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**Do People Choose the Same Strategies to Regulate Other People's Emotions as they  
Choose to Regulate Their Own?**

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Information regarding the data for all studies is available at: <https://osf.io/g5bs8/>

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### **Abstract**

How do people choose how to regulate others' emotional responses? We extended previous work on how the intensity of an emotional situation influences which strategies people choose to regulate their emotions (i.e., intrapersonal emotion regulation choice) to also consider the effect of intensity on which strategies people choose to regulate other people's emotions (i.e., interpersonal emotion regulation choice). Studies 1a and 1b found that the intensity of the emotional situation influenced whether participants chose distraction or reappraisal in both intrapersonal and interpersonal regulation contexts, but also that the effect of intensity differed between the contexts (participants choose reappraisal more frequently for others in intense situations than for themselves). However, this difference was stronger (or only found) when participants helped the other person to control their emotions first. Two further studies examined whether differences in perceived intensity (Study 2) and/or the anticipated effort or effectiveness of the strategies (Study 3) could explain the difference between intrapersonal and interpersonal contexts. Together, the findings suggest that the regulation strategies that people choose depend on the intensity of the emotional situation, the target of regulation, and whether people choose how to regulate their own emotions before choosing how to regulate another person's emotions, with preliminary evidence that differences between intrapersonal and interpersonal emotion regulation choice may be associated with differences in the anticipated effort and effectiveness of regulation between these contexts.

*Keywords:* interpersonal emotion regulation, intrapersonal emotion regulation, emotion regulation, emotion regulation choice

Word count: 227 words

**Do people choose the same strategies to regulate other people's emotions as they choose to regulate their own?**

Daily life is filled with emotional experiences, ranging from happiness upon hearing good news to frustration when being stuck in traffic. However, emotional responses are not always appropriate – they might occur at an inappropriate moment or not be of suitable magnitude or intensity for the situation in which they occur. As such, people often attempt to control their emotions (Gross, 1998). A whole host of different strategies can potentially be used to do so, such as cognitive reappraisal that involves engaging with the emotional situation, distraction that involves disengaging from the emotional situation and so on (for a review, see Parkinson & Totterdell, 1999). Regulation can alter different aspects of the emotional experience, such as what emotion is experienced (e.g., anger or fear), when it is experienced (e.g., immediately or after the event), how strongly it is felt, and how long the feelings last for (Gross, 1998; Gross & Thompson, 2007). As a consequence, being able to effectively and flexibly control emotions is crucial to functioning successfully in daily life (Aldao et al., 2010; Bonanno et al., 2004; Levy-Gigi et al., 2016).

Contemporary perspectives posit that emotion regulation is a multi-stage process that involves: (i) identifying the need to control an emotion, (ii) selecting both whether to attempt to control the emotion and which regulatory strategy to use to do so, (iii) implementing the chosen strategy, and (iv) monitoring outcomes to assess whether regulation was successful (Bonanno & Burton, 2013; Gross, 2015; Webb, Schweiger Gallo, et al., 2012). To date, most research has focused on the effect of implementing certain strategies (i.e., the third stage of emotion regulation), with numerous studies examining the effectiveness and consequences of using different strategies (e.g., Webb, Miles, & Sheeran, 2012). However, it has been suggested that it is overly simplistic to conclude that strategies are inherently adaptive or maladaptive; rather, the effectiveness and potential consequences of employing different

strategies is determined partly by the situations in which the strategies are deployed (e.g., Altamirano et al., 2010; Sheppes & Meiran, 2007, 2008). This conclusion illustrates the importance of being able to choose between different strategies in different contexts, which has been found to be associated with psychological health and well-being (Bonanno & Burton, 2013; Cheng, 2001; Kashdan & Rottenberg, 2010; Troy et al., 2013).

### **Emotion Regulation Choice**

Research has started to investigate what influences the strategies that people choose to control their emotions (e.g., Sheppes et al., 2011, 2014, for a review see Matthews et al., 2021). The term ‘emotion regulation choice’ (ERC) is typically used to describe how people actively choose to regulate their emotions from the different regulatory strategies that are available to them (Sheppes, 2020; Sheppes et al., 2011). Several factors relating to the nature of the emotion that is being regulated, the individual doing the regulating, and the broader context in which the regulation is taking place have been examined as potential determinants of ERC (Matthews et al., 2021). One of the most frequently studied factors is the intensity of the emotional situation. The effect of intensity on ERC is typically assessed using a paradigm in which participants are exposed to images of varying intensity and asked to choose between the regulatory strategies of distraction and reappraisal to control their emotions in response to the images (e.g., Sheppes et al., 2011, 2014). Results from these studies have repeatedly shown that intensity influences ERC, with distraction being chosen more frequently in response to high-intensity situations, and reappraisal being chosen more frequently in response to low-intensity situations.

Sheppes and colleagues explain this finding by suggesting that people’s decisions are based on a trade-off between the short- and long-term costs and benefits associated with using the different strategies in contexts of varying intensity. For example, reappraisal is thought to be more costly in the short-term in terms of the cognitive resources required to

implement the strategy but more effective in the long-term, whereas distraction requires fewer cognitive resources to implement but is not as effective in the long-term (see Sheppes, 2020). In short, we are beginning to understand what influences how people choose to control their *own* emotions in particular situations. However, people do not only try to control their own emotions. Humans are social beings, and both the experience and regulation of emotions often occurs within social contexts (Beckes & Coan, 2011; Butler & Randall, 2013; Zaki & Williams, 2013). Consequently, people also frequently try to help those around them to control their emotions, such as comforting a friend who is upset or trying to calm an angry colleague.

### **Interpersonal Emotion Regulation**

The process of helping other people to control their emotions can be referred to as interpersonal (Niven, 2017), extrinsic (Nozaki & Mikolajczak, 2020; Zaki & Williams, 2013), or social (Reeck et al., 2016) emotion regulation. Compared to the amount of research conducted on how people control their own emotions (i.e., intrapersonal emotion regulation), interpersonal emotion regulation is relatively understudied (Barthel et al., 2018; Zaki & Williams, 2013). That being said, the research that has been conducted on interpersonal regulation has focused on similar questions as research regarding intrapersonal emotion regulation, such as examining which strategies people use to help others to control their emotions (e.g., Pauw et al., 2019), the effectiveness of different regulatory strategies in response to different emotions (Shu et al., 2020), and the relative effectiveness of intrapersonal and interpersonal emotion regulation (e.g., Levy-Gigi & Shamay-Tsoory, 2017). Interpersonal emotion regulation has also been associated with several important outcomes such as psychological wellbeing and mental health (e.g., Hofmann, 2014; Horn & Maercker, 2016; Marroquín, 2011) and social functioning and connectedness (Horn et al., 2019; Niven et al., 2012, 2015; Williams et al., 2018). Given the importance of interpersonal

emotion regulation and the fact that most research to date has focused on the relative effectiveness and consequences of different strategies (i.e., the implementation stage), an important question now is what factors influence how people choose to help *others* to regulate their emotions? Therefore, the current work aimed to extend the studies looking at the role of emotional intensity on intrapersonal ERC (e.g., Sheppes et al., 2011, 2014) to also examine whether the emotional intensity of a situation influences how people choose to help others to control their emotions (i.e., interpersonal ERC).

There are similarities between intrapersonal and interpersonal emotion regulation. For example, both types of regulation are goal-directed, multi-stage processes (Nozaki & Mikolajczak, 2020; Reeck et al., 2016) and a wealth of strategies can be used to help someone else to regulate their emotions (Niven et al., 2009) - many of which are similar to how people control their own emotions, such as strategies that involve either engaging with or disengaging from the emotional situation. Therefore, people may choose the same strategies to help someone else to control their emotions as they choose to control their own emotions. That is, intensity may have a similar effect on ERC when helping someone else to control their emotions as it does when controlling their own emotions. However, others have suggested that interpersonal and intrapersonal emotion regulation should not be equated and instead should be thought of as distinct forms of emotion regulation (Niven, 2017; Nozaki & Mikolajczak, 2020); not least because the target of the regulation is different. In intrapersonal contexts, the target of the regulation is the self, whereas in interpersonal contexts the target of the regulation is another individual (Niven, 2017). Therefore, intensity may have a different effect on ERC in intrapersonal and interpersonal contexts, such that people choose different strategies when helping someone else to control their emotions than they choose to control their own emotions. Given these competing predictions and the lack of research on

interpersonal ERC, the present research aimed to investigate whether people choose the same strategies to regulate someone else's emotions they do to regulate their own.

### **The Present Research**

To investigate whether emotional intensity has the same or different effects on how people choose to regulate their own versus others' emotions, we replicated and extended Sheppes and colleagues' (2011) paradigm for measuring ERC. The intensity of the emotional situation was manipulated through the use of affective images and participants were given a choice between the regulatory strategies of distraction and reappraisal in both intrapersonal (i.e., regulate their own emotions) and interpersonal (i.e., regulate another's emotions) contexts. Based on previous research into ERC, we predicted that we would replicate the effect of intensity on ERC when people were regulating their own emotions (i.e., intrapersonal emotion regulation) with participants being more likely to choose reappraisal rather than distraction in response to low-intensity images, and more likely to choose distraction, rather than reappraisal in response to high-intensity images. However, as described above, it seemed an open question whether we would observe similar effects of intensity on ERC in interpersonal emotion regulation contexts. Studies 1a and 1b tested this hypothesis. Having found that the effect of intensity on ERC differed between intrapersonal and interpersonal regulation contexts, Studies 2 and 3 examined possible explanations; namely, that the two contexts might lead to differences in the perceived intensity of the images and/or perceived effort and effectiveness of the regulatory strategies.

### **Study 1a**

#### **Method**

#### ***Participants***

Previous research looking at the effect of intensity on ERC in intrapersonal contexts (e.g., Sheppes et al., 2011), typically reports a large-sized effect ( $\eta^2_p = 0.71$ ). However, as our

research examined both intrapersonal and interpersonal ERC and we were unsure whether the effect of intensity on interpersonal ERC would be comparable in magnitude to the effect of intensity on intrapersonal ERC, we based our power analysis on a medium-sized effect.

G\*Power (Faul et al., 2007) estimated that a sample of 34 participants would provide 80% power to detect a medium-sized effect of intensity on ERC ( $f^2 = 0.25$ ) with  $\alpha = .05$  for a repeated-measures ANOVA. Thirty-seven female participants were recruited to take part in the study. Nineteen of the participants (51%) were Psychology students who received 4-course credits for their participation. The remaining 18 participants (49%) responded to an email that was distributed to a list of student volunteers who received a £5 voucher for their participation. Two participants were excluded for not following the instructions regarding the use of reappraisal. The final sample, therefore, comprised of 35 participants ( $M_{age} = 21.29$ ,  $SD = 3.98$ ).

### ***Materials***

*Emotional Stimuli.* Images from the International Affective Picture System (IAPS; Lang et al., 2008) were used to induce negative emotions of varying intensity. The images presented in the intrapersonal regulation choice section were those previously used by Sheppes and colleagues (2011) and the images used in the interpersonal regulation choice section were matched to those in the intrapersonal section based on normative ratings of arousal and valence as published by Lang et al. (2008) and content. The images were categorised as either low-intensity (mean arousal = 4.73,  $SD = 0.75$ , mean valence = 3.46,  $SD = 0.34$ ) or high-intensity (mean arousal = 6.11,  $SD = 0.96$ , mean valence = 2.01,  $SD = 0.34$ ). Levels of arousal ( $t(58) = 6.17$ ,  $p < .001$ ,  $d = 1.59$ ) and valence ( $t(58) = 16.40$ ,  $p < .001$ ,  $d = 4.24$ ) were significantly different between the low and high-intensity images, but there were no significant differences in the valence ( $t(29) = 0.74$ ,  $p = .463$ ,  $d = 0.08$ ) or arousal ( $t(29) =$

0.56,  $p = .580$ ,  $d = 0.01$ ) ratings between the sets of images used in the intrapersonal and interpersonal regulation sections.

*Emotion Regulation Strategies.* The regulation strategies were the same as in Sheppes et al. (2011); as were the instructions on how to use them. For distraction, participants were told to think of something neutral and unrelated to the image, and for reappraisal, they were told to change the meaning of the image but without saying that it was a fake scene (e.g., from a movie). The order in which the participants were taught how to use the different strategies was counterbalanced across participants.

*Ratings.* After each trial, participants were asked to rate either how negative the image that they had seen made them feel (after the intrapersonal choice trials) or how negative they thought the image made the other person feel (after the interpersonal choice trials).

Participants provided these ratings on a scale of 1 (*not negative at all*) to 9 (*very negative*).<sup>1</sup>

### ***Procedure***

During the emotion regulation choice task, participants worked alongside another person, who they were led to believe was another participant, but was, in fact, a confederate. As can be seen in Figure 1, the participants were first taught how to use the two different regulatory strategies of distraction and reappraisal. They then completed 6 practice trials, in which each strategy was used 3 times: Once to control their own emotions, once to help the confederate to control their emotions, and a final time in which the confederate used the strategy to help the participant to regulate their emotions. The main part of the study consisted of 2 blocks. In the intrapersonal regulation block, participants were asked to regulate their own emotions, and in the interpersonal regulation block, they were asked to

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<sup>1</sup> At the end of the emotion regulation choice task, participants were also asked to complete a modified measure of perceived similarity between themselves and the other participant (the 'Inclusion of Other in the Self' or IOS scale; Aron et al., 1992) in which they circled the depiction that best described how similar they perceived themselves and the other participant to be. These ratings did not influence choice of regulation strategy and so are not reported further.

regulate the confederate's emotions. The order was of these blocks was counterbalanced across participants. Participants were led to believe that there would be a third block in which the confederate would regulate their emotions; however, this was not the case and the study ended after the first two blocks.

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

The main part of the study involved 30 trials in both the intrapersonal and interpersonal blocks, with each block presenting 15 low-intensity images and 15 high-intensity images (i.e., 60 trials overall). To ensure that the strategies continued to be used correctly throughout the choice trials, after 6 of the trials, participants were asked to briefly

describe the strategy that they had selected and how they had used it. Following the main part of the study, participants reported their age and nationality and were asked whether they were suspicious at any point that the confederate was not another participant.<sup>2</sup> Participants were then fully debriefed, thanked, and remunerated for their time. The study took approximately 45 minutes to complete and was approved by the Research Ethics Committee in the Department of Psychology at the University of Sheffield (as were all subsequent studies).

### Results

A 2 within (intensity: low vs. high) x 2 within (nature of regulation: intrapersonal vs. interpersonal) x 2 between (order of regulation sections: intrapersonal first vs. interpersonal first) ANOVA was conducted on the frequency with which reappraisal was selected to regulate emotions in response to images (see Figure 2). In addition to the main effects of the nature of regulation,  $F(1, 33) = 4.89, p = .034, \eta_p^2 = .13$ , and intensity,  $F(1, 33) = 146.71, p < .001, \eta_p^2 = .82$ , there was a significant two-way interaction between the nature of regulation and intensity,  $F(1, 33) = 11.03, p = .002, \eta_p^2 = .25$ , which, in turn, was qualified by a significant three-way interaction between the order of the regulation sections, the nature of regulation, and intensity,  $F(1, 33) = 10.07, p = .003, \eta_p^2 = .23$ . Bonferroni-corrected follow-up analyses indicated that there was a significant two-way interaction between the nature of regulation and intensity for participants who completed interpersonal regulation section first,  $F(1, 15) = 21.59, p < .001, \eta_p^2 = .59$ , but not for those who completed the intrapersonal regulation section first,  $F(1, 18) = .011, p = .918, \eta_p^2 = .001$ .

Follow-up tests of this two-way interaction revealed that intensity had a significant main effect on ERC in both intrapersonal regulation contexts,  $F(1, 15) = 128.88, p < .001, \eta_p^2 = .90$  (mean difference = 9.06, 95% CI [7.36, 10.76],  $p < .001$ ), and interpersonal regulation

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<sup>2</sup> Three participants reported being suspicious that the confederate was not another participant. Removing these participants from the analyses did not affect the findings and so all participants were retained in the analyses.

contexts,  $F(1, 15) = 28.14, p < .001, \eta_p^2 = .65$  (mean difference = 4.44, 95% CI [2.66, 6.22],  $p < .001$ ). Participants who helped the other person to control their emotions first chose reappraisal more frequently over distraction to regulate both their own and others' emotions in response to low, relative to high-intensity images, although this difference was considerably larger when controlling their own emotions than when helping the other person to control their emotions.

The nature of regulation had a significant effect on ERC in response to the high-intensity images,  $F(1, 15) = 24.27, p < .001, \eta_p^2 = .62$  (mean difference = 2.88, 95% CI [1.63, 4.12],  $p < .001$ ), such that participants who helped the other person to control their emotions first chose reappraisal (rather than distraction) more frequently when helping the other person to control their emotions in response to high-intensity images than when they were regulating their own emotions to similarly intense images. The nature of regulation had a smaller (although still statistically significant) effect on ERC in response to the low-intensity images,  $F(1, 15) = 6.39, p = .023, \eta_p^2 = .30$  (mean difference = -1.75, 95% CI [-3.23, -.28],  $p = .023$ ), such that participants who helped the other person to control their emotions first chose reappraisal more frequently (rather than distraction) to regulate their own emotional responses to low-intensity images than when choosing how to help others to regulate their emotional responses to low-intensity images.

### Discussion

Study 1a examined whether the intensity of emotion influences how people choose to help others to control their emotions (i.e., interpersonal ERC), much as it has been shown to do when people choose to regulate their own emotions (i.e., intrapersonal ERC). Overall, the findings suggest that the intensity of emotion significantly influences ERC when people are regulating both their own and another person's emotions. Specifically, people tended to choose reappraisal over distraction more frequently for low-intensity images and distraction

over reappraisal more frequently for high-intensity images when regulating both their own and another person's emotions. These findings replicate those previously found in an intrapersonal context (e.g., Sheppes et al., 2011, 2014) and suggest that intensity also influences ERC in interpersonal contexts. However, Study 1a also found an important difference in the effect of intensity on ERC in intrapersonal and interpersonal contexts. Participants chose reappraisal more frequently to regulate their own emotions in response to low-intensity images than when helping someone else to regulate their emotions, but chose reappraisal more frequently when helping someone else to regulate their emotions in response to high-intensity images than when regulating their own emotions. That being said, this regulatory choice pattern was only found for those who helped another person to control their emotions first, and not for those who controlled their own emotions first.

### **Study 1b**

As Study 1a was the first to our knowledge to (i) investigate whether emotional intensity influences how people choose to regulate both their own and another person's emotions (ii) make comparisons between the active regulatory choices made in these contexts, and (iii) to find that the order of regulation influenced the effect of intensity on ERC, we wanted to conduct a second study using a similar procedure to examine whether the findings of Study 1a could be replicated.<sup>3</sup>

### **Method**

#### ***Participants***

We conducted a power analysis using GLIMMPSE V3 (Kreidler et al., 2013) to determine the approximate sample size required for Study 1b based on the means from Study

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<sup>3</sup> Study 1b also examined whether individual differences in empathy, self-monitoring, and social desirability were associated with the difference in the effect of intensity between intrapersonal and interpersonal contexts identified in Study 1a. However, none of the individual differences predicted the strength of the interaction between intensity and regulation and so are not reported further in this manuscript. The analyses are reported on OSF (<https://osf.io/g5bs8/>).

1a for the interaction between order, intensity, and nature of regulation on ERC. Based on an  $\alpha = .05$  and power = .80, the projected sample size required was 14. Fifty female participants completed the study ( $M_{age} = 20.44$ ,  $SD = 4.63$ ). Participants were recruited via an undergraduate research participation scheme ( $N = 38$ ) and an email to a University-wide list of volunteers ( $N = 12$ ). Psychology students received 4-course credits for their participation, and those from the volunteer list were remunerated with a £5 voucher.

### ***Materials and Procedure***

We used the same emotion regulation strategies and ratings of negative feelings as in Study 1a. A small number of the images used in the interpersonal section were changed so that the content more closely matched the content of the images in the intrapersonal section. As before, based on the normative ratings published by Lang et al. (2008), the images were categorised as either low-intensity (mean arousal = 4.74,  $SD = 0.75$ , mean valence = 3.48,  $SD = 0.35$ ) or high-intensity (mean arousal = 6.08,  $SD = 0.96$ , mean valence = 2.04,  $SD = 0.35$ ). Levels of arousal ( $t(58) = 6.03$ ,  $p < .001$ ,  $d = 1.56$ ) and valence ( $t(58) = 15.91$ ,  $p < .001$ ,  $d = 4.11$ ) differed significantly between the low and high-intensity images, but there were no significant differences between the ratings of valence ( $t(29) = 1.14$ ,  $p = .266$ ,  $d = 0.13$ ) or arousal ( $t(29) = 0.47$ ,  $p = .643$ ,  $d = 0.09$ ) between the sets of images used in the intrapersonal and interpersonal regulation sections. The procedure for the ERC task was the same as in Study 1a and the study took approximately 45 minutes to complete.

### **Results**

As in Study 1a, a 2 within (intensity: low vs. high) x 2 within (nature of regulation: intrapersonal vs. interpersonal) x 2 between (order of regulation sections: intrapersonal first vs. interpersonal first) ANOVA was conducted on the frequency with which participants chose reappraisal to control emotions (see Figure 3). The main effects of the nature of regulation,  $F(1, 48) = 4.94$ ,  $p = .031$ ,  $\eta_p^2 = .09$ , and intensity,  $F(1, 48) = 120.61$ ,  $p < .001$ ,  $\eta_p^2$

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

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

Additionally, the nature of regulation had a significant effect on ERC in response to the high-intensity images,  $F(1, 25) = 20.46, p < .001, \eta_p^2 = .45$  (mean difference = -2.15, 95% CI [-3.14, -1.17],  $p < .001$ ), such that participants who helped the other person to control their emotions first chose to regulate the other person's emotions using reappraisal more frequently (rather than distraction) in response to high-intensity images than when choosing how to regulate their own emotions to similarly intense images. There was also a smaller (although still statistically significant) effect of nature of regulation on ERC in response to the low-intensity images,  $F(1, 25) = 9.21, p = .006, \eta_p^2 = .27$  (mean difference = 1.62, 95% CI [0.52, 2.71],  $p = .006$ ) as participants who helped the other person to control their emotions first chose reappraisal more frequently (compared to distraction) to regulate their

own emotional responses to low-intensity images than when choosing how to help others to regulate their emotional responses to low-intensity images.

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

### Discussion

The findings of Study 1b replicated those of Study 1a in showing that the intensity of the emotional situation influences ERC when people are choosing how to regulate both their own and another person's emotions, with reappraisal being selected over distraction more frequently for low-intensity images and distraction being selected over reappraisal more frequently for high-intensity images when regulating both their own and another person's emotions. As in Study 1a, Study 1b also found that people choose reappraisal more frequently to regulate their own emotions in response to low-intensity images than when helping someone else to regulate their emotions, but chose reappraisal more frequently to help someone else to reappraise in response to high-intensity images than they are when regulating their own emotions. Furthermore, as in Study 1a, this was especially (although not

only) likely to be the case if participants chose how to regulate the other person's emotions before they chose how to regulate their own.

## **Study 2**

Study 2 examined a possible explanation for the increased choice of reappraisal for regulating intense emotions when helping another person to control their emotions; namely, whether people underestimate how negative the other person finds the images. Specifically, it seemed possible that the participants in Studies 1a and 1b chose reappraisal more frequently when helping someone else in intense situations than for themselves as they did not believe that others would find these emotional images as intense – in other words, they underestimated the other person's emotional response. If so, this might also explain why the difference between the regulation contexts was not found (Study 1a) or smaller (Study 1b) when participants chose how to regulate their own emotions first – because thinking about their responses to the images reminded them of how the other person was likely to feel and prevented any underestimation of their response.

To examine this hypothesis, we asked participants to rate (i) how negative they found the images used in Study 1a, and (ii) how negative they think that others would find the images. One half of the participants rated how negative they would find the images first, the other half of the participants rated how negative they believed that the other person would find the images first. It was predicted that people would provide lower ratings for the other participants compared to their own ratings and that this would be especially (or only) likely when they rated how others would be likely to feel first.

## **Method**

### ***Participants***

As in Study 1b, we conducted a power analysis using GLIMMPSE V3 (Kreidler et al., 2013) to determine the approximate sample size required based on the means from Study 1a

for the interaction between order, intensity and nature of regulation on ERC. Based on an alpha of = .05 and power = .80, the projected sample size required was 14. One-hundred and twenty-five participants completed an online questionnaire. Participants were recruited via an undergraduate research participation scheme ( $N = 29$ ) and an email to a University-wide list of volunteers ( $N = 96$ ). Psychology students received 1-course credit for their participation.

### ***Materials***

*Emotional Stimuli.* The same images were used as in Study 1a.

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

### ***Procedure***

Participants completed an online questionnaire hosted by Qualtrics and the ratings were separated into two blocks: intrapersonal and interpersonal. At the beginning of each block, participants completed 4 practice trials, which were followed by 30 test trials. In each trial, the participants were presented with an image for 5 seconds followed by the rating scale. The order in which the intrapersonal and interpersonal blocks were completed was counterbalanced. Following the ratings, participants were asked questions regarding their age and nationality and asked if they had a phobia of anything that they had seen in the images

and, if so, what their phobia was.<sup>4</sup> Participants were then debriefed and told why they would not be required to provide a photograph of themselves. The study took approximately 15 minutes to complete.

### Results

A 2 within (intensity: low vs. high) by 2 within (target: self vs. other) x 2 between (order of regulation sections: self first vs. other first) ANOVA was conducted with the ratings of emotion as the dependent variable (see Figure 4). The three-way interaction between order of regulation sections, target, and intensity, was not significant ( $F(1, 123) = 0.89, p = .348, \eta_p^2 = .01$ ), but there was a significant main effect of target ( $F(1, 123) = 48.69, p < .001, \eta_p^2 = .28$ ) and intensity ( $F(1, 123) = 1549.24, p < .001, \eta_p^2 = .93$ ), which was qualified by a significant interaction between target and intensity ( $F(1, 123) = 47.79, p < .001, \eta_p^2 = .28$ ).

Bonferroni-corrected simple main effects revealed that intensity had a significant effect on the participant's ratings of how negative they felt, ( $F(1, 124) = 1036.92, p < .001, \eta_p^2 = .89$ ) and how negative they thought that the other person would feel ( $F(1, 124) = 1101.839, p < .001, \eta_p^2 = .90$ ). In each case, participants provided significantly higher ratings for both themselves and the other person in response to the high-intensity images compared to the low-intensity images. Additionally, there was a significant effect of target for both the low-intensity images ( $F(1, 124) = 129.82, p < .001, \eta_p^2 = .51$ ) and the high-intensity images ( $F(1, 124) = 3.98, p = .048, \eta_p^2 = .03$ ). Participants' ratings indicated that they thought that the other person would feel more negative in response to both the low and high-intensity images than they would and that this difference was especially pronounced for the low-intensity images.

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<sup>4</sup> We ran the analyses excluding the participants who reported a phobia associated with something presented in one or more of the images ( $N = 30$ ). The findings were unchanged and so all participants were retained for analysis.

## Discussion

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

## Study 3

Study 3 investigated another possible explanation for the difference in the effect of intensity on how people choose to regulate their own versus another person's emotions – specifically whether the two contexts differ in (i) how effortful people believe it will be to implement the different strategies and (ii) how effective they believe that the different strategies will be at regulating emotions. This idea is based on motivational theories which suggest that decisions about exerting control and/or engaging with goal-directed behaviours are made by weighing up the costs and benefits (as in the Expected Value of Control model; Shenhav et al., 2013, 2017) or driving and restraining forces (as in Cognitive Energetics Theory; Kruglanski et al., 2012) of the action. For example, the decision to choose a particular regulation strategy might involve considering whether the likely effectiveness of implementing the strategy is worth the effort associated with doing so. As research suggests that reappraisal is more effortful and cognitively demanding than distraction (e.g., Strauss et al., 2016), we examined whether the difference in the effect of intensity on intrapersonal and interpersonal ERC might occur because people expect reappraisal to be either less effortful

and/or more effective (i) when regulating their own emotions in response to low-intensity images and/or (ii) when regulating someone else's emotions in response to high-intensity images.

The idea that people might discount – or forget – how effortful reappraisal is likely to be for other people might also explain why the difference in the effect of intensity on ERC between interpersonal and intrapersonal contexts was stronger (Study 1b) or only found (Study 1a) when participants chose how to regulate another person's emotion before deciding how to regulate their own. Specifically, it is possible that regulating own emotions reminds people of the effortful nature of reappraisal and so they choose to regulate other's emotions in much the same way as they choose to regulate their own.

## Method

### *Participants*

No previous research has investigated the effects of context (i.e., interpersonal vs. intrapersonal) and emotional intensity (i.e., high vs. low) on the anticipated effort and effectiveness of regulation strategies. We therefore conducted a power analysis using GLIMMPSE V3 (Kreidler et al., 2013) to determine the approximate sample size required. Based on mean differences from earlier studies, we estimated means for the interaction between order, intensity, regulation target, and regulation strategy on anticipated effort and effectiveness. The projected sample size required was 114, with  $\alpha = .05$  and power = .80.

One-hundred and thirty-nine female students completed the study. After those with incomplete responses were removed, the final sample consisted of 93 participants ( $M_{age} = 19.48$ ,  $SD = 3.02$ ); 82 (76%) were level one Psychology students who received course credit; the remaining 11 participants were recruited via an email to a list of student volunteers and offered the opportunity to enter a prize draw for participating.

### **Materials**

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

*Emotion Regulation Strategies.* Distraction and reappraisal were described to participants in the same way as in Studies 1a and 1b.

*Ratings.* After each image, participants were asked to rate how effortful and effective they thought that using either distraction or reappraisal would be in controlling either (i) their own emotions, or (ii) another person's emotions on a 7-point scale (1 = not effortful/effective, 7 = very effortful/effective).<sup>5</sup>

### **Procedure**

Participants followed a link to an online questionnaire hosted by Qualtrics. Participants first read about the two regulatory strategies (distraction and reappraisal) and then practiced using these strategies in response to 6 images (3 for each strategy). Following this, they completed a series of test trials which consisted of a brief (1 second) presentation of one of the images, followed by a question prompting participants to rate how effortful or effective they thought that using one of the strategies would be when (i) controlling their own

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<sup>5</sup> We also included an additional block to examine how effortful and effective people thought it would be for someone else to control their emotions. However, for the sake of parsimony and as the findings regarding the additional block do not change the conclusions drawn, they are not reported here. For further information, please see supplementary materials.

emotions (i.e., intrapersonal regulation) and (ii) helping someone else to control their emotions (i.e., interpersonal regulation). These judgements were separated into three blocks, which were presented in a random order. Twelve images were presented in each block (6 of each intensity) and the study took approximately 35 minutes to complete.

## Results

### *Ratings of Anticipated Effort*

A 2 within (intensity: low vs. high) x 2 within (regulation strategy: reappraisal vs. distraction) x 2 within (nature of regulation: self vs. self helps other) x 2 between (order of regulation section: intrapersonal first vs. interpersonal first) ANOVA was conducted with ratings of effort as the dependent variable (see Figure 5). There were significant main effects of intensity,  $F(1, 91) = 237.46, p < .001, \eta_p^2 = .72$  (participants expected it to be more effortful to regulate their responses to high, relative to low-intensity images,  $M_s = 5.26$  and  $3.42$ , respectively,  $SD_s = 0.81$  and  $0.89$ ) and regulation strategy,  $F(1, 91) = 6.97, p = 0.10, \eta_p^2 = .07$  (participants expected using reappraisal to be more effortful than using distraction,  $M_s = 4.41$  and  $4.27$ , respectively,  $SD_s = 0.74$  and  $0.73$ ). These main effects were qualified by a significant two-way interaction between intensity and regulation strategy,  $F(1, 91) = 12.13, p < .001, \eta_p^2 = .12$ , and a significant three-way interaction between intensity, nature of regulation, and order of regulation,  $F(1, 91) = 6.00, p = .016, \eta_p^2 = .06$ .

Bonferroni-corrected follow-up tests highlighted a statistically significant two-way interaction between intensity and nature of regulation on ratings of effort for those who completed the interpersonal ratings first,  $F(1, 69) = 20.87, p < .001, \eta_p^2 = .23$ , but not for those who completed the intrapersonal ratings first,  $F(1, 22) = 0.10, p = .755, \eta_p^2 = .01$ . Follow-up analyses of this two-way interaction among participants who completed the interpersonal ratings first identified a significant main effect of the nature of regulation on effort both for the low-intensity images,  $F(1, 69) = 75.81, p < .001, \eta_p^2 = .52$ , and the high-

intensity images,  $F(1, 69) = 14.44, p < .001, \eta_p^2 = .17$ . However, the direction of this effect differed between the low- and high-intensity images. Participants thought that using the strategies to regulate their own responses to low-intensity images would be significantly *less* effortful for themselves compared to using them to help someone else (mean difference = -0.68,  $p < .001, 95\% \text{ CI} [-0.84, -0.52]$ ). In contrast, these participants thought that using the strategies to regulate their own responses to high-intensity images would be significantly more effortful than using them to use them to help another person to regulate their emotions (mean difference = 0.39,  $p = .001, 95\% \text{ CI} [0.19, 0.59]$ ).

In turn, although participants consistently rated regulating responses to high-intensity images as more effortful for than regulating responses to low-intensity images, intensity had a larger effect on the ratings of effort when participants were thinking about regulating their own emotions,  $F(1, 69) = 337.98, p < .001, \eta_p^2 = .83$  (mean difference = -2.65,  $p < .001, 95\% \text{ CI} [-2.94, -2.36]$ ), than when thinking about helping another person to regulate their own emotions,  $F(1, 69) = 141.67, p < .001, \eta_p^2 = .67$  (mean difference = -1.58,  $p < .001, 95\% \text{ CI} [-1.85, -1.32]$ )

### ***Ratings of Anticipated Effectiveness***

A similar 2 within (intensity: low vs. high) x 2 within (regulation strategy: reappraisal vs. distraction) x 2 within (nature of regulation: self vs. self helps other) x 2 between (order of regulation section: intrapersonal first vs. interpersonal first) ANOVA was conducted with the ratings of the effectiveness as the dependent variable (see Figure 6). There were significant main effects of intensity,  $F(1, 91) = 237.46, p < .001, \eta_p^2 = .72$  (participants expected regulation to be more effective in response to low-intensity images than high-intensity images,  $M_s = 4.82$  and  $3.26$ , respectively,  $SD_s = 0.87$  and  $0.92$ ), regulation strategy,  $F(1, 91) = 6.97, p = .010, \eta_p^2 = .07$  (participants expected distraction to be more effective than reappraisal,  $M_s = 4.09$  and  $3.99$ , respectively,  $SD_s = .84$  and  $.84$ ). However, as with the

ratings of effort, these main effects were qualified by a significant two-way interaction between intensity and regulation strategy,  $F(1, 91) = 12.13, p = .001, \eta_p^2 = .12$ , that, in turn, was qualified by a significant three-way interaction between intensity, regulation target, and order of regulation,  $F(1, 91) = 6.00, p = .016, \eta_p^2 = .06$ .

Follow-up analyses highlighted a statistically significant two-way interaction between intensity and regulation target on ratings of the likely effectiveness of strategies for those who completed the interpersonal ratings first,  $F(1, 69) = 20.87, p < .001, \eta_p^2 = .23$ , but not for those who completed the intrapersonal ratings first,  $F(1, 22) = 0.10, p = .755, \eta_p^2 = .01$ . Simple main effects focusing on the ratings for participants who completed the interpersonal ratings first identified a significant main effect of the nature of regulation for the high-intensity images  $F(1, 69) = 17.31, p < .001, \eta_p^2 = .20$ , such that participants thought that regulation would be significantly less effective when regulating their own response to high-intensity images compared to helping someone else (mean difference =  $-0.52, p < .001, 95\%$  CI  $[-0.76, -0.27]$ ). There was no significant difference between how effective participants thought it would be to control their own emotions or to help someone else to control their emotions in response to low-intensity images. Simple main effects also revealed a significant main effect of intensity on ratings of effectiveness when thinking about regulating own emotions,  $F(1, 69) = 152.47, p < .001, \eta_p^2 = .69$  (mean difference =  $1.84, p < .001, 95\%$  CI  $[1.54, 2.14]$ ) and when thinking about helping another person to regulate their own emotions,  $F(1, 69) = 151.98, p < .001, \eta_p^2 = .69$  (mean difference =  $1.41, p < .001, 95\%$  CI  $[1.19, 1.64]$ ).

## Discussion

Study 3 examined whether the extent to which people consider the effort associated with implementing emotion regulation strategies and how effective they are likely to be might explain the difference in the effect of intensity on how people choose to control their own compared to another person's emotions. In line with our predictions, participants who

completed the ratings for another person first thought that regulation would be less effortful for themselves in response to low-intensity images than when helping someone else to regulate but more effortful for themselves in response to high-intensity images than when helping someone else to regulate. Taken together with the main effect of regulation strategy (which highlighted that participants expected reappraisal to be more effortful to use than distraction), these findings suggest that differences in the anticipated effort associated with regulating emotions may contribute to the differences between ERC in intrapersonal and interpersonal contexts. Furthermore, as these differences were only found among participants who completed the interpersonal ratings first, it is possible that participants who completed the ratings for themselves first (i.e., intrapersonal ratings) realised how much effort using reappraisal would require, as predicted. These findings may help to understand why Studies 1a and 1b did not observe a difference in the effect of intensity on ERC in intrapersonal and interpersonal regulation contexts when participants chose how to control their own emotions first.

Study 3 also asked participants how effective they thought that the strategies would be in helping them to regulate their emotional responses or those of the other person. Based on Shenhav et al.'s (2013, 2017) ideas about the expected value of control, we predicted that people might choose reappraisal more frequently in (i) intrapersonal contexts in response to low-intensity images, and (ii) interpersonal contexts in response to high-intensity images because they anticipate that regulation will be more effective in these contexts. In support of this idea, participants who completed the interpersonal section first thought that regulation would be less effective for controlling their own emotions in response to high-intensity images than when helping another person to control their emotions or for another person controlling their own emotions. These findings suggest that differences in expected

effectiveness may also have contributed to the increased choice of reappraisal over distraction in response to high-intensity images in interpersonal contexts.

### **General Discussion**

The present research investigated whether the emotional intensity of a situation influences how people choose to help others to control their emotions (i.e., interpersonal ERC) and whether this effect is similar or different to how evidence suggests that intensity influences how people choose to regulate their own emotions (i.e., intrapersonal ERC; Sheppes et al., 2011). The findings of Studies 1a and 1b replicated previous findings regarding intrapersonal ERC, with people more frequently choosing to reappraise their emotions in response to low-intensity images, but choosing to distract themselves more frequently in response to high-intensity images. A similar effect of intensity on choice was found in interpersonal regulation contexts (i.e., people typically chose to help others to reappraise their responses to low-intensity images, but chose distraction in response to high-intensity images). However, it was also clear that the effect of intensity on ERC differed between interpersonal and intrapersonal contexts, such that people chose reappraisal more frequently in response to (i) low-intensity images when controlling their own emotions compared to when helping another person, and (ii) high-intensity images when helping someone else to control their emotions than when controlling their own emotions in the same context. This difference was stronger (or only found) when participants helped the other person to control their emotions first (i.e., interpersonal regulation).

Having established that the effect of intensity on ERC differs between intrapersonal and interpersonal contexts, we explored possible explanations for the difference. Sheppes and colleagues (2011) suggest that people choose reappraisal over distraction in less intense emotional situations because, unlike in more intense situations, they can reappraise the situation depicted in the images before being overwhelmed by the full emotional response. It,

therefore, seemed possible that people choose reappraisal more frequently for others than for themselves in high-intensity situations because they do not believe that these are likely to be intense situations for the other person – in other words, they underestimate their emotional response. The findings of Study 2, however, did not support this idea, as people typically thought that another person would find the images more (not less) intense than them.

Study 3 examined an alternative explanation based on motivational accounts of when people exert control (e.g., Kruglanski et al., 2012; Shenhav et al., 2013, 2017). The findings pointed to differences in how effortful and effective people believe that emotion regulation will be for themselves (i.e., in intrapersonal contexts) versus when helping others (i.e., in interpersonal contexts). Specifically, we found that intensity had a stronger influence on (i) how effortful people thought that regulating their own emotions will be than how effortful they thought that regulating other people's emotions will be and (ii) how effective people thought that regulation would be when helping someone else to regulate in response to high-intensity images than when regulating their own emotions. We conclude that differences between the effects of intensity on how people choose to control their own emotions compared to how people choose to help another person to control their emotions (i.e., intrapersonal vs. interpersonal ERC) may arise from differences in the anticipated effort and/or the anticipated effectiveness of implementing the different regulatory options.

These findings suggest that motivational frameworks, such as Cognitive Energetics Theory (CET; Kruglanski et al., 2012) could help to explain both the differences in the effect of intensity observed between intrapersonal and interpersonal ERC, and why these differences were smaller, or removed, when people regulated their own emotions first. According to CET, the likelihood that people will engage in a cognitive process is a function of both driving and restraining forces. Driving forces include the importance of the goal (including expectations about whether this will be attained) and an individual's mental

resources. These combine to determine the overall magnitude of the driving force.

Restraining forces include the demands of the task at hand, competing goals, and the desire to conserve resources (Muraven et al., 2006). Milyavsky and colleagues (2019) applied this framework to understand whether people choose to regulate their emotional responses to images using reappraisal or simply to watch the images instead. They suggested that the intensity of an emotional situation can simultaneously act as both a driving force and a restraining force and that people are less likely to choose reappraisal in response to high-intensity images because, despite being motivated to regulate in such contexts, which serves as a driving force, the difficulty associated with reappraisal is also high, which serves as a restraining force. As there are both driving and restraining forces, they essentially cancel each other out resulting in reappraisal not being selected.

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

Finally, CET may also help to explain the finding that the differences between regulatory choices between interpersonal and intrapersonal regulation contexts were more strongly (or only) found for those who completed the interpersonal section first. Specifically, it is possible that regulating own emotions (i.e., completing the intrapersonal regulation section first) anchored participants' judgements regarding the driving and restraining forces in this mode of regulation (e.g., participants were reminded of how effortful and effective the strategies were likely to be), resulting in the same regulatory choices being made when helping someone else to control their emotions as when choosing how to control their own emotions. In contrast, when participants helped the other person to control their emotions first (i.e., completed the interpersonal regulation section first), they may have discounted or forgotten how effortful and/or effective strategies are, with the consequence that their decisions about how to regulate the other person's emotional responses reflected how effortful and effective they believed that the strategies would be *in interpersonal contexts*, without necessarily anchoring these judgements in their experiences of regulating their own emotions. Taken together, motivational accounts like CET not only help to understand how people choose to regulate their own emotions (Milyavsky et al., 2019), but also those of other people.

### **Limitations**

The present findings should be interpreted in the context of several limitations. One limitation concerns the use of a forced-choice paradigm in which the participants only had the choice between two regulatory strategies in response to pictorial stimuli. Despite the two strategies that we examined (i.e., reappraisal and distraction) being the focus of previous research on emotion regulation (for a review, see Webb, Miles, & Sheeran, 2012) and frequently used in daily life (Brans et al., 2013; English et al., 2017), people will likely have a greater range of strategies to choose from when making regulatory choices in real-life

emotional situations (see Parkinson & Totterdell, 1999). Subsequent research might therefore consider offering a greater range of strategies for the participants to choose from and look at ERC in response to alternative forms of stimuli (e.g., videos) or within a more natural setting.

Another limitation is the relatively small sample sizes across the studies, especially as our hypotheses primarily concerned three-way interactions and one of the studies (Study 3) was under-powered as determined by power analyses. Although the effects were consistent across the studies, larger samples would increase confidence in the findings, especially with respect to whether they might be generalised. With this in mind, it is also worth noting that all of the studies recruited samples of university-aged participants who were all female. As both gender and age differences are frequently found in research on emotion regulation (e.g., Nolen-Hoeksema & Aldao, 2011), studies in the future might examine interpersonal ERC with different populations forming the dyadic interactions, such as between males, older individuals, and also those with different relationships (e.g., familial or romantic).

Third, it should be noted that the image sets were not counterbalanced across the intrapersonal and interpersonal conditions. However, the images were matched in terms of the valence and arousal of the emotions that they were likely to elicit (as indicated by the norms published by Lang et al., 2008), we sought to match the content of the images as far as possible, and each study used slightly different sets of images. A wealth of research has also been conducted looking at the effect of intensity on emotion regulation choice across various sets of images and the effect of intensity has been replicated across these studies (see Matthews et al., 2021, for a review). However, there could still be subtle differences between the image sets and counterbalancing the images used in the different blocks would have prevented any potential confound to this manipulation.

Fourth, despite providing preliminary evidence that the difference between the effect of intensity when controlling one's own emotions compared to when helping another person

to control their emotions might be due to differences in the anticipated effort and effectiveness associated with implementing the different strategies, we did not measure the regulation choices that people made and the expected effectiveness and effort associated with regulation strategies within the same study. Further research is therefore required to explicitly test whether beliefs about effort and efficacy predict choice. Similarly, while our findings seem consistent with a CET framework, the studies were not explicitly conducted within this framework and other factors that have not been considered here are likely to also contribute to the driving and restraining forces. For example, factors relating to the person doing the regulating, such as how empathetic they are or the extent to which they monitor how they appear to others (Snyder, 1974), might influence the driving and restraining forces associated with interpersonal ERC. Consequently, this might prove a fruitful area for future research.

Finally, the requirement to verbalise the chosen regulation strategy differed between the intrapersonal and interpersonal regulation conditions. Studies 1a and 1b recruited a confederate so that participants had the opportunity to actually implement the strategy that they had chosen and provide another person with verbal support. However, participants were not asked to verbalise their regulation strategies when regulating their own emotions (rather, we simply checked every few trials that they were using the chosen strategy as instructed). Rather than a limitation, however, we would argue that this difference is synonymous with the nature of these two contexts. For example, interpersonal emotion regulation outside the laboratory often occurs within live social interactions (Dixon-Gordon et al., 2015; Zaki & Williams, 2013). Likewise, people probably rarely verbalise their regulation strategies to themselves in real life. Therefore, if the requirement to verbalise versus not verbalise the chosen regulation strategy accounts for the different effect of intensity on ERC in the two contexts, then it likely reflects a valid explanation, rather than an unfortunate confound.

### **Future Directions**

In addition to addressing the limitations above, future research might also investigate questions raised by the current findings. For example, the order effects found in the present studies suggest that there may be reciprocal influences between intrapersonal and interpersonal emotion regulation that warrant further consideration. It is also worth noting that the paradigm used in Study 1a and 1b involved both the regulator and the target seeing the image at the same time, which may have resulted in the regulator trying to control their own response as well as attempting to help the other person to control their response. We believe that this situation is ecologically valid in the sense that interpersonal regulation often occurs in a situation where both the regulator and the target share the emotional experience (e.g., two friends watching a sad or scary film together). However, there are other interpersonal emotion regulation contexts in which people only have to attempt to control the emotions of another person (e.g., a friend describing their bad day at work). Therefore, future research might want to examine the choices made in interpersonal contexts in which the regulator is not directly involved to examine whether and how simultaneous emotion regulation influences how people choose to help others to control their emotions.

Furthermore, the two strategies that we examined have previously been found to be associated with a number of different costs, such as how difficult they are to implement (e.g., Josephson et al., 1996; Ortner et al., 2016). However, this research has largely focused on the costs incurred when regulating one's own emotions (i.e., in intrapersonal contexts). As intrapersonal and interpersonal emotion regulation are thought to be distinct forms of regulation, it is possible that there are different costs associated with the implementation of the strategies in interpersonal contexts. Additionally, due to the nature of interpersonal interactions involving two individuals, there may be other costs associated with the implementation of the strategies, such as more 'social' costs such as presentational concerns

(e.g., Snyder, 1974). Therefore, future research may aim to examine the costs associated with regulating emotions in interpersonal contexts.

Finally, Study 3 examined how different levels of the same processes (i.e., differences in the anticipated effort and effectiveness of the regulatory strategies between intrapersonal and interpersonal emotion regulation) might explain the difference in the effect of intensity on intrapersonal and interpersonal ERC identified in Studies 1a and 1b. However, it is possible that there are additional processes involved in interpersonal ERC that were not considered in the present research. For example, the increased psychological distance between the target and the regulator in interpersonal regulation contexts might result in different choices being made (e.g., Polman & Emich, 2011). Additionally, as regulation attempts in interpersonal contexts are often more overt and someone else is witness to them (namely, the target), they may raise self-monitoring or self-presentational concerns in the regulator (Snyder, 1974). Such concerns may also influence the strategies that people choose to help someone else to regulate their emotions, as they may wish to choose a strategy that portrays them in a favourable light (e.g., shows that they are taking the other person's emotions seriously). These additional processes might impact ERC directly (i.e., in addition to beliefs about the anticipated effort and effectiveness of regulatory strategies) or indirectly via, for example, beliefs regarding the anticipated effort and effectiveness of using different strategies in different regulation contexts. For instance, the increased psychological distance between the regulator and the target in interpersonal contexts might lead people to underestimate how effortful it would be to regulate the other person's emotions. In short, the present research should only be considered as a starting point in understanding the mechanisms which underlie how people choose to help others to regulate their emotions.

**Conclusion**

Previous research has highlighted that features of the emotional situation (e.g., intensity) influence the strategies that people choose to use to regulate their emotions. The present research contributes to and extends our current understanding of ERC by demonstrating that these same features of the situation also influence how people choose to help someone else to regulate their emotions, such that people choose reappraisal (over distraction) more frequently both when regulating their own and others' responses to intense, relative to less intense, emotional situations. However, the findings of the present research also suggest that the effect of intensity on ERC differs between intrapersonal and interpersonal contexts, especially when people choose how to regulate another person's emotions before choosing how to regulate their own. We propose that this difference might be due to differences in the anticipated effort and effectiveness of regulation between interpersonal and intrapersonal contexts; however further research is needed to directly examine the mechanisms underlying these choices.

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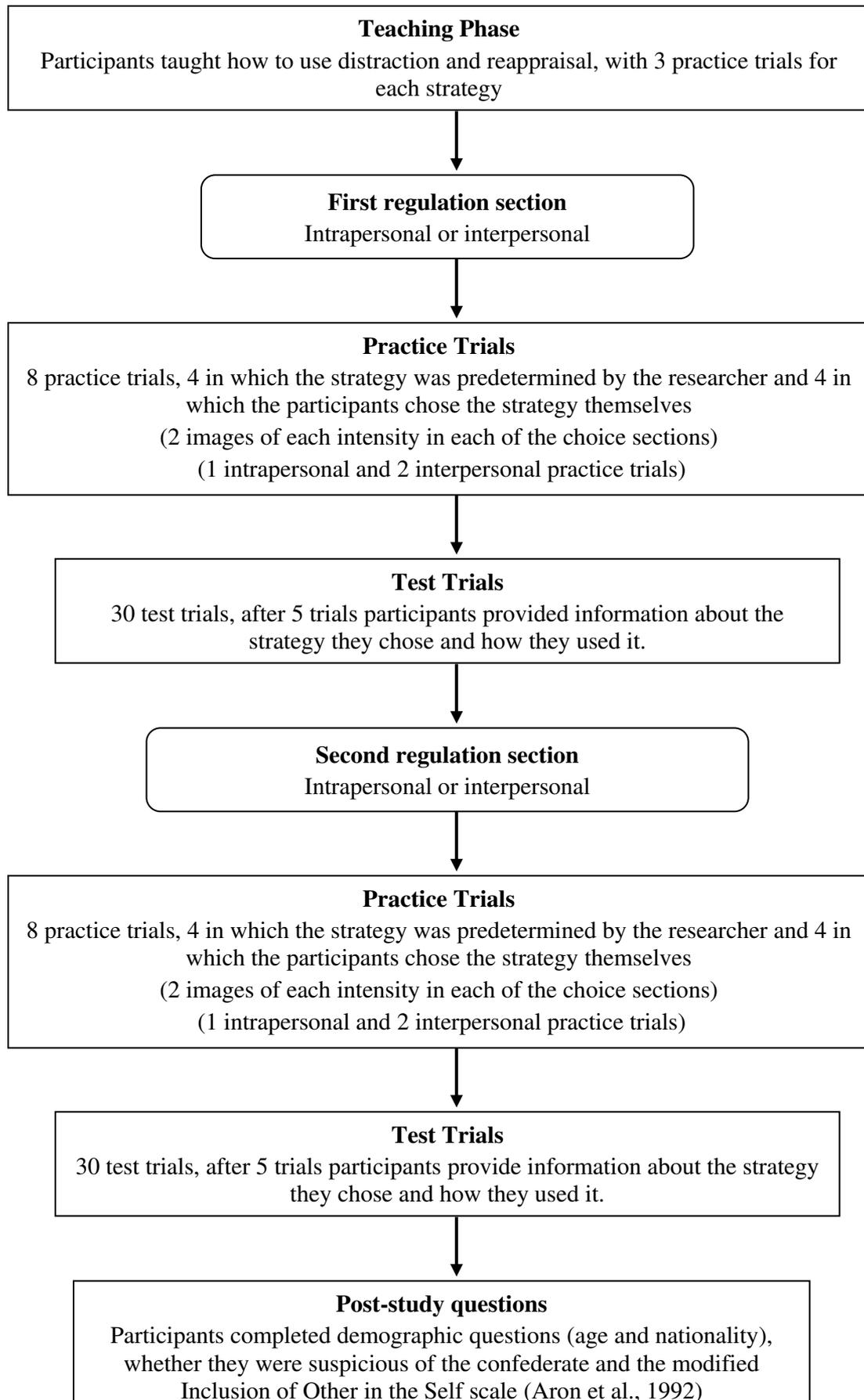
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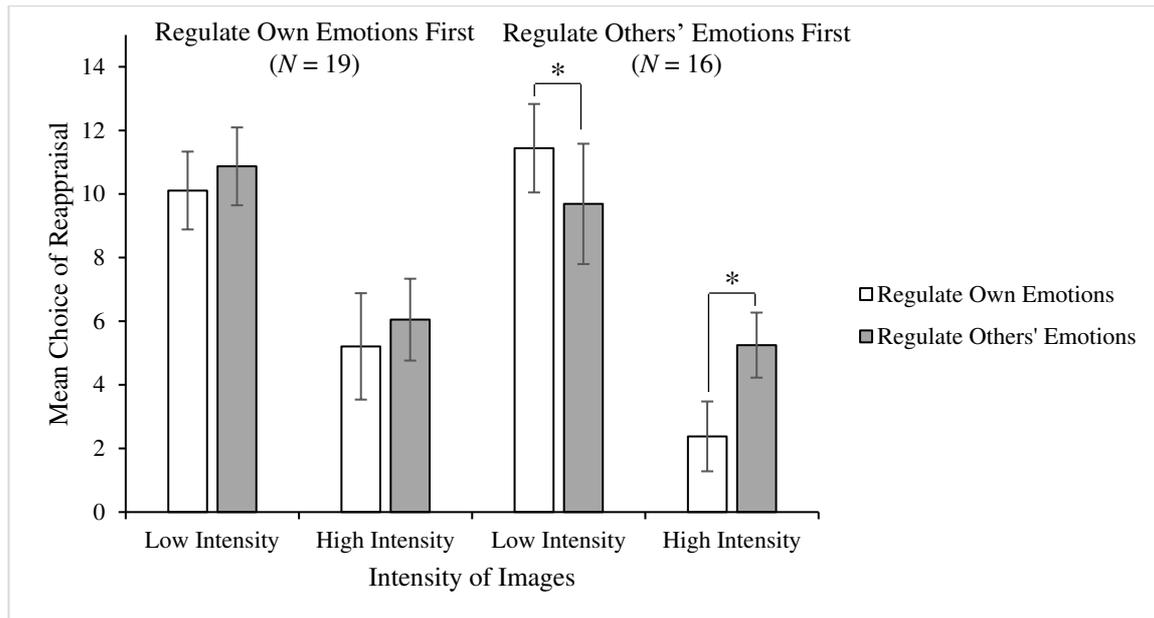
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**Figure 1***Procedure of Studies 1a and 1b*

**Figure 2**

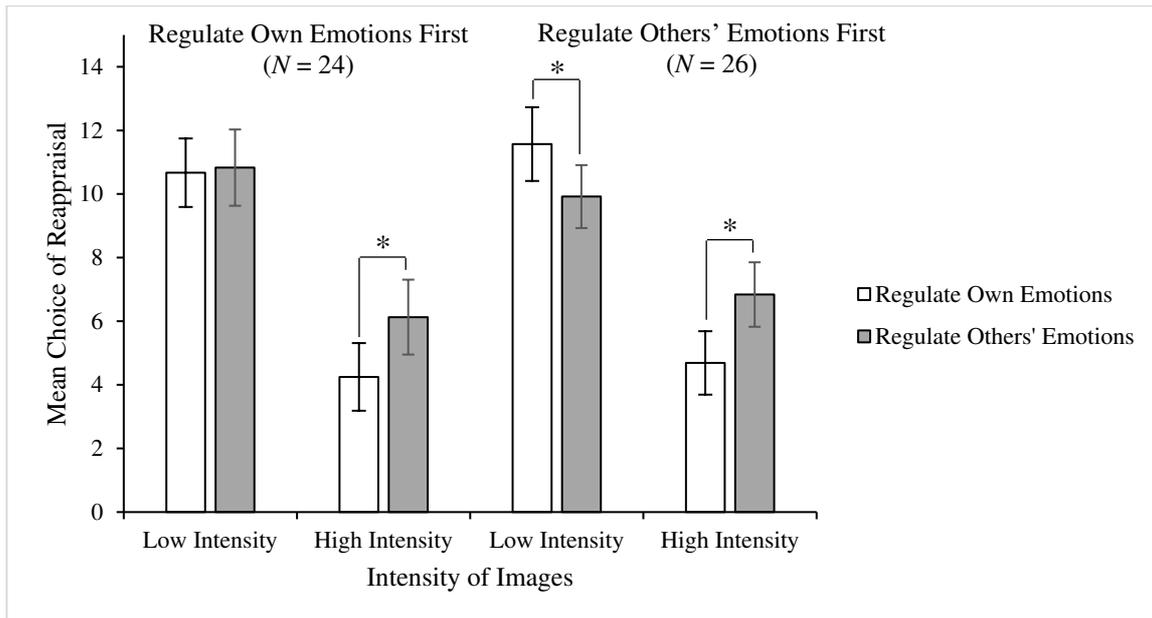
*Number of Trials on which Participants Chose Reappraisal (out of 15) by the Nature of Regulation, the Intensity of the Images, and the Order of Regulation Sections (Study 1a)*



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

**Figure 3**

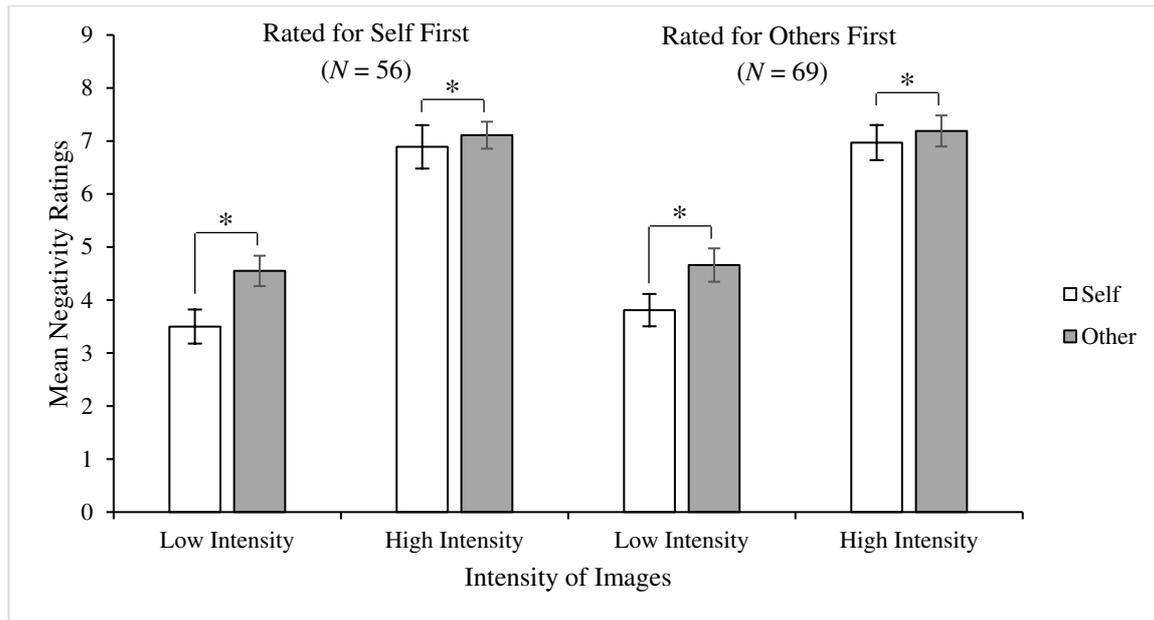
*Number of Trials on which Participants Chose Reappraisal (out of 15) by the Nature of Regulation, the Intensity of the Images, and the Order of Regulation Sections (Study 1b)*



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

**Figure 4**

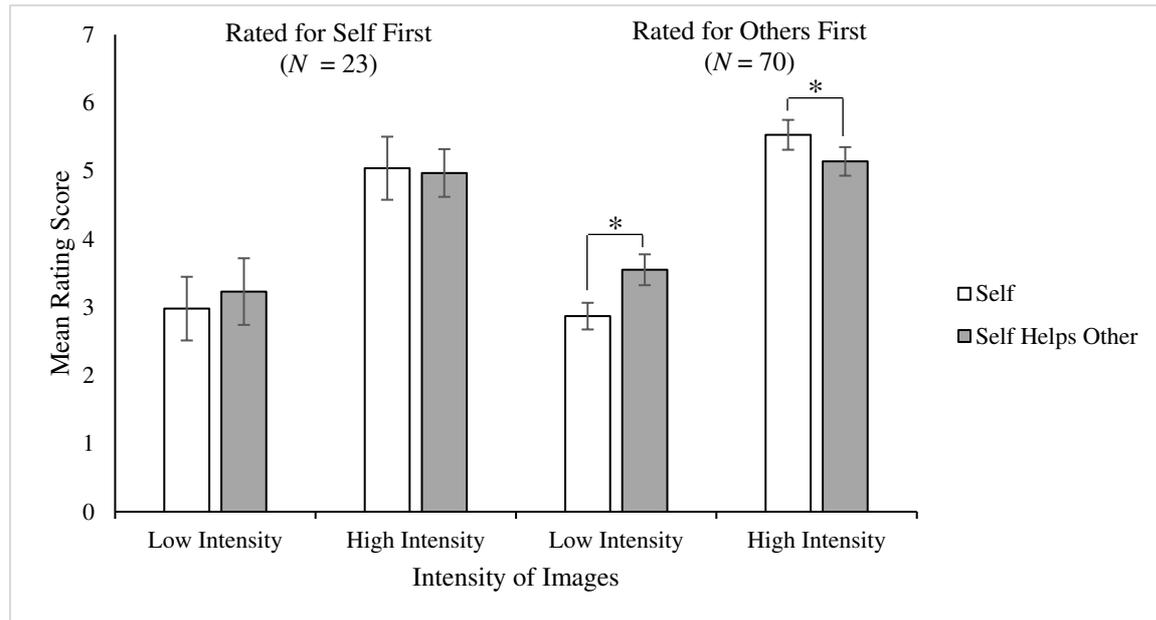
*Negativity Ratings by the Target of Regulation, the Intensity of the Images, and the Order of the Regulation Sections (Study 2)*



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

**Figure 5**

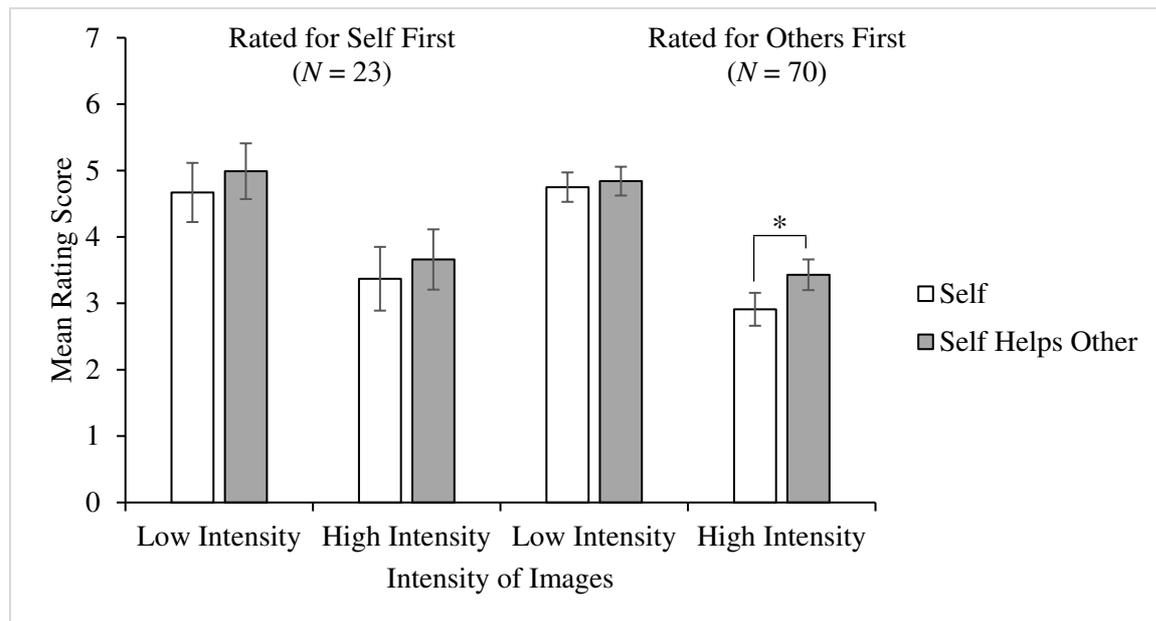
*Ratings of the Anticipated Effort Associated with Regulating by the Target of Regulation, the Intensity of the Images, and the Order of the Regulation Sections (Study 3)*



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

**Figure 6**

*Ratings of the Anticipated Effectiveness of Regulation by the Target of Regulation, the Intensity of the Images, and the Order of the Regulation Sections (Study 3)*



*Note.* Error bars show 95% confidence intervals. Asterisks denote statistically significant differences between how effective people thought it would be regulating their own vs another person’s emotions in the respective settings (e.g., when thinking about how effective it would be to regulate their emotions in response to intense images having already chosen how to regulate someone else’s emotions in a similar context).

**Supplementary Material – Study 2b**

One limitation of Study 2 was that it adopted a within-participants design in which participants rated both their own and the other person's emotional responses to the images. To check that doing both tasks did not influence the findings (e.g., because participants drew comparisons between their own and others' emotional reactions, leading them to focus on relative, rather than absolute, emotionality), Study 2b largely adopted the same procedure as in Study 2 however, participants were randomly allocated to rate either how negative they found a series of images or how negative they thought that another person would find the images (i.e., the target of regulation was manipulated between-participants).

**Method*****Participants***

One-hundred and twenty-eight female participants were recruited via an email to a list of staff at a large University in the UK ( $M_{age} = 40.47$ ,  $SD = 11.86$ ).

***Procedure and Materials***

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

**Results**

The assumption of normality and the assumption of equal variances were violated (as highlighted by significant Levene's score); therefore, a 2 within (intensity: low vs. high) x 2 between (target: self vs. other) robust mixed-design ANOVA was conducted using R Studio.

Based on trimmed means of 20%, there was a significant main effect for intensity:  $F(1, 71.93) = 435.14, p < .001$ , such that participants rated the high-intensity images as more negative than the low-intensity images, and a main effect for target:  $F(71.12) = 33.36, p < .001$ , such that participants rated the other person's emotional responses to both the low- and high-intensity images as more negative than their own responses (see Table B). However, the interaction between intensity and target was not statistically significant,  $F(1, 71.12) = 3.43, p = .068$ , suggesting that participants thought that the intensity of the images would have a similar effect on their own response as it would on the other person's response. These findings suggest that the pattern of results found in Study 2 are not due to the within-participants nature of the design and, taken together, support the idea that people typically over, rather than underestimate how negative someone else finds the situations.

Table B. *Negativity Ratings by the Intensity of the Image and Target of Regulation (Study 2b)*

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

**Supplementary Material – Analysis of the data from Study 3 including ratings from the block in which participants reflected on how effortful and effective they believe that others would find regulating (i.e., the ‘other helps self’ block).**

## Results

### *Ratings of Anticipated Effort*

A 2 within (intensity: low vs. high) x 2 within (regulation strategy: reappraisal vs. distraction) x 3 within (nature of regulation: self, self helps other, other helps self) x 2 between (order of regulation section: intrapersonal first, interpersonal first)<sup>6</sup> ANOVA was conducted with ratings of effort as the dependent variable (see Figure 5). There were significant main effects of intensity,  $F(1, 91) = 228.52, p < .001, \eta_p^2 = .72$  (participants expected it to be more effortful to regulate their responses to high, relative to low-intensity images,  $M_s = 5.22$  and  $3.44$ , respectively,  $SD_s = 0.80$  and  $0.87$ ) and regulation strategy,  $F(1, 91) = 8.68, p = .004, \eta_p^2 = .09$  (participants expected using reappraisal to be more effortful than using distraction,  $M_s = 4.40$  and  $4.26$ , respectively,  $SD_s = 0.70$  and  $0.72$ ), which were qualified by a significant two-way interaction between intensity and regulation strategy,  $F(1, 89) = 14.42, p < .001, \eta_p^2 = .14$ , and a significant three-way interaction between intensity, nature of regulation, and order of regulation,  $F(2, 182) = 3.39, p = .036, \eta_p^2 = .04$ .

Bonferroni-corrected follow-up tests highlighted a statistically significant two-way interaction between intensity and nature of regulation for those who completed the interpersonal ratings first,  $F(2, 138) = 12.54, p < .001, \eta_p^2 = .15$ , but not for those who completed the intrapersonal ratings first,  $F(2, 42) = 0.16, p = .850, \eta_p^2 = .01$ . Follow-up analyses of this two-way interaction among participants who completed the interpersonal ratings first identified a significant main effect of the nature of regulation on effort both for

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<sup>6</sup> For the purposes of looking at the effect of order, we collapsed the ‘self helps other’ and ‘other helps self’ blocks as both reflect interpersonal regulation.

the low-intensity images,  $F(2, 138) = 47.86, p < .001, \eta_p^2 = .41$ , and the high-intensity images,  $F(2, 138) = 9.43, p < .001, \eta_p^2 = .12$ . However, the direction of this effect differed between low- and high-intensity images. Participants thought that using the strategies to regulate their own responses to low-intensity images would be significantly *less* effortful for themselves compared to using them to help someone else (mean difference =  $-0.68, p < .001$ , 95% CI  $[-0.87, -0.49]$ ) or for another person to use them to control their own emotions (mean difference =  $-0.64, p < .001$ , 95% CI  $[-0.82, -0.45]$ ). In contrast, these participants thought that using the strategies to regulate their own responses to high-intensity images would be significantly *more* effortful than using them to use them to help another person to regulate their emotions (mean difference =  $0.39, p = .001$ , 95% CI  $[0.14, 0.64]$ ) or for another person to use the strategies to control their own emotions (mean difference =  $0.31, p = .003$ , 95% CI  $[0.09, 0.54]$ ). There was no significant difference in the ratings of effort between the two different types of interpersonal emotion regulation.

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

### ***Ratings of Anticipated Effectiveness***

A similar 2 within (intensity: low vs. high) x 2 within (regulation strategy: reappraisal vs. distraction) x 3 within (nature of regulation: self, self helps other, other helps self) x 2 between (order of regulation section: intrapersonal first, interpersonal first) ANOVA was

conducted with the ratings of the effectiveness as the dependent variable (see Figure 5). There were significant main effects of intensity,  $F(1, 91) = 178.49, p < .001, \eta_p^2 = .66$  (participants expected regulation to be more effective in response to low-intensity images than high-intensity images,  $M_s = 4.77$  and  $3.30$ , respectively,  $SD_s = 0.83$  and  $0.89$ ), regulation strategy,  $F(1, 91) = 4.16, p = .044, \eta_p^2 = .04$  (participants expected distraction to be more effective than reappraisal,  $M_s = 5.40$  and  $5.30$ , respectively,  $SD_s = 1.07$  and  $1.08$ ), and nature of regulation,  $F(2, 182) = 8.80, p < .001, \eta_p^2 = .09$  (participants thought that the strategies would be more effective for someone else regulating their own emotions than for regulating their own emotions and for them when helping someone else to regulate their emotions,  $M_s = 6.03, 5.84$  and  $4.18$ , respectively,  $SD_s = 1.24, 1.21$  and  $0.84$ ). However, as with the ratings of effort, these main effects were qualified by a significant two-way interaction between intensity and regulation strategy,  $F(1, 91) = 7.31, p = .008, \eta_p^2 = .07$ , that, in turn, was qualified by a significant three-way interaction between intensity, regulation target, and order of regulation,  $F(2, 182) = 3.40, p = .036, \eta_p^2 = .04$ .

Follow-up analyses<sup>7</sup> highlighted a statistically significant two-way interaction between intensity and regulation target for those who completed the interpersonal ratings first,  $F(1.74, 119.81) = 8.86, p < .001, \eta_p^2 = .11$ , but not for those who completed the intrapersonal ratings first,  $F(1.58, 34.69) = 0.22, p = .753, \eta_p^2 = .01$ . Simple main effects identified a significant main effect of the nature of regulation for the low-intensity images,  $F(2, 138) = 3.42, p = .036, \eta_p^2 = .05$ , and the high-intensity images  $F(2, 138) = 11.85, p < .001, \eta_p^2 = .15$ . Participants who completed the interpersonal ratings first thought that regulation would be significantly less effective for another person trying to control their emotions in response to low-intensity images than if they were to help someone else to

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<sup>7</sup> Mauchly's test indicated that the assumption of sphericity had been violated,  $\chi^2(2) = 11.20, p = .004$ , therefore degrees of freedom were corrected using Greenhouse-Geisser estimates.

control their emotions in response to those images (mean difference = -0.24,  $p = .029$ , 95% CI [-0.46, -0.02]). There were no significant differences between how effective participants thought it would be to control their own emotions compared to both types of interpersonal emotion regulation. Furthermore, participants thought that regulation would be significantly less effective when regulating their own response to high-intensity images compared to helping someone else (mean difference = -0.52,  $p < .001$ , 95% CI [-0.82, -0.21]) or for another person to control their own emotions (mean difference = -0.44,  $p = .001$ , 95% CI [-0.73, -0.15]). There was no significant difference between how effective participants thought it would be to help someone else to control their emotions and how effective they thought it would be for someone else to control their emotions for the high-intensity images.

Simple main effects also revealed that, for those who completed the interpersonal ratings first, intensity influenced ratings of effectiveness in all three regulation contexts – i.e., when thinking about regulating own emotions,  $F(1, 69) = 152.47$ ,  $p < .001$ ,  $\eta_p^2 = .69$  (mean difference = 1.84,  $p < .001$ , 95% CI [1.54, 2.14]), when thinking about helping another person to regulate their own emotions,  $F(1, 69) = 151.98$ ,  $p < .001$ ,  $\eta_p^2 = .69$  (mean difference = 1.41,  $p < .001$ , 95% CI [1.19, 1.64]), and when thinking about how effective someone else would find it to regulate their own emotions,  $F(1, 69) = 78.19$ ,  $p < .001$ ,  $\eta_p^2 = .53$  (mean difference = 1.25,  $p < .001$ , 95% CI [0.97, 1.54]); although the effect of intensity on judgements of how effective strategies were likely to be was noticeably smaller when thinking about how effective someone else would find the strategies for regulating their emotions.