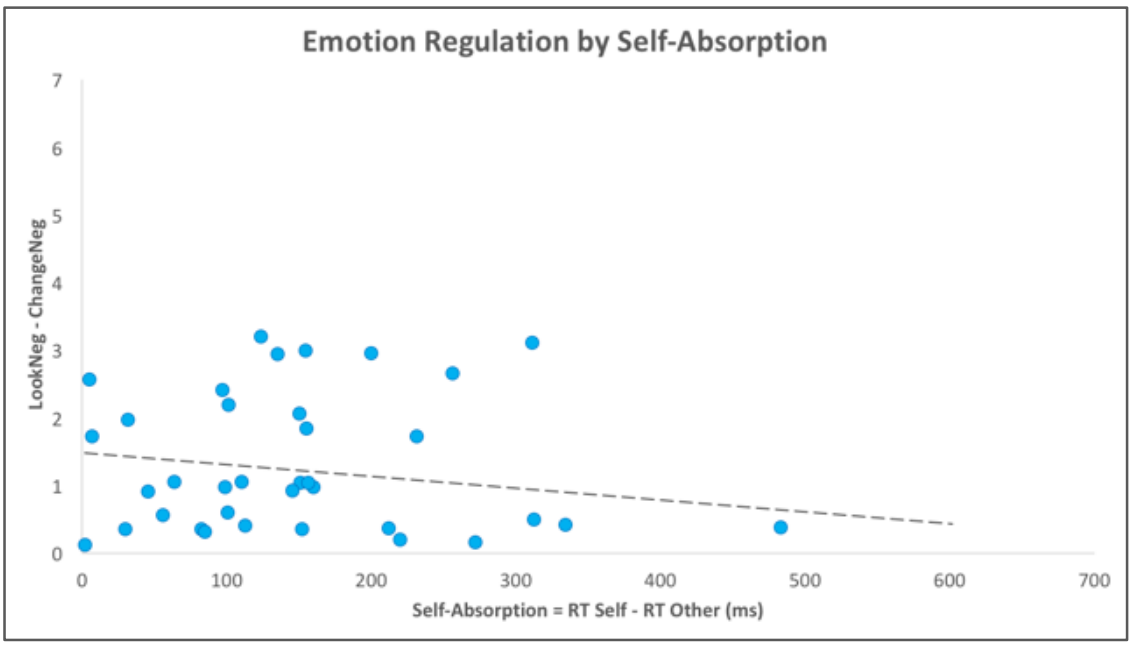


Figure B. Emotion regulation difference scores by self-absorption in Study 2. Of those participants who showed a self-absorption effect, the more self-absorbed they were, the less successful when down-regulating their negative emotion, $r(40) = -.331$, $p < .038$.

Appendix B - Figures

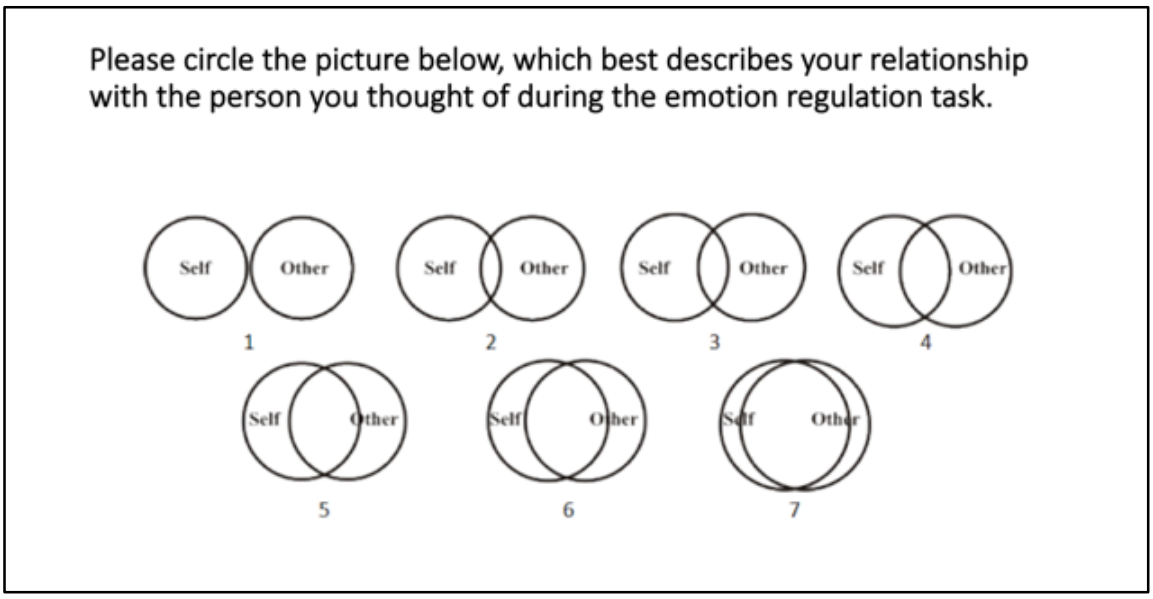


Figure 1. Rating scale used in Study 1 to measure relationship closeness via inclusion of other in the self. Adapted from Aaron, Aaron, & Smollan, 1992.

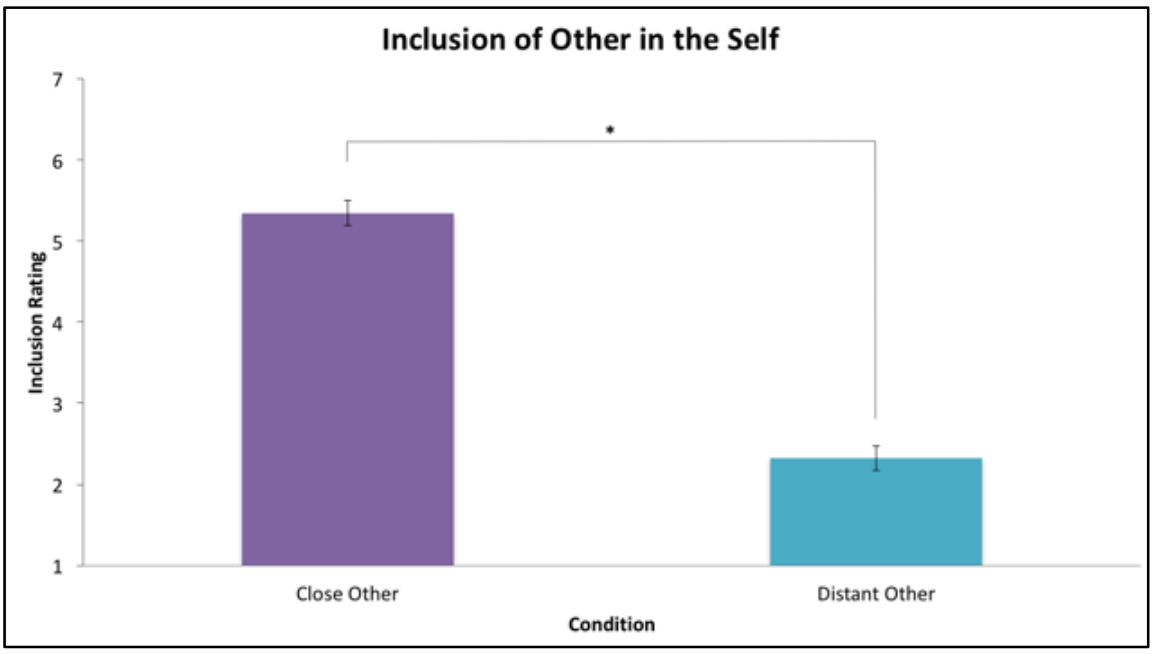


Figure 2. Average inclusion of other in self ratings for the Close Other and Distant Other conditions in Study 1. As expected, participants in the Close Other condition rated were significantly closer to the person they thought of, $F(1,61)=97.42$, $p < .001$.Error bars represent standard error of the mean.

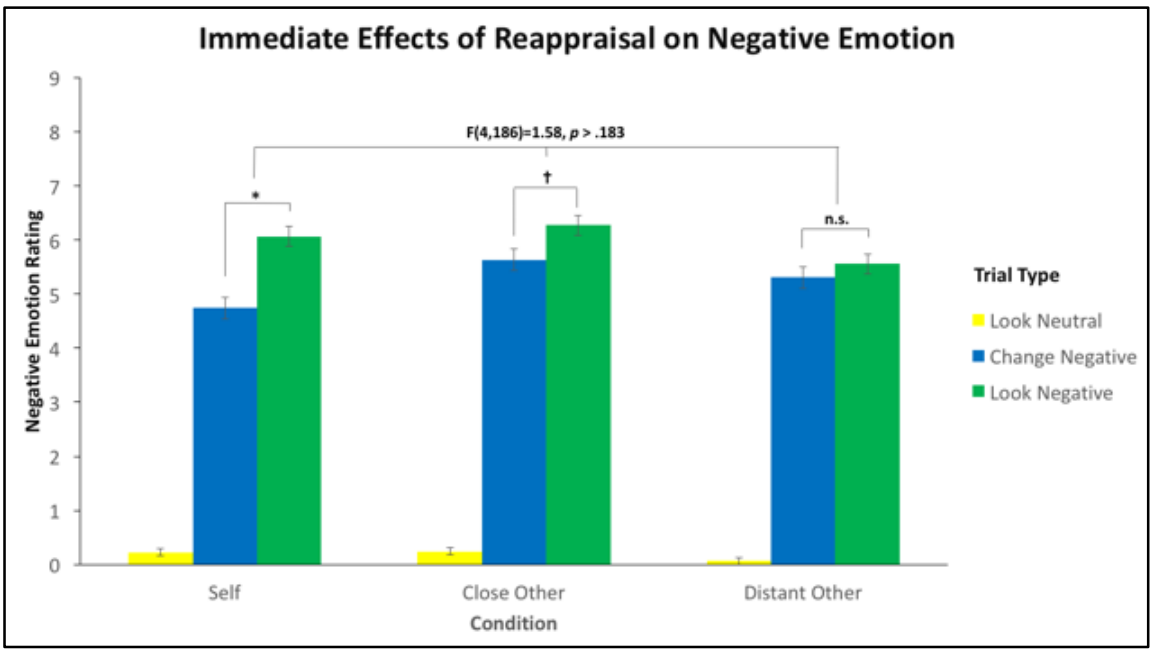


Figure 3. Average negative emotion ratings by Condition and Trial Type in Study 1. The effect of Trial Type was not significantly different in the Self, Close Other, and Distant Other conditions, $F(4,186)=1.58$, $p > .183$. Error bars represent the standard error of the mean for each Trial Type.

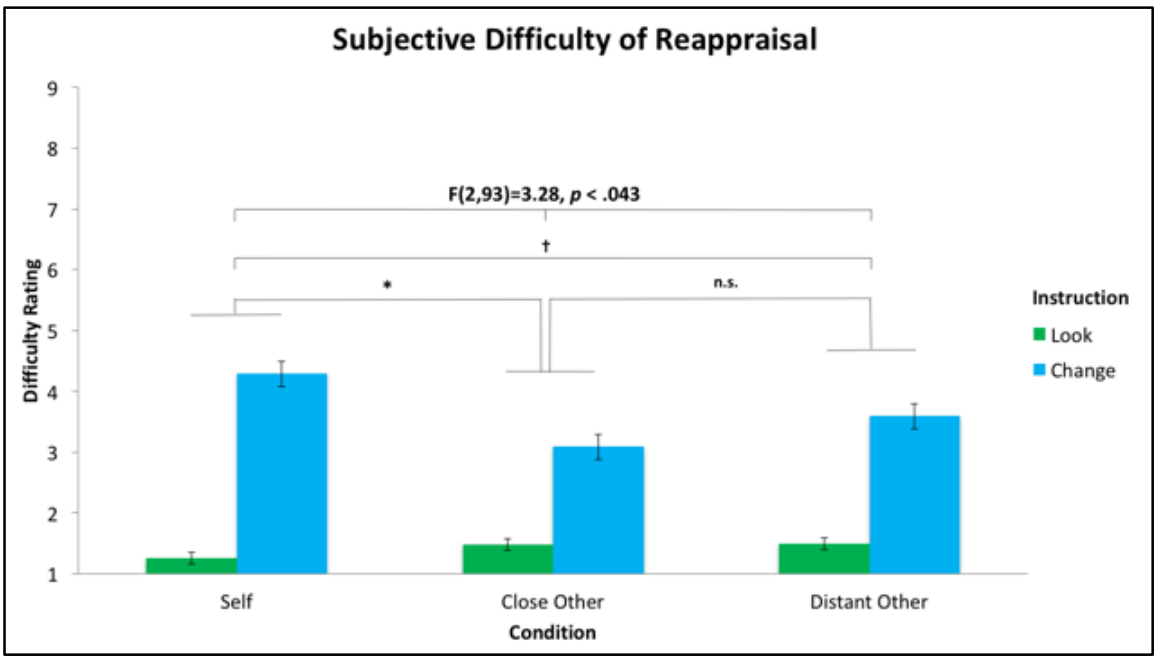


Figure 4. Average difficulty ratings by Condition and Instruction in Study 1. Participants found reappraisal significantly more difficult in the Self condition compared to the Close Other condition, $t(62)=2.54$, $p < .015$, but only marginally less difficult in the Self condition compared to the Distant Other condition, $t(61)=1.61$, $p < .113$. Error bars represent the standard error of the mean for each Instruction.

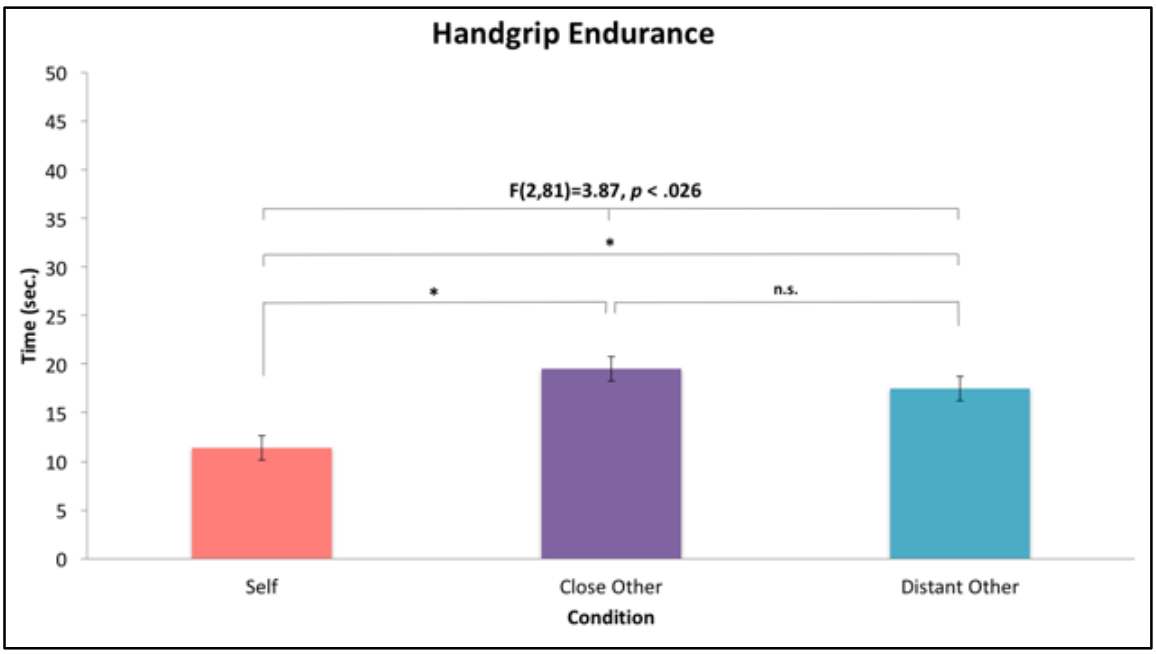
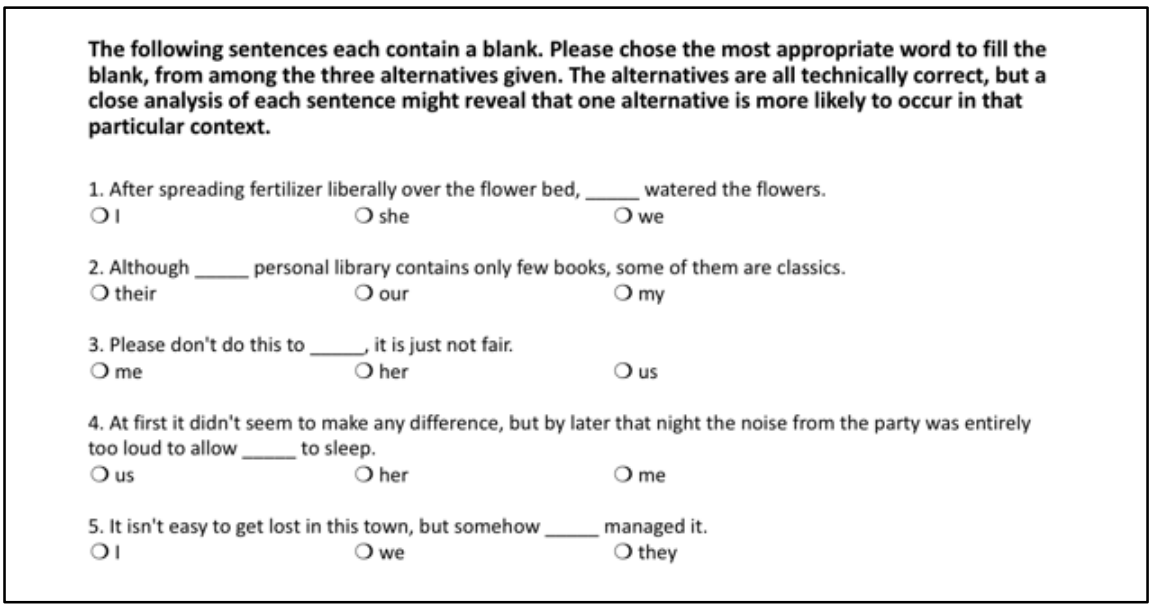


Figure 5. Average handgrip endurance times by Condition in Study 1. Participants had significantly lower endurance in the Self condition compared to both the Close Other condition, $t(56) = -2.72$, $p < .010$, and the Distant Other condition, $t(50) = -2.24$, $p < .031$. Error bars represent the standard error of the mean for each Condition.



The following sentences each contain a blank. Please chose the most appropriate word to fill the blank, from among the three alternatives given. The alternatives are all technically correct, but a close analysis of each sentence might reveal that one alternative is more likely to occur in that particular context.

1. After spreading fertilizer liberally over the flower bed, _____ watered the flowers.
❍ I ❍ she ❍ we

2. Although _____ personal library contains only few books, some of them are classics.
❍ their ❍ our ❍ my

3. Please don't do this to _____, it is just not fair.
❍ me ❍ her ❍ us

4. At first it didn't seem to make any difference, but by later that night the noise from the party was entirely too loud to allow _____ to sleep.
❍ us ❍ her ❍ me

5. It isn't easy to get lost in this town, but somehow _____ managed it.
❍ I ❍ we ❍ they

Figure 6. Sentence completion task used in Study 3 as a measure of self-focused thought immediately after the emotion regulation task. Modeled after the "Linguistic Implications Form" (Wegner & Giuliano, 1980).