

One Size Does Not Fit All: Tailoring Cognitive Reappraisal to Different Emotions

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Allon Vishkin¹ , Yossi Hasson^{1,2}, Yael Millgram¹,
and Maya Tamir¹

Abstract

Emotion regulation strategies have been typically studied independently of the specific emotions people try to change by using them. However, to the extent that negative emotions are inherently different from one another, people may choose different means to change them. Focusing on fear and sadness, we first mapped emotion-related content to theoretically matched reappraisal tactics. We then tested how frequently people choose such reappraisal tactics when regulating fear and sadness (Studies 1, 2, and 4a). As predicted, people were most likely to select reappraisal tactics that targeted content that was particularly relevant to the specific emotion they tried to regulate. Next, we tested whether such choices were driven by differences in the efficacy (Study 3), perceived efficacy (Study 4b), and anticipated effort (Study 4c) of regulation. Our findings demonstrate that the means people select to regulate their emotions depend on which emotions they try to regulate.

Keywords

emotion, emotion regulation, motivation/goal setting

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People try to regulate different emotional states. For instance, people might want to decrease sadness after a failure, minimize anger at a partner, or eliminate stage fright. To pursue such emotion goals (i.e., desired emotional end-states; Tamir & Millgram, 2017), they use emotion regulation strategies. Some strategies are generally considered to be effective and others are generally considered ineffective (e.g., Aldao, Nolen-hoeksema, & Schweizer, 2010; Webb, Miles, & Sheeran, 2012). Yet, if specific emotions differ from each other, people may use different means to regulate them. Therefore, we suggest that people tailor emotion regulation to specific emotions. In what follows, we first discuss goals and means in emotion regulation and the potential links between them. Next, we discuss differences between emotions and the implications of these differences for emotion regulation. Finally, we hypothesize that people are more likely to use specific reappraisal tactics that map on to the specific emotions they seek to regulate.

relevant for specific goals (Kruglanski et al., 2002), emotion regulation strategies may be differentially relevant for particular emotion goals (Millgram, Sheppes, Kalokerinos, Kuppens & Tamir, 2019). If specific emotions have different characteristics, strategies that target these characteristics may be more relevant than those that do not. Trying to calm one's anger, for instance, might cue a different set of tools than trying to relieve one's sadness. Thus, the relevance of a particular emotion regulation strategy may depend on the specific emotion one is trying to regulate.

Existing models of emotion regulation do not account for the specificity of the emotion being targeted for regulation. For example, the process model of emotion regulation (Gross, 1998, 2015); identifies stages within an emotional episode in which regulation can occur. The process model of emotion regulation builds on a model of emotion which is assumed to apply to any emotion. Other models of emotion regulation (e.g., Naragon-Gainey, McMahon, & Chacko, 2017; Parkinson

Emotion Regulation Strategies in the Service of Goals

Emotion regulation is directed toward particular emotional end states (i.e., emotion goals; Mauss & Tamir, 2014; Tamir, 2016). Building on the notion that different means are

¹The Hebrew University of Jerusalem, Israel

²The Interdisciplinary Center at Herzliya, Israel

Corresponding Author:

Allon Vishkin, Department of Psychology, The Hebrew University of Jerusalem, Mt. Scopus, Jerusalem 91905, Israel.
Email: allon.vishkin@mail.huji.ac.il

& Totterdell, 1999) distinguish between different emotion regulation strategies on the basis of structural or factorial considerations, with limited attention to the unique features of particular emotions. Yet, different emotions have different characteristics. We suggest that these characteristics carry important implications for emotion regulation.

All Emotions Are Not Created Equal

Emotions differ from each other in many ways, including their levels of arousal and valence (Russell, 1980) and their underlying appraisals (Frijda, Kuipers, & Schure, 1989). One difference that distinguishes between emotions involves the appraisals that underlie them (e.g., Frijda, 1986; Scherer, 1984). Appraisals refer to patterns of meaning assigned to an emotional event that are linked to specific emotions. For instance, when people interpret the outcomes of an unpleasant situation as uncertain, they are more likely to feel afraid (Frijda et al., 1989). In contrast, when people interpret the outcomes of an unpleasant situation as beyond their personal control, they are more likely to feel sad. Given that different emotions are associated with different appraisals, we propose that people are more likely to use emotion regulation strategies that modify appraisals that are more closely related to the emotion they wish to regulate.

Mapping Regulation Tactics to Target Different Emotions

If each specific emotion is linked to certain appraisals, it should be possible to change an emotion by changing those appraisals. One type of emotion regulation strategy that targets the appraisal of emotion-eliciting situations is cognitive reappraisal (Gross, 1998). When people use cognitive reappraisal, they think about the emotion-eliciting situation in a way that changes its meaning, which in turn leads to changes in the emotional response to the situation. People can target distinct appraisals by using different reappraisal tactics (McRae, Ciesielski, & Gross, 2012). For instance, the reappraisal tactic of *changing future consequences* (e.g., “what seems inevitable will not actually happen”; McRae et al., 2012) targets the appraisal of outcome certainty (i.e., knowing how a situation will end; Frijda et al., 1989), which is an appraisal that can contribute to fear. In contrast, the reappraisal tactic of *acceptance* (e.g., “that’s the way life goes”) targets the appraisal of lack of personal controllability (i.e., being unable to personally affect the situation; Frijda et al., 1989), which is an appraisal that can contribute to sadness. According to appraisal theories of emotion (e.g., Ellsworth & Scherer, 2003; Frijda et al., 1989), appraisals function to map people’s environmental demands to congruent action tendencies. Similarly, we propose that appraisals of emotion-eliciting situations map people’s present emotional state to a congruent reappraisal tactic.

Research on emotion regulation choice has sought to identify the conditions under which people choose particular

emotion regulation strategies. Some of these conditions pertain to individual differences, such as psychopathology (Gruber, Harvey, & Gross, 2012; Sheppes, Suri, & Gross, 2015). Other conditions pertain to features of emotions, such as their intensity. For example, people are more likely to use cognitive reappraisal when emotional intensity is relatively low, whereas they are more likely to use distraction when emotional intensity is relatively high (Sheppes, Scheibe, Suri, & Gross, 2011). Similarly, we propose that an additional feature of emotions—namely, their underlying appraisals—may be associated with emotion regulation choice, such that when people want to regulate a specific emotion, they may be more likely to use reappraisal tactics that target an appraisal related to that emotion. For example, people should be more likely to regulate fear by changing future consequences than by using acceptance, but the opposite should be true for sadness.

As an initial exploration of the notion that people choose to regulate emotions via reappraisal tactics that target appraisals underlying their emotions, we assessed which reappraisal tactic people select when regulating fear and sadness. One appraisal that is relevant to fear is outcome certainty (Frijda et al., 1989). For instance, if a person is walking in a forest and suddenly spots a venomous snake nearby, that person might feel fear, to the extent that she does not know whether the snake will bite her or not. One reappraisal tactic that targets outcome certainty is changing future consequences. By changing the perceived future consequences of the situation, such as by thinking that the snake will turn around and slither away, that person may decrease her fear. Therefore, we expect that when people try to regulate fear, they would be more likely to try to change the perceived consequences of the fear-inducing stimulus, relative to other reappraisal tactics.

One appraisal that is related to sadness is lack of personal control (Frijda et al., 1989). Such a loss of primary control can be overcome by establishing secondary control. Primary and secondary control are complementary in that both address non-optimal circumstances. Whereas primary control addresses non-optimal circumstances by actively changing the situation, secondary control does so by adjusting one’s expectation to the circumstances (Rothbaum, Weisz, & Snyder, 1982). Acceptance is a reappraisal tactic that targets primary control by establishing secondary control (Sasaki & Kim, 2011). For instance, if a beloved family member passes away, one is likely to feel sadness. By telling oneself that this is the way life goes (situational acceptance), or by recognizing one’s sadness without judging it (emotional acceptance) one re-establishes some control over the situation. Therefore, we expect that when people try to regulate sadness, they would be more likely to use situational or emotional acceptance, relative to other reappraisal tactics.

We expect people to be more likely to select tactics that target appraisals related to the target emotion. Therefore, we tested if associations exist between emotions and reappraisal

tactics, and if so, whether they are mediated by the underlying appraisal that is related to the emotion. In addition, for a mapping between emotions and reappraisal tactics to guide emotion regulation choice, certain mechanisms must be in place to motivate such choice. In particular, people may choose to regulate emotions using strategies that are actually more effective (Sheppes et al., 2011), that they believe to be more effective (regardless of how effective they actually are; Bigman, Sheppes, & Tamir, 2017), or that require less effort to execute (Kool, McGuire, Rosen, & Botvinick, 2010).

We propose that certain reappraisal tactics are associated with specific emotions more than other reappraisal tactics on the basis of each emotion's underlying appraisals. These associations, in turn, may affect actual efficacy (i.e., how effective each reappraisal tactic actually is), perceived efficacy (i.e., how effective each reappraisal tactic is perceived to be), or effort (i.e., how much effort is required to implement each reappraisal tactic). If there is a mapping between certain reappraisal tactics and specific emotions, such a mapping may lead to differences in actual efficacy, perceived efficacy, or effort, which would then render people more likely to select reappraisal tactics that map onto the underlying appraisals of the emotions they seek to regulate. Consequently, we explored these three non-mutually exclusive mechanisms that might underlie our predicted patterns regarding choice.

The Present Investigation

In Studies 1 and 2, we tested which emotion regulation tactic people are most likely to choose to regulate specific emotions. We tested two sets of hypotheses regarding possible associations between emotions, appraisals, and reappraisal tactics. The first hypothesis is that people may be more likely to regulate fear via the reappraisal tactic of changing future circumstances. The second hypothesis is that people may be more likely to regulate sadness via the reappraisal tactic of acceptance.¹ Moreover, we expected that these associations would be mediated by the appraisals linked to these emotions. Study 1 was conducted online, whereas Study 2 was conducted in the lab on an undergraduate sample. In Study 3, we assessed the actual efficacy of our target reappraisal tactics. In Study 4, we assessed beliefs about the efficacy of specific reappraisal tactics and perceived effort in executing them. We predicted that the association between emotion and selection of reappraisal tactics would be linked to their efficacy, their perceived efficacy, or the effort people expect to exert to implement them. Pre-registrations for all studies are included in the online supplemental materials.

Study 1

In Study 1, we tested which reappraisal tactics people are most likely to select when regulating fear and sadness. We focused on the tactics of changing future consequences

(CFC) and acceptance. We expected CFC to be chosen more frequently for regulating fear, and fear to be regulated by CFC more frequently than other emotions. We also expected acceptance to be chosen more frequently for regulating sadness, and sadness to be regulated by acceptance frequently often than other emotions. To establish the specificity of possible associations between fear and CFC and between sadness and acceptance, we included a third reappraisal tactic—namely, reality challenge (e.g., “It’s not real”; McRae et al., 2012). Although we had no a priori predictions regarding the selection of reality challenge for regulating fear or sadness, we expected the hypothesized associations between fear and CFC and between sadness and acceptance to be robust to the presence of an alternative reappraisal tactic.

To explore whether the relevant appraisal of the emotional event underlies the selection of the tactic, we assessed the extent to which participants used the relevant dimensions of meaning to interpret the emotional stimuli used to induce sadness and fear. We expected participants to rate fear-inducing events as more uncertain and sadness-inducing events as less controllable. We further expected these appraisals to mediate any links between the target emotion and the selection of reappraisal tactics. For instance, we expected people to perceive the sadness-inducing events as less controllable, and the less controllable people perceived them to be, the more likely they would be to select acceptance to regulate them.

Method

Participants. To obtain 80% power for a comparison of matched pairs, we needed a sample size of 90 for a small effect size of $d = 0.3$, which we assumed because we had no prior published findings to rely on.² We slightly over-sampled to account for possible attrition. Participants were 96 MTurk workers (44% female, $M_{age} = 35.17$) recruited from the Amazon Mechanical Turk (MTurk.com) marketplace.³ Participants were compensated \$1.00 for their participation.

Materials

Emotional stimuli. To induce fear and sadness, we selected IAPS pictures on the basis of normed ratings for discrete emotional reactions (Mikels et al., 2005). We selected six fear-inducing pictures and six sadness-inducing pictures. According to the normed ratings, the fear-inducing pictures arouse more fear ($M = 3.55$, $SD = 0.25$) than the sadness-inducing pictures do ($M = 2.03$, $SD = 0.35$), $t(10) = 8.71$, $p < .001$, 95% CI [1.13, 1.90], whereas the sadness-inducing pictures arouse more sadness ($M = 4.43$, $SD = 0.77$) than the fear-inducing pictures do ($M = 1.89$, $SD = 0.62$), $t(10) = 6.29$, $p < .001$, 95% CI [1.64, 3.44], on a scale of 1 (*not at all*) to 7 (*a great amount*). According to these norms, the sadness-inducing pictures arouse their target emotion more than the fear-inducing pictures do, $t(10) = 2.66$, $p = .024$. To amplify the emotional impact, each picture was paired with a

short matching description (e.g., a picture depicting a snake ready to lunge was paired with “During a hiking trip in the mountains, a snake suddenly appears ready to attack you.”).

Reappraisal tactics. We selected two written statements for each reappraisal tactic based on McRae et al. (2012). The statements for CFC were “Things will turn out better than expected” and “What seems inevitable will not actually happen.” The statements for acceptance were “That’s the way life goes” and “Nothing could be done.” The statements for reality challenge were “It’s not real” and “This is really not what I think it is.” The order in which the statements were presented was randomized.

Appraisals. Following Frijda et al. (1989), to assess perceptions of outcome certainty, participants were asked: “Did you know how the situation would end?” To assess perceptions of personal controllability, participants were asked “Could you affect the situation depicted in the picture in some way?” Participants rated their appraisals on a scale of 1 (*not at all*) to 7 (*very much*).

Procedure. After giving informed consent, participants completed 12 trials. Each trial began with the instruction to imagine oneself in the scenario depicted in the picture, followed by viewing an IAPS picture. Afterward, participants were asked to rate their level of fear and sadness. Participants also rated their level of disgust, guilt, and anger, as filler items. All ratings were made on a scale of 1 (*not at all*) to 7 (*to a great extent*). Next, participants were informed that it is possible to change one’s emotional experience and were prompted to mark which of six statements they would be most likely to choose to change their emotional reaction to the picture. The order in which the tactics were presented

was randomized in every trial. Next, they rated their appraisals of each picture. The order of presentation of the stimuli was randomized.

Results

Manipulation check. As expected, the fear-inducing pictures induced more fear ($M = 6.27, SD = 0.77$) than the sadness-inducing pictures did ($M = 2.41, SD = 1.63$), $t(95) = 23.28, p < .001, 95\% CI [3.52, 4.18]$. Similarly, the sadness-inducing pictures induced more sadness ($M = 5.65, SD = 1.34$) than the fear-inducing pictures did ($M = 2.36, SD = 1.84$), $t(95) = 16.24, p < .001, 95\% CI [2.89, 3.69]$. The fear-inducing pictures aroused their target emotion more than the sadness-inducing pictures did, $t(95) = 5.46, p < .001$. As predicted, fear-inducing pictures were perceived as less certain ($M = 2.82, SD = 1.42$) than the sadness-inducing pictures ($M = 4.01, SD = 1.33$), $t(95) = 8.61, p < .001, 95\% CI [0.91, 1.46]$. The sadness-inducing pictures were perceived as less personally controllable ($M = 3.81, SD = 1.14$) than the fear-inducing pictures ($M = 4.74, SD = 1.21$), $t(95) = 7.53, p < .001, 95\% CI [0.68, 1.17]$.

Main analysis. Choice of reappraisal tactics per emotion was computed by summing the number of times each person used each tactic per each emotion. The choice of each tactic for each emotion is represented below as a proportion of total choices (see Figure 1).

CFC was chosen to regulate fear (44.8%) significantly more often than both acceptance (25.0%) and reality challenge (30.2%), $F(2, 94) = 9.27, p < .001, \eta_p^2 = .089$, contrasts also significant. CFC was also used more often to regulate fear than to regulate sadness (25.9%), $F(1, 95) = 33.47, p < .001, \eta_p^2 = .26, 95\% CI [0.12, 0.25]$. Acceptance

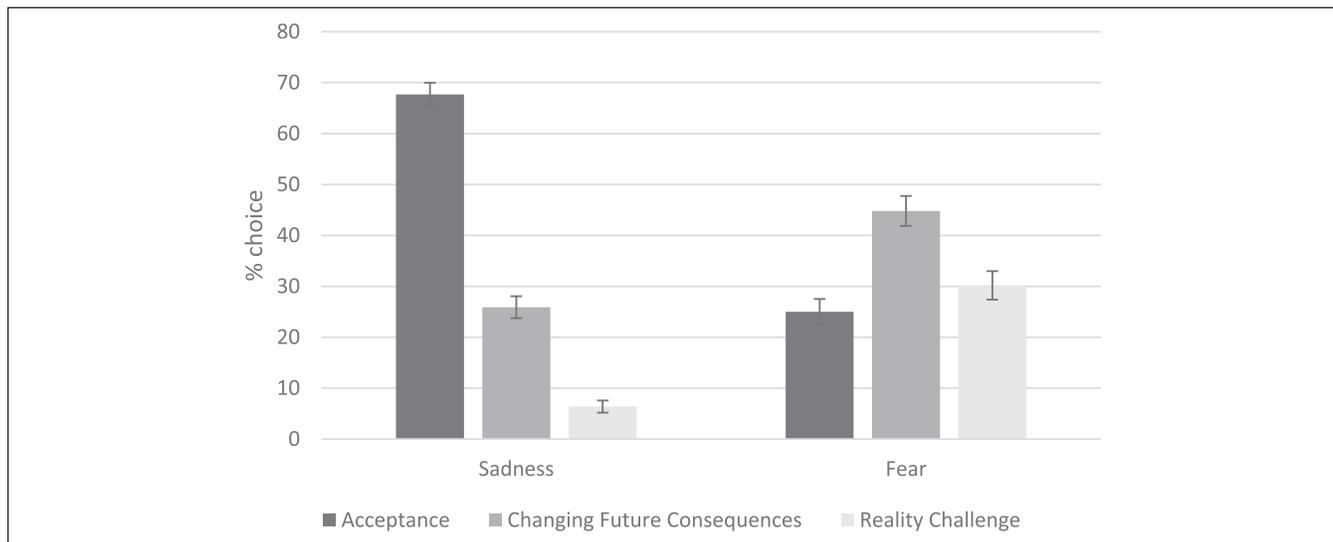


Figure 1. Percentage of selecting each reappraisal tactic to regulate each target emotion (Study 1).

was chosen to regulate sadness (67.7%) significantly more often than both CFC (25.9%) and reality challenge (6.4%), $F(2, 94) = 174.95, p < .001, \eta_p^2 = .65$, contrasts also significant. Acceptance was also used more often to regulate sadness than fear, $F(1, 95) = 214.16, p < .001, \eta_p^2 = .69$, 95% CI [0.37, 0.49].

To examine whether the effects generalize across stimuli, we ran several logistic mixed-effect regressions using the “lme4” package in R (Bates, Maechler, Bolker, & Walker, 2015). In instances throughout the present investigation where the analyses did not converge, we followed the guidelines set by Barr, Levy, Scheepers, and Tily (2013) and removed the random effect that explained the least variance. First, to examine whether CFC was chosen more often for regulating fear relative to sadness, we ran a mixed-effect regression with emotion (fear vs. sadness) as a fixed factor, and picture intercept, subject intercept, and subject slopes as random factors. The effect was significant, indicating that CFC was more likely to be chosen to regulate fear relative to sadness, $b = 0.75, OR = 2.12, z = 2.23, p = .026$. Next, to examine whether acceptance was chosen more often for regulating sadness relative to fear, we ran a mixed-effect regression with emotion (sadness vs. fear) as a fixed factor, and picture intercept, subject intercept, and subject slopes as random factors. The model converged only when removing subject slopes. The effect was significant, indicating that acceptance was more likely to be chosen to regulate sadness relative to fear, $b = 1.48, OR = 4.39, z = 4.08, p < .001$.

Mediation. We tested whether appraisals of personal controllability and outcome certainty mediated the effect of emotion on reappraisal tactic choice. To test multiple mediators, we used the PROCESS macro for SPSS (Hayes, 2013). We ran one mediation analysis on selecting acceptance (vs. CFC and reality challenge) and another mediation analysis on selecting CFC (vs. acceptance and reality challenge). Both personal controllability ($M = 0.19, SE = 0.03, 95\%$ bootstrap CI [0.14, 0.26]) and outcome certainty ($M = 0.08, SE = 0.02, 95\%$ bootstrap CI [0.04, 0.13]) partially mediated the effect of emotion on selecting acceptance (see Figure 2a). In addition, both personal controllability ($M = -0.19, SE = 0.03, 95\%$ bootstrap CI [-0.25, -0.13]) and outcome certainty ($M = -0.10, SE = 0.02, 95\%$ bootstrap CI [-0.15, -0.06]) partially mediated the effect of emotion on selecting CFC (see Figure 2b).

Discussion

In Study 1, we found that people were more likely to choose to regulate fear via CFC (relative to acceptance and reality challenge) and to regulate sadness via acceptance (relative to CFC and reality challenge). Moreover, CFC was chosen to regulate fear more often than it was chosen to regulate sadness and the opposite was true for acceptance. These effects

held across stimuli when analyzed in mixed-effect regressions. These effects were partially mediated by the underlying appraisals of each emotion, indicating that appraisals that underlie emotions partially account for the associations between emotions and reappraisals tactics. Study 1 has several methodological limitations, however. It was conducted online and included a limited set of stimuli per emotion. Study 2, therefore, addressed these limitations.

Study 2

Study 2 was conducted in the lab with 15 stimuli per emotion. In this study, we excluded the reappraisal tactic of reality challenge and focused on the reappraisal tactics relevant to fear and sadness. As in Study 1, we expected CFC to be chosen more frequently for regulating fear, and acceptance to be chosen more frequently for regulating sadness. We also tested whether the association between fear and selection of CFC is mediated by the appraisal of outcome certainty and the association between sadness and acceptance is mediated by the underlying appraisal of controllability.

Method

Participants. A priori power analyses based on previous studies assessing emotion regulation choice in the lab ($\eta_p^2 = .75$, Sheppes et al., 2011; Sheppes et al., 2014) lead to unacceptably small sample sizes (i.e., less than 10 participants). Therefore, we set the sample size to 40 participants. Participants were 40 undergraduate students at an Israeli university (58% female, $M_{age} = 24.33$). They received NIS 20 (~\$5.50) for their participation.

Materials

Emotional stimuli. To induce sadness and fear, we used the same method to select emotional stimuli as in Study 1 except that we selected 15 pictures for each emotion. Based on normative ratings (Mikels et al., 2005), the 15 fear-inducing pictures arouse fear to a greater extent ($M = 3.56, SD = 0.20$) than the sadness-inducing pictures ($M = 1.95, SD = 0.34$), $t(28) = 15.60, p < .001, 95\%$ CI [1.39, 1.81], whereas the 15 sadness-inducing pictures arouse sadness to a greater extent ($M = 4.35, SD = 0.70$) than the fear-inducing pictures ($M = 1.95, SD = 0.71$), $t(28) = 9.34, p < .001, 95\%$ CI [1.87, 2.92], on a scale of 1 (*not at all*) to 7 (*a great amount*). According to these norms, the sadness-inducing pictures arouse their target emotion more than the fear-inducing pictures do, $t(28) = 4.21, p < .001$. As in Study 1, each picture was paired with a short matching description to amplify the emotional impact.

Reappraisal tactics. We used the same reappraisal tactics for CFC and for acceptance as in Study 1. The order in which tactics were presented was randomized in every trial.

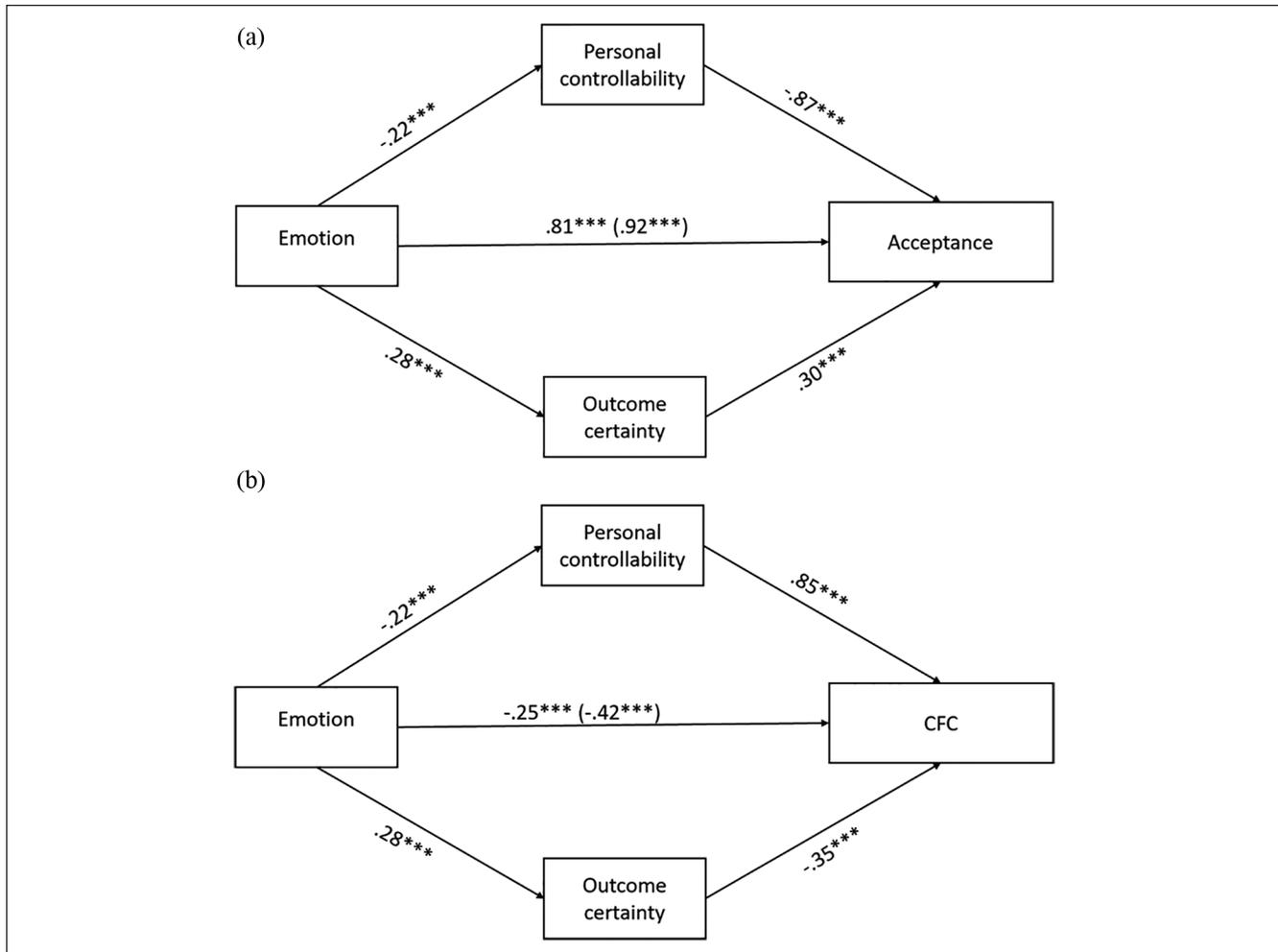


Figure 2. Study 1: Personal controllability and outcome certainty as mediators between emotion (*Fear* = 0, *Sadness* = 1) and reappraisal tactic choice: (a) *CFC* and *reality challenge* = 0, *acceptance* = 1; (b) *acceptance* and *reality challenge* = 0, *CFC* = 1. Note. Coefficients predicting the dependent variable are expressed in a log-odds metric. Asterisks indicate levels of significance (***) $p < .001$. CFC = changing future consequences.

Appraisals. We used the same measures used in Study 1 to assess appraisals of outcome certainty and of personal controllability.

Procedure. Each trial began with a presentation of an emotion-inducing picture for 6 s. Participants were then asked to rate their level of fear, disgust, sadness, guilt, and anger on a scale of 1 (*not at all*) to 7 (*to a great extent*). Next, participants were informed that it is possible to change one's emotional experience. They were prompted to choose one of the four statements they would be most likely to use to change their emotional reaction to the picture. Next, they rated their appraisals of each picture. Finally, participants were asked to think about the picture in the manner they chose so that their choice will reflect real implementation intentions. On 1/3 of the trials, they were prompted to write down what they told themselves as they did so. Participants completed 30 trials, presented in a random order.

Results

Manipulation check. As expected, the fear-inducing pictures induced more fear ($M = 6.05$, $SD = 0.73$) than the sadness-inducing pictures, $M = 2.93$, $SD = 1.40$; $t(39) = 15.66$, $p < .001$, 95% CI [2.72, 3.52]. In addition, the sadness-inducing pictures induced more sadness ($M = 6.17$, $SD = 0.85$) than the fear-inducing pictures, $M = 2.69$, $SD = 1.47$; $t(39) = 16.15$, $p < .001$, 95% CI [3.04, 3.91]. The fear-inducing pictures and sadness-inducing pictures aroused their target emotion to a similar extent, $t(39) = 1.08$, $p = .29$. In addition, the fear-inducing pictures were perceived as having a less certain outcome ($M = 3.23$, $SD = 0.93$) than the sadness-inducing pictures ($M = 3.66$, $SD = 0.92$), $t(39) = 3.26$, $p = .002$, 95% CI [0.17, 0.71]. The sadness-inducing stimuli were perceived as less personally controllable ($M = 3.03$, $SD = 0.85$) than the fear-inducing stimuli ($M = 3.58$, $SD = 0.94$), $t(39) = 3.43$, $p = .001$, 95% CI [0.23, 0.87].

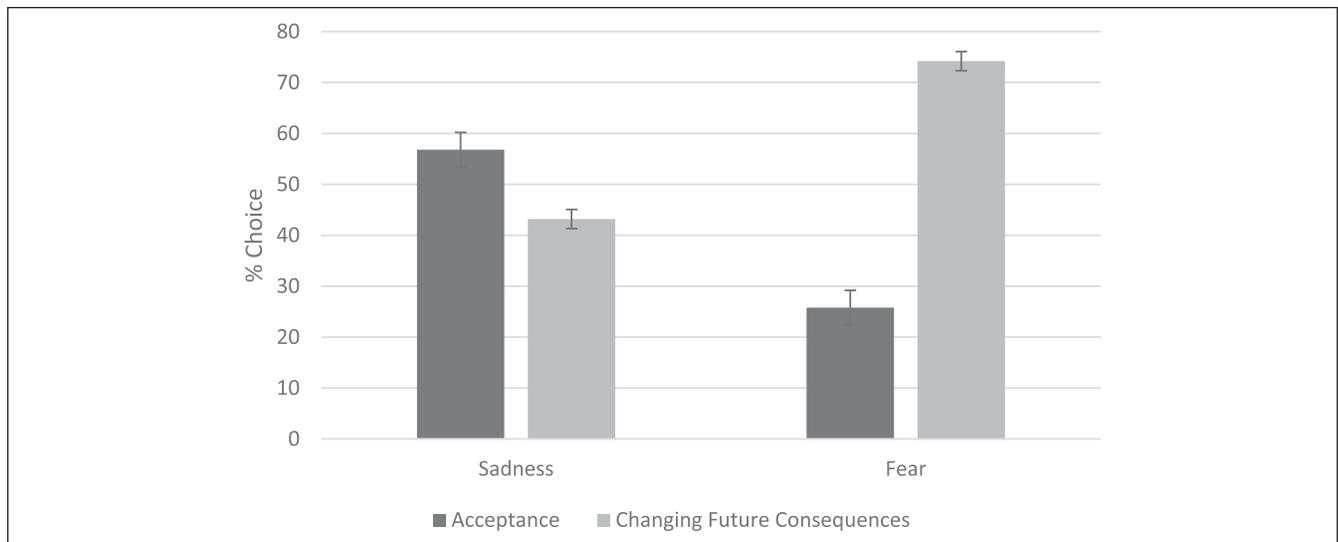


Figure 3. Percentage of choosing each reappraisal tactic to regulate each target emotion (Study 2).

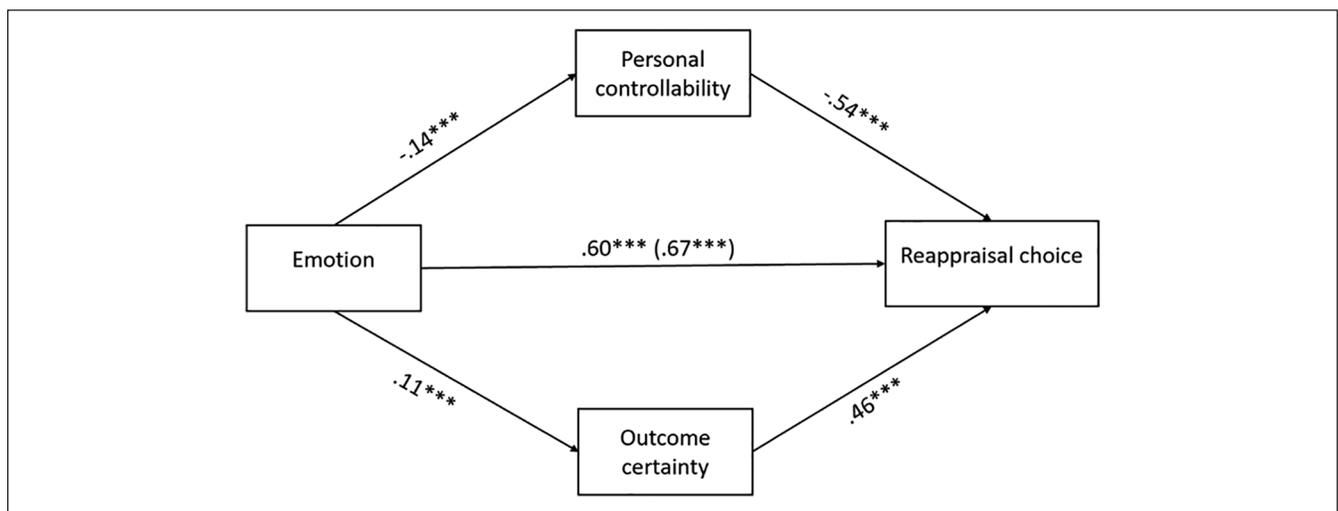


Figure 4. Study 2: Personal controllability and outcome certainty as mediators between emotion ($Fear = 0$, $Sadness = 1$) and reappraisal tactic choice ($CFC = 0$, $Acceptance = 1$).

Note. Coefficients predicting the dependent variable are expressed in a log-odds metric. Asterisks indicate levels of significance (***) $p < .001$. CFC = changing future consequences.

Main analysis. As predicted, one-sample t tests revealed that sadness was more likely to be regulated by acceptance than by CFC, $t(39) = 2.01$, $p = .051$, $\eta_p^2 = .02$, whereas fear was more likely to be regulated by CFC than by acceptance, $t(39) = 12.84$, $p < .001$, $\eta_p^2 = .51$ (see Figure 3). Overall, acceptance was chosen significantly more often to regulate sadness than fear, $t(39) = 8.52$, $p < .001$, $\eta_p^2 = .65$, 95% CI [0.24, 0.38]. To examine whether the effects generalize across stimuli, we ran a logistic mixed-effect regression using the “lme4” package in R (Bates et al., 2015), with emotion (sadness vs. fear) as a fixed factor, and picture intercept,

subject intercept, and subject slopes as random factors. The effect remained significant, $b = 1.18$, OR = 3.25, $z = 3.37$, $p < .001$.

Mediation. We tested whether personal controllability and outcome certainty mediated the effect of emotion on reappraisal tactic choice. Both personal controllability ($M = 0.08$, $SE = 0.02$, 95% bootstrap CI [0.04, 0.12]) and outcome certainty ($M = 0.05$, $SE = 0.02$, 95% bootstrap CI [0.02, 0.09]) partially mediated the effect of emotions on reappraisal tactic choice (see Figure 4).

Discussion

As in Study 1, Study 2 demonstrated that people are more likely to choose to regulate fear and sadness via CFC and acceptance, respectively, and this effect was partially mediated by the underlying appraisals of these emotions. Study 2 further established the validity of the findings in Study 1, by replicating the key effects in a laboratory setting, on a student sample, and using a larger set of stimuli. Studies 1 and 2 provide the first empirical evidence for an association between different emotions and the selection of reappraisal tactics based on relevant appraisals of these emotions. However, it remains unclear why people select tactics that at least partially match relevant appraisals of specific emotions. We tested several such potential mechanisms in Studies 3 and 4.

Study 3

Why are people more likely to select reappraisal tactics that map on to appraisals of the emotions they seek to regulate? Such matching may be guided by various potential mechanisms. One possibility is that appraisal-matching reappraisal tactics may be more efficient in regulation. In particular, CFC may be more efficient at regulating fear (vs. sadness), because it changes the perceived negative outcomes that contribute to fear. Similarly, acceptance may be more efficient at regulating sadness (vs. fear), because it establishes secondary control, which should attenuate sadness. In Study 3 we tested the efficacy of matching reappraisal tactics in emotion regulation.

Method

Participants. Prior studies on the efficacy of reappraisal tactics found strong effects ($d = 0.72$; McRae et al., 2012), but did not look at emotion specificity. Therefore, to err on the conservative side, we expected a medium effect size. A power analysis revealed that we needed 56 participants to reach 80% power. We preregistered 60 participants and over-sampled by 10%. Participants were 66 students at a large Israeli university (61% female, $M_{age} = 23.98$). Participants were compensated NIS 30 (~\$8.00) for their participation.

Materials

Emotional stimuli. To increase the generalizability of our findings, in Study 3 we used brief vignettes rather than pictures to induce emotions. We selected six sad vignettes and six fearful vignettes (see Appendix B of the Supplementary Material). A pilot study ($n = 30$) confirmed that the sad vignettes aroused more sadness ($M = 7.98$, $SD = 0.58$, where 1 = *not at all*, and 9 = *to a great extent*) than fear ($M = 4.43$, $SD = 1.63$), $t(29) = 12.50$, $p < .001$, 95% CI [2.96, 4.12], whereas the fearful vignettes aroused more fear (M

$= 7.79$, $SD = 1.03$) than sadness ($M = 4.90$, $SD = 1.78$), $t(29) = 9.90$, $p < .001$, 95% CI [2.30, 3.49]. Both types of vignettes aroused their respective emotion to a similar extent $t(29) = 1.16$, $p = .26$.

Emotional reactions. We assessed emotional reactions of fear, sadness, anger, and disgust ($\alpha = .58$) on a scale of 1 (*not at all*) to 9 (*to a great extent*). The assessment of emotional reactions included several negative emotions so that we would have a common measure for both the fear-inducing and sadness-inducing stimuli.

Appraisals. We used the same measures from Studies 1 and 2 to assess the appraisals of outcome certainty and personal controllability.

Reappraisal tactics. On the basis of McRae et al. (2012), we developed three instantiations of CFC (e.g., “When I will wake up tomorrow morning, everything will appear silly or taken out of proportion”) and three instantiations of acceptance (e.g., “The situation is no one’s fault and sometimes these things just happen”). The reappraisal tactics were more elaborate than in Studies 1 and 2 because they served as instructions in the present study.

Procedure. First, participants read all 12 vignettes. For each vignette, participants were asked to take a few seconds to imagine that the situation described in the vignette was happening to them. They then rated their emotional reactions to the situation and their underlying appraisals. Half the participants first read all six sad vignettes and then read all six fear vignettes, and half the participants read the vignettes in the reverse order. The order of presentation within each set of vignettes was randomized.

Next, participants were trained to implement each of the six statements of acceptance and CFC with an experimenter who was blind to the hypotheses. During the training, the experimenter explained that each statement could be used to change one’s emotional reactions to the vignettes. The experimenter completed two sample trials with the participant and explained the regulation task. To minimize any potential carryover effects, in the training phase we did not use sad or fearful vignettes, but disgusting ones instead. The training task also served to ensure that there was a considerable time lag between the baseline measure and the regulated response for each stimulus, to minimize potential demand.

On each trial of the regulation task, participants read the vignette and took a few seconds to imagine the situation was happening to them. Next, they were prompted with the statement they were to use to think about the situation differently. Participants were asked to implement the statement, and subsequently rated their emotional response. To ensure that participants implemented the instructed tactic, on two of the 12 trials, they were prompted to write down what they had told

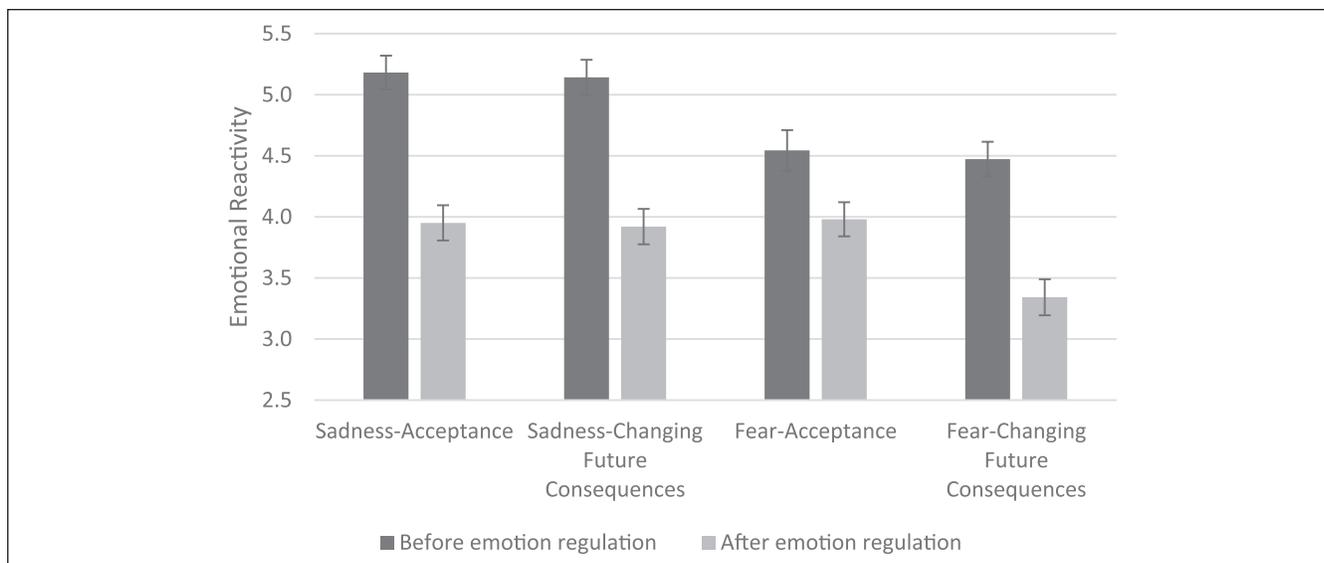


Figure 5. Emotional reactivity before and after implementing reappraisal tactics (Study 3).

themselves as they implemented the statement. Participants reacted to all sad vignettes and to all fearful vignettes in counterbalanced blocks. The presentation of vignettes within each block was randomized. The presentation of reappraisal statements was also randomized, with the limitation that all six statements appeared once in each set of vignettes.⁴ Finally, participants provided demographic information.

Results

Efficacy. First, we ran a within-participant analysis of variance (ANOVA) with Time (pre vs. post) \times Emotion (sadness vs. fear) \times Reappraisal tactic (acceptance vs. CFC), predicting mean negative emotional response. We found a main effect for time, $F(1, 65) = 95.19, p < .001, \eta_p^2 = .594$, indicating that, on average, emotional reactivity effectively decreased from the baseline to the postregulation assessment. The expected three-way interaction was significant, $F(1, 65) = 10.27, p = .002, \eta_p^2 = .136$ (see Figure 5). The interaction revealed that negative emotions decreased less when using acceptance to regulate reactions to fear-inducing stimuli ($M = 0.56, SD = 1.00$), compared to using acceptance to regulate reactions to sadness-inducing stimuli ($M = 1.23, SD = 1.03$), using CFC to regulate reactions to fear-inducing stimuli ($M = 1.13, SD = 1.14$) and using CFC to regulate reactions to sadness-inducing stimuli ($M = 1.22, SD = 1.17$). The three latter pairings did not differ significantly from each other, $F(2, 64) = 0.38, p = .69, \eta_p^2 = .006$.

This effect qualified a main effect for emotion, $F(1, 65) = 29.60, p < .001, \eta_p^2 = .313$, indicating that emotional reactivity was greater for sad than for fearful vignettes. It also qualified a main effect for tactic, $F(1, 65) = 7.52, p = .008, \eta_p^2 = .104$, such that CFC resulted in less negative emotions

($M = 4.22, SD = 0.90$) than acceptance ($M = 4.41, SD = 1.00$). We also found a Time \times Emotion interaction, $F(1, 65) = 14.42, p < .001, \eta_p^2 = .182$, indicating that people succeeded in regulating their reactions to sad stimuli more than they succeeded in regulating reactions to fearful stimuli. We also found a Time \times Tactic interaction, $F(1, 65) = 9.39, p = .003, \eta_p^2 = .126$, indicating that CFC was generally more effective in decreasing negative emotions (Baseline: $M = 4.81, SD = 0.98$; After regulation: $M = 3.63, SD = 1.09$) than acceptance (Baseline: $M = 4.86, SD = 1.11$; After regulation: $M = 3.97, SD = 1.07$). Furthermore, we found an Emotion \times Tactic interaction, $F(1, 65) = 4.96, p = .029, \eta_p^2 = .071$, indicating that people felt less negative in response to fearful stimuli after using CFC, relative to acceptance, but tactics did not differ in their impact in response to sad stimuli.

Next, to account for the full structure of the data and examine whether the effect holds across stimuli, we ran a mixed-effect regression using the “lme4” library in R and obtained significance levels via the “lmerTest” library. Time, emotion, and tactic were fixed factors, and participants and vignettes were random factors. The model converged with all slopes and intercepts as random factors. The three-way interaction reported above remained significant, $F(1, 1301) = 8.42, p = .004$. Of the main effects and two-way interactions, only the main effect of time and the Time \times Tactic interaction remained significant.

Discussion

The purpose of Study 3 was to examine whether the selection of reappraisal tactics mirror differences in their relative efficacy in regulation. As we predicted, acceptance was more

effective in regulating sadness than in regulating fear. However, contrary to our prediction, CFC was not more effective in regulating fear than sadness. The results of Study 3, therefore, were only partially consistent with the possibility that people select tactics that match the emotions they seek to regulate because such tactics are more effective. In Study 4, we tested two additional mechanisms that may explain why people tend to select emotion-specific reappraisal tactics.

Study 4

In Study 3, we found that acceptance and CFC are equally effective at regulating sadness. Nonetheless, people may still expect acceptance to be more effective in regulating sadness than CFC, because acceptance is linked to appraisals that characterize sadness. Therefore, rather than assessing actual efficacy in Study 4, we assessed perceived efficacy. Another possible reason why people might select specific reappraisal tactics for regulating specific emotions is that certain tactics may require less effort when regulating certain emotions. For instance, regardless of whether CFC is more or less effective in regulating sadness, CFC may require more effort to regulate sadness than acceptance does. When faced with the loss of a loved one, for instance, CFC might be very difficult to implement, albeit effective if implemented.

In Study 4, we tested whether selection of tactics is linked to perceived efficacy or to perceived effort. To do so, Study 4a sought to replicate the findings from Studies 1 and 2 regarding tactic choice. Study 4b was similar to Study 4a except that rather than selecting a tactic, participants were asked to indicate how effective they expect the tactic to be. Finally, Study 4c was similar to Study 4a, except that rather than selecting a tactic, participants were asked to indicate how much effort they would need to exert to implement it.

In Study 4a, we expected to replicate our prior findings, such that acceptance would be chosen more often than CFC to regulate sadness, whereas CFC would be chosen more often than acceptance to regulate fear. In Study 4b, we predicted that participants would expect acceptance to be more effective than CFC in regulating sadness, whereas they would expect CFC to be more effective than acceptance in regulating fear. Finally, in Study 4c, we predicted that participants would expect acceptance to be less effortful than CFC to regulate sadness, whereas they would expect CFC to be less effortful than acceptance to regulate fear.

Method

Participants. Since we assessed two original prompts in this study, it was important that each study would have ample statistical power. Therefore, following Study 1, we selected a target sample size of 100 participants for each of the three studies.⁵ Participants were MTurk workers and were compensated \$1.20 for their participation (Study 4a:

$N = 100$, 42% female, $M_{\text{age}} = 35.19$; Study 4b: $N = 98$, 47% female, $M_{\text{age}} = 36.77$; Study 4c: $N = 98$, 38% female, $M_{\text{age}} = 34.50$).

Materials

Emotional stimuli. We used the same stimuli as in Study 3.

Reappraisal tactics. We used the same reappraisal tactics for CFC and acceptance as in Study 1. The order in which tactics were presented was randomized.

Appraisals. We measured outcome certainty and personal control using the same measures used in Study 1.

Procedure. The procedure for Study 4a was identical to the procedure used in Study 1, with two exceptions. First, Study 4a used the stimuli that were used in Study 3. Second, after selecting the statement to regulate their emotional reaction using a forced-choice paradigm as in Studies 1 and 2, they also rated the likelihood that they would choose each statement to change their emotional reaction on a continuous scale (1 = *very unlikely*; 5 = *very likely*). The analyses using the two measures are largely equivalent. For the sake of simplicity, we report the results of the analyses using the forced-choice measure here and the results of the analyses using the continuous measures in the supplementary materials. The procedures for Studies 4b and 4c were similar to Study 4a, except that participants did not indicate which statement they are most likely to select. Instead, in Study 4b, participants were asked to select the statement that they believe would be most effective in regulation, and in Study 4c, participants were asked to select the statement that would require the least amount of effort.

Results

Manipulation check. As expected, the fearful vignettes induced more fear ($M = 5.62$, $SD = 1.12$) than sadness ($M = 3.21$, $SD = 1.40$), $t(295) = 29.82$, $p < .001$. Similarly, the sad vignettes induced more sadness ($M = 5.95$, $SD = 0.96$) than fear ($M = 3.05$, $SD = 1.46$), $t(295) = 34.24$, $p < .001$. The sadness-inducing pictures aroused their target emotion more than the fear-inducing pictures did, $t(295) = 6.83$, $p < .001$. In addition, fearful vignettes were perceived as having a less certain outcome ($M = 2.24$, $SD = 1.17$) than the sad vignettes ($M = 4.73$, $SD = 1.59$), $t(295) = 22.84$, $p < .001$. The sad vignettes were perceived as less personally controllable ($M = 2.38$, $SD = 1.09$) than the fearful vignettes ($M = 3.32$, $SD = 1.09$), $t(295) = 16.11$, $p < .001$.

Main analysis. The main dependent variable for each study (Study 4a: reappraisal tactic choice; Study 4b: perceived tactic efficacy; Study 4c: perceived tactic effort) was the proportion that each reappraisal tactic was selected per each emotion (see Figure 6). Given that the choice between acceptance and CFC was forced, we report the differences between

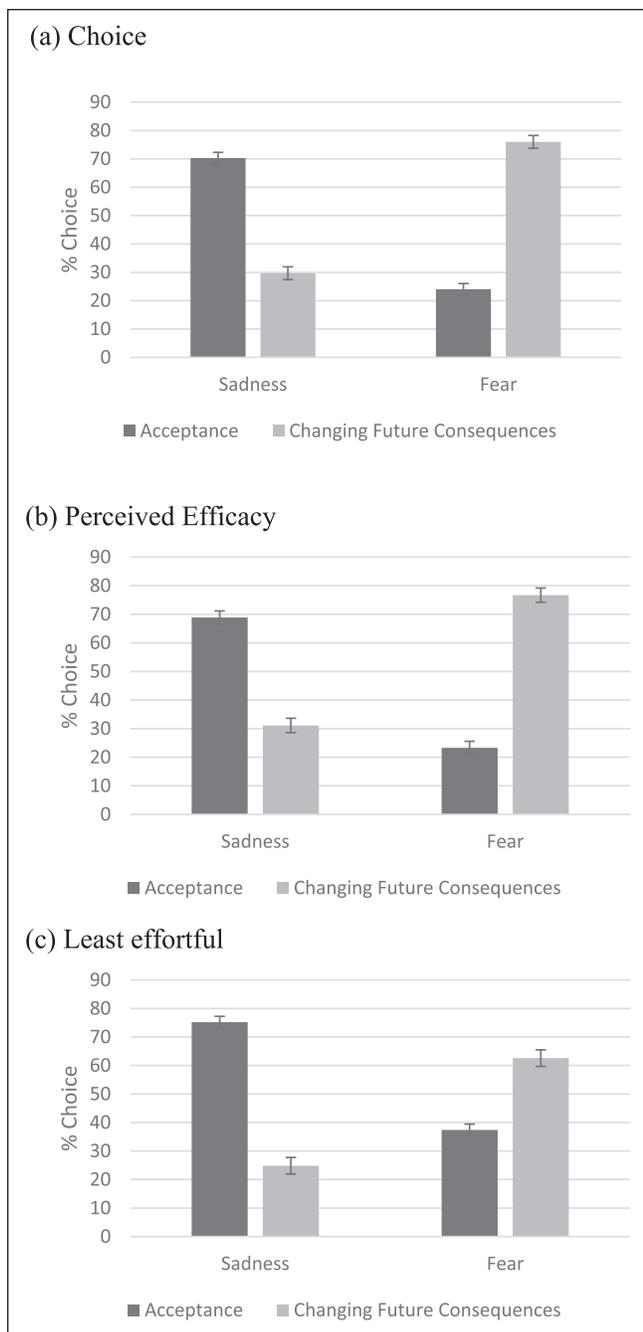


Figure 6. Study 4: Extent to which each reappraisal tactic was: (a) likely to be chosen (Study 4a), (b) perceived to be effective (Study 4b), and (c) perceived to be less effortful to implement (Study 4c).

fear and sadness as a function of choosing acceptance. As predicted, and replicating Studies 1 and 2, in Study 4a, one-sample t tests revealed that sadness was more likely to be regulated by acceptance than by CFC, $t(99) = 10.08, p < .001, \eta_p^2 = .20$, whereas fear was more likely to be regulated by CFC than by acceptance, $t(99) = 11.49, p < .001, \eta_p^2 = .25$.

Overall, acceptance was more likely to be chosen to regulate sadness than fear, $t(99) = 15.29, p < .001, \eta_p^2 = .70, 95\% \text{ CI } [0.40, 0.52]$ (Figure 6a). In Study 4b, one-sample t tests revealed that acceptance was perceived as more efficient for regulating sadness than CFC, $t(97) = 8.20, p < .001, \eta_p^2 = .15$, whereas CFC was perceived as more efficient for regulating fear than acceptance, $t(97) = 10.69, p < .001, \eta_p^2 = .23$. Overall, acceptance was perceived as more efficient for regulating sadness than fear, $t(97) = 16.69, p < .001, \eta_p^2 = .74, 95\% \text{ CI } [0.40, 0.51]$ (Figure 6b). Finally, in Study 4c, one-sample t tests revealed that acceptance was perceived as less effortful for regulating sadness than CFC, $t(97) = 12.25, p < .001, \eta_p^2 = .28$, whereas CFC was perceived as less effortful for regulating fear than acceptance, $t(97) = 4.32, p < .001, \eta_p^2 = .05$.⁶ Overall, acceptance was perceived as less effortful for regulating sadness than fear, $t(97) = 12.36, p < .001, \eta_p^2 = .61, 95\% \text{ CI } [0.32, 0.44]$ (Figure 6c). To examine whether the effects generalize across stimuli, we ran logistic mixed-effect regressions using the “lme4” package in R (Bates et al., 2015). We ran a mixed-effect regression with emotion (fear vs. sadness) as a fixed factor, and vignette intercept, subject intercept, and subject slopes as random factors. The effects remained significant in Study 4a ($b = 1.70, \text{OR} = 5.46, z = 4.11, p < .001$), Study 4b ($b = 1.61, \text{OR} = 5.02, z = 4.74, p < .001$), and Study 4c ($b = 1.39, \text{OR} = 4.03, z = 3.54, p < .001$).⁷

Mediation. We tested whether appraisals of personal controllability and outcome certainty mediated the main findings presented above. First, for Study 4a, we tested whether perceived personal controllability and perceived outcome certainty mediated the relationship between sadness (vs. fear) and choosing acceptance (vs. CFC). Both personal controllability ($M = 0.11, SE = 0.02, 95\% \text{ bootstrap CI } [0.07, 0.16]$) and outcome certainty ($M = 0.21, SE = 0.04, 95\% \text{ bootstrap CI } [0.13, 0.30]$) partially mediated the effect of emotions on reappraisal tactic choice (see Figure 7a). Next, we tested whether perceived personal controllability and perceived outcome certainty mediated the relationship between sadness (vs. fear) and perceived efficacy (Study 4b). Both personal controllability ($M = 0.10, SE = 0.02, 95\% \text{ bootstrap CI } [0.06, 0.14]$) and outcome certainty ($M = 0.30, SE = 0.04, 95\% \text{ bootstrap CI } [0.22, 0.39]$) partially mediated the effect of emotions on perceived reappraisal efficacy (see Figure 7b). Finally, we tested whether perceived personal controllability and perceived outcome certainty mediated the relationship between sadness (vs. fear) and perceived effortlessness of implementing reappraisal tactics (Study 4c). Both personal controllability ($M = 0.15, SE = 0.02, 95\% \text{ bootstrap CI } [0.10, 0.19]$) and outcome certainty ($M = 0.26, SE = 0.05, 95\% \text{ bootstrap CI } [0.17, 0.35]$) partially mediated the effect of emotions on perceived effortlessness (see Figure 7c).

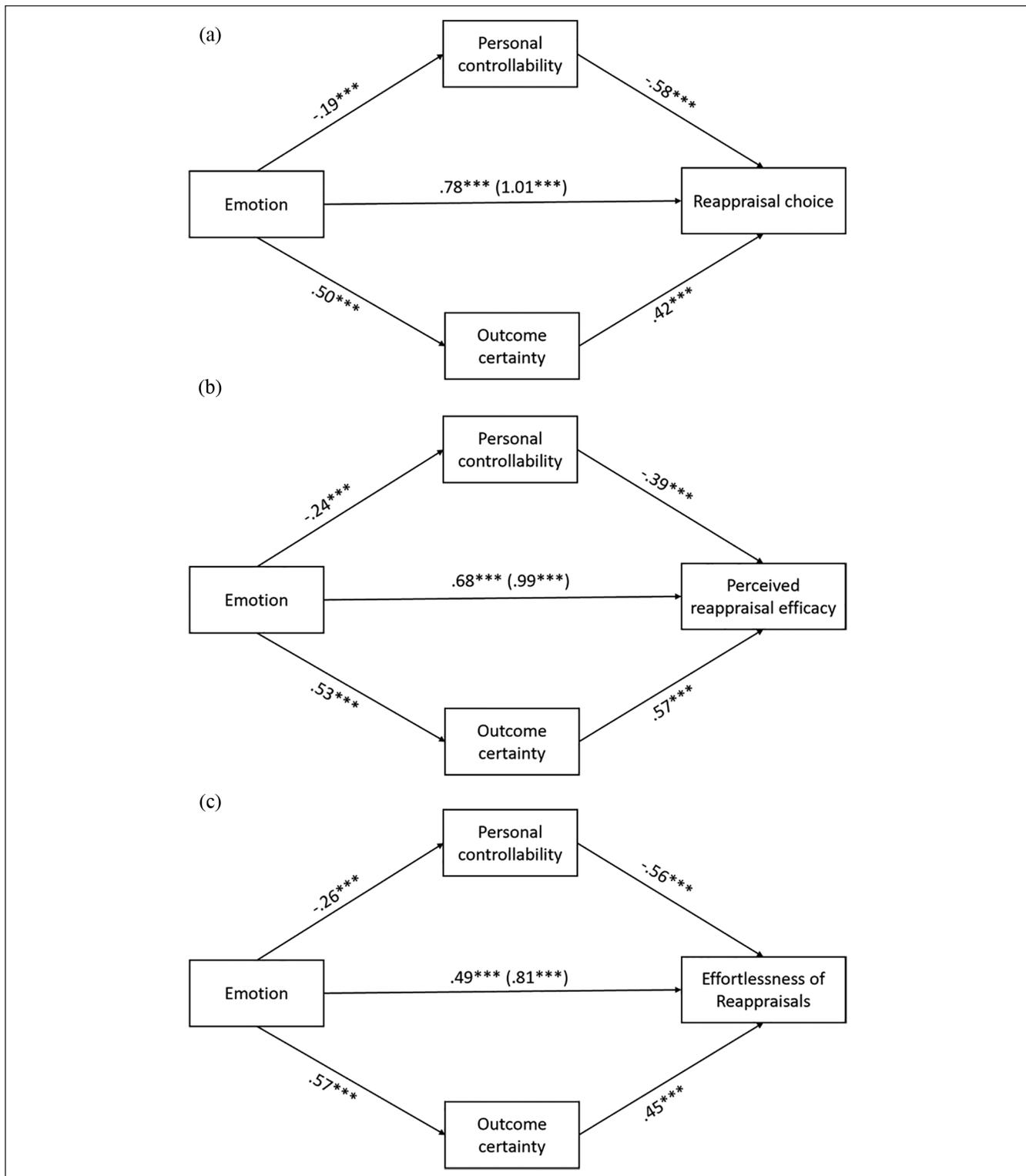


Figure 7. Personal controllability and outcome certainty as mediators between emotion (*Fear* = 0, *Sadness* = 1) and reappraisal tactics (*CFC* = 0, *Acceptance* = 1) for Studies 4a, 4b, and 4c.

Note. Coefficients predicting the dependent variable are expressed in a log-odds metric. Asterisks indicate levels of significance ($^{***}p < .001$). CFC = changing future consequences.

Discussion

The purpose of Study 4 was to replicate the associations between choice of reappraisal tactics and emotions found in Studies 1 and 2 and examine two possible explanations that may account for this association. Study 4a replicated the association between emotions and selection of reappraisal tactics. Study 4b showed a similar pattern between emotions and reappraisal tactics for perceived efficacy, such that reappraisal tactics that address appraisals linked to these emotions were perceived as more effective, although they may not necessarily be more effective. Study 4c showed a similar pattern between emotions and reappraisal tactics for perceived effort, such that reappraisal tactics that address appraisals linked to these emotions were perceived as less effortful to implement. The effects remained significant in a mixed-effect regression, demonstrating that they generalize across stimuli. Finally, in all three studies, the associations between emotions and reappraisal tactics were partially mediated by the appraisals related to each emotion.

Collectively, the findings of Studies 3 and 4 point to a dissociation between actual efficacy and perceived efficacy. Whereas acceptance and CFC were equally effective in regulating sadness (Study 3), acceptance was perceived to be more effective than CFC in regulating sadness (Study 4b). This discrepancy demonstrates an instance in which people choose emotion regulation strategies that may or may not be the most effective at regulating their emotions.

General Discussion

The aim of this investigation was to test whether certain reappraisal tactics match certain emotions better than others, and whether this association is due to the extent to which the reappraisal tactics target emotion-specific appraisals. Our investigation showed that people are more likely to select acceptance to regulate sadness and CFC to regulate fear (Studies 1 and 2, 4a). Effect sizes were consistently large across studies, demonstrating the robustness of the phenomenon. We also found that people expect reappraisal tactics that target emotion-specific appraisals to be more effective and easier to implement (Study 4b-c). Finally, we found partial but not conclusive support for the possibility that tactics are more effective in regulating emotions that map on to appraisals that are relevant to them (Study 3). Overall, the findings highlight the importance of considering emotion regulation tactics in the context of specific desired emotional end-states, or emotion goals.

Implications for Understanding Emotion Regulation

Emotion regulation strategies operate in the service of emotion goals (Tamir, 2016; Tamir & Millgram, 2017). Given that people can pursue various emotion goals, they may

select strategies to optimize the pursuit of the specific goal they are seeking to attain. The selection of emotion regulation strategies, therefore, may depend on the emotion goal pursued. Providing initial support for this idea, Millgram and colleagues (2019) found that people were more likely to choose distraction to decrease emotions, but to choose rumination to increase emotions. Thus, which emotion regulation strategy people selected depended on the emotion goal they pursued. The present investigation provides further evidence for the interdependence of goals and means in emotion regulation. It demonstrates, for the first time, that such interdependence extends beyond the desired direction of regulation to particular emotions and specific regulation tactics. Furthermore, this investigation provides one theoretical basis for the interdependence of emotion goals and regulation tactics—namely, their underlying appraisals. Different emotions might dictate the selection of different tactics for their regulation partly because they inherently differ in the appraisals that underlie them.

The match between regulation tactics and different emotions may also have important implications for understanding efficacy in emotion regulation. For example, Dunn, Billotti, Murphy, and Dalgleish (2009) found that expressive and experiential suppression were more effective than acceptance at down-regulating negative emotions and concluded that this is “contrary to the current clinical zeitgeist” that acceptance is effective and suppression is ineffective (p. 761). The authors concluded that suppression may exert more positive effects than is acknowledged in the literature. Our analysis offers a different perspective to such debates. It suggests that the inefficacy of acceptance may depend on the emotions targeted for regulation. Dunn et al. (2009) examined regulation in response to films of traffic accidents. It is possible that the lower efficacy of acceptance, in this context, was unique to the regulation of fear. Our investigation points to the possibility that the efficacy of emotion regulation strategies or tactics may critically depend on how well they match the specific emotion targeted for regulation. However, whereas our investigation has focused primarily on situational acceptance, Dunn et al. (2009) have focused on emotional acceptance. Consequently, further research is needed to evaluate this proposition.

Limitations and Future Directions

We have argued that people select reappraisal tactics that map on to the appraisals that are linked to the emotions they seek to regulate. To better understand the phenomenon and point to possible mechanisms, we focused on two emotions and two reappraisal tactics. By doing so, our findings provide a proof of concept, supporting the idea that there may be a correspondence between emotions and reappraisal tactics. Nevertheless, our investigation assessed only two emotions, two reappraisal tactics, and two possible dimensions of appraisal. This limited our ability to assess the distinct role

that each appraisal may play for each emotion. For example, when showing that outcome certainty mediates the association between experiencing fear (vs. sadness) and choosing CFC (vs. acceptance), it is not possible to determine whether outcome certainty is negatively related to fear and positively related to CFC, as we predicted, or whether outcome certainty is positively related to sadness and negatively related to acceptance. Furthermore, even though we did not distinguish between situational acceptance and emotional or non-judgmental acceptance, these different forms of acceptance have been associated with different outcomes (Nakamura & Orth, 2005) and future research is needed to determine whether all types of acceptance are associated with sadness. In addition, future research should identify additional matches between other reappraisal tactics and other emotions on the basis of shared appraisals. For example, both CFC and acceptance concern expectancies (Uusberg, Taxer, Yih, Uusberg, & Gross, 2018). Reappraisal tactics that refer to attributions may be useful for regulating emotions that differ with respect to the attribution of negative outcomes (Ellsworth & Smith, 1988). For instance, changing the attribution of negative outcomes to one's own behavior may be suited for regulating guilt, changing the attribution of negative outcomes to the situation may be suited for regulating sadness, and changing the attribution of negative outcomes to others may be suited for regulating anger.

In addition, some reappraisal tactics have already been meaningfully dissociated from one another and therefore may be a good starting point for examining fit with particular emotions. For example, the tactic of distancing, which involves mentally changing one's construal of an emotional event by varying one's psychological distance from it, has been found to be more effective than the tactic of re-interpretation, which involves mentally changing the meaning of an emotional event (Denny & Ochsner, 2014). Distancing may be particularly suited to regulate emotions whose appraisals are conducive to adopting an external perspective to oneself. Indeed, self-distancing, which involves adopting an external perspective to oneself, was found to be less effective at regulating emotions low in self-distance, such as guilt and shame, relative to emotions higher in self-distance, such as sadness and anger (Katzir & Eyal, 2013). Additional tactics, such as detached reappraisal and positive reappraisal, have also been dissociated from each other and may map on to different emotions (Shiota & Levenson, 2012). For example, to the extent that detached reappraisal involves focusing on appraisals that do not involve threat, detached reappraisal may be particularly effective at regulating fear. Future research could examine these possibilities directly. Although the findings on strategy selection were consistent and stable across studies, the findings on efficacy were not. The results of Study 3 did not point to a conclusive association between the efficacy of regulating specific emotions and their corresponding reappraisal tactics. Furthermore, these results differed from the association between emotion and reappraisal tactics when

assessing perceived efficacy in Study 3. One account for these inconsistent findings is the role of effort in selection and in perceived efficacy. In particular, actions are selected so as to minimize effort (Kool et al., 2010), but the least effortful action may not necessarily be the most effective action. Thus, selection may be influenced by perceived effort to a greater extent than efficacy. Future research should address these inconsistent findings. Future studies should also test whether the selection of reappraisal tactics for regulating specific emotions replicates outside the lab, in daily life, potentially by using experience sampling methods. These studies should also use more reliable, multi-item measures of appraisals.

The present investigation demonstrates that appraisals that are relevant to fear and sadness mediate the association between emotions and the selection of reappraisal tactics. All mediation analyses were preregistered and demonstrated partial mediation, but not full mediation. This may be due to the simple, single-item measures we used to assess appraisals. Psychometrically valid multi-item measures of appraisals may explain a larger portion of the association between emotions and reappraisal tactics. However, we cannot rule out alternative criteria for mapping emotions to reappraisal tactics. For example, the associations may be due to differences in arousal between fear and sadness. In particular, fear is more arousing than sadness (Russell, 1980). If CFC is more suited for regulating high arousal relative to acceptance, people may be more likely to regulate fear (which involves high arousal) by selecting CFC than by selecting acceptance. Nevertheless, in our studies, fear was sometimes more intense than sadness (Study 1), sometimes as intense to sadness (Study 2), and sometimes less intense than sadness (Studies 3 and 4), indicating that differences in emotional intensity do not account for our findings. The associations may also be due to temporal differences between fear and sadness. If CFC is more suited for regulating future outcomes, whereas acceptance is more suited for regulating past outcomes, people may be more likely to regulate fear (which involves future outcomes) by selecting CFC than by selecting acceptance. Future studies could assess the role of appraisals of emotions in mapping emotions to reappraisal tactics.

The present investigation demonstrates the idea that emotion regulation can be tailored to different emotions. We tested specific predictions that were formulated primarily on the basis of appraisal theories of emotions, but the broader idea could be generalized to other conceptualizations of emotions, including dimensional accounts (e.g., Russell, 1980, 2003). Future research could examine such possibilities directly.

Emotion regulation strategies have been typically studied independently of emotion goals. We demonstrate the explanatory power of examining emotion goals in understanding emotion regulation choice. Yet, the specific mechanism underlying the pattern of strategy selection captured

in our study remains unclear. Our findings suggest that this pattern corresponds to perceived effort and expected efficacy, but not necessarily actual efficacy. Future research should continue to test the causal mechanisms driving such selection, comparing potential mechanisms we already identified as well as potential new ones, using experimental designs.

Specific emotions are the targets of emotion regulation. Nevertheless, existing models of emotion regulation typically studied how people regulate emotions as one-size-fits-all, regardless of the specific emotions they were trying to regulate. The present investigation shows that how people choose to regulate their emotions largely depends on which emotion is the target of regulation. To advance our understanding of emotion regulation, therefore, it is incumbent to consider regulation strategies in relation of the specific emotions they are designed to modify.

Declaration of Conflicting Interests

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ORCID iD

Allon Vishkin  <https://orcid.org/0000-0002-9655-7449>

Supplemental Material

Supplemental material is available online with this article.

Notes

1. Although our studies focus primarily on situational acceptance, they do not fully distinguish between situational and emotional acceptance.
2. Studies on emotion regulation choice have been conducted primarily in laboratory settings (e.g., Sheppes et al., 2011), but we did not expect effect sizes from such studies to necessarily replicate in online settings.
3. Five participants were removed for failing an instructional attention check (IMC; Oppenheimer, Meyvis, & Davidenko, 2009).
4. After completing the regulation task, participants completed the reappraisal subscale of the ERQ and reported the extent to which they believed each of the statements would be effective in regulating sadness and in regulating fear on a scale of 1 (*not at all*) to 5 (*to a great extent*). We expected the latter to be heavily dependent on actual efficacy, given that they followed regulation directly. Therefore, we report the results of these exploratory analyses in the Supplementary Materials. We did not analyze the reappraisal subscale of the ERQ.
5. We removed three participants from Study 4a, three participants from Study 4b, and two participants from Study 4c for failing an instructional attention check (Oppenheimer et al., 2009).
6. On the continuous measure, CFC was perceived as more effortful to implement for both sadness and fear, even though the interaction was in the expected direction (see Supplementary Materials).
7. The models in Studies 4a and 4b converged only after removing subject slopes.

References

- Aldao, A., Nolen-hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*, 217-237.
- Barr, D. J., Levy, R., Scheepers, C., & Tily, H. J. (2013). Random effects structure for confirmatory hypothesis testing: Keep it maximal. *Journal of Memory and Language, 68*, 255-278.
- Bates, D., Maechler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software, 67*, 1-48.
- Bigman, Y. E., Sheppes, G., & Tamir, M. (2017). Less is more in emotion regulation: The availability of regulation options impairs efficacy. *Emotion, 17*, 993-1006.
- Denny, B. T., & Ochsner, K. N. (2014). Behavioral effects of longitudinal training in cognitive reappraisal. *Emotion, 14*, 425-433.
- Dunn, B. D., Billotti, D., Murphy, V., & Dalgleish, T. (2009). The consequences of effortful emotion regulation when processing distressing material: A comparison of suppression and acceptance. *Behaviour Research and Therapy, 47*, 761-773.
- Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 572-595). New York, NY: Oxford University Press.
- Ellsworth, P. C., & Smith, C. A. (1988). From appraisal to emotion: Differences among unpleasant feelings. *Motivation and Emotion, 12*, 271-302.
- Frijda, N. H. (1986). *The emotions*. London, England: Cambridge University Press.
- Frijda, N. H., Kuipers, P., & Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology, 57*, 212-228.
- Gross, J. J. (1998). The emerging field of emotion regulation. *Review of General Psychology, 2*, 271-299.
- Gross, J. J. (2015). The extended process model of emotion regulation: Elaborations, applications, and future directions. *Psychological Inquiry, 26*, 130-137.
- Gruber, J., Harvey, A. G., & Gross, J. J. (2012). When trying is not enough: Emotion regulation and the effort-success gap in bipolar disorder. *Emotion, 12*, 997-1003.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.
- Katzir, M., & Eyal, T. (2013). When stepping outside the self is not enough: A self-distanced perspective reduces the experience of basic but not of self-conscious emotions. *Journal of Experimental Social Psychology, 49*, 1089-1092.
- Kool, W., McGuire, J. T., Rosen, Z. B., & Botvinick, M. M. (2010). Decision making and the avoidance of cognitive demand. *Journal of Experimental Psychology: General, 139*, 665-682.
- Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, R., Chun, W. Y., & Sleeth-Keppler, D. (2002). A theory of goal-systems. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 34, pp. 331-378). San Diego, CA: Academic Press.

- Mauss, I. B., & Tamir, M. (2014). Emotion goals: How their content, structure, and operation shape emotion regulation. In J. J. Gross (Ed.), *The handbook of emotion regulation* (2nd ed., pp. 361-375). New York, NY: Guilford Press.
- McRae, K., Ciesielski, B., & Gross, J. J. (2012). Unpacking cognitive reappraisal: Goals, tactics, and outcomes. *Emotion, 12*, 250-255.
- Mikels, J. A., Fredrickson, B. L., Larkin, G. R., Lindberg, C. M., Maglio, S. J., & Reuter-Lorenz, P. A. (2005). Emotional category data on images from the international affective picture system. *Behavior Research Methods, 37*, 626-630.
- Millgram, Y., Sheppes, G., Kalokerinos, E. K., Kuppens, P., & Tamir, M. (2019). Do the ends dictate the means in emotion regulation? *Journal of Experimental Psychology: General, 148*, 80-96.
- Nakamura, Y. M., & Orth, U. (2005). Acceptance as a coping reaction: Adaptive or not? *Swiss Journal of Psychology, 64*, 281-292.
- Naragon-Gainey, K., McMahon, T. P., & Chacko, T. P. (2017). The structure of common emotion regulation strategies: A meta-analytic examination. *Psychological Bulletin, 143*, 384-427.
- Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology, 45*, 867-872.
- Parkinson, B., & Totterdell, P. (1999). Classifying affect-regulation strategies. *Cognition and Emotion, 13*, 277-303.
- Rothbaum, F., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social Psychology, 42*, 5-37.
- Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology, 39*, 1161-1178.
- Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review, 110*, 145-172.
- Sasaki, J. Y., & Kim, H. S. (2011). At the intersection of culture and religion: A cultural analysis of religion's implications for secondary control and social affiliation. *Journal of Personality and Social Psychology, 101*, 401-414.
- Scherer, K. S. (1984). On the nature and function of emotion: A component process approach. In K. R. Scherer & P. Ekman (Eds.), *Approaches to emotion* (pp. 293-317). Hillsdale, NJ: Lawrence Erlbaum.
- Sheppes, G., Scheibe, S., Suri, G., & Gross, J. J. (2011). Emotion regulation choice. *Psychological Science, 22*, 1391-1396.
- Sheppes, G., Scheibe, S., Suri, G., Radu, P., Blechert, J., & Gross, J. J. (2014). Emotion regulation choice: A conceptual framework and supporting evidence. *Journal of Experimental Psychology: General, 143*, 163-181.
- Sheppes, G., Suri, G., & Gross, J. J. (2015). Emotion regulation and psychopathology. *Annual Review of Clinical Psychology, 11*, 379-405.
- Shiota, M. N., & Levenson, R. W. (2012). Turn down the volume or change the channel? Emotional effects of detached versus positive reappraisal. *Journal of Personality and Social Psychology, 103*, 416-429.
- Tamir, M. (2016). Why do people regulate their emotions? A taxonomy of motives in emotion regulation. *Personality and Social Psychology Review, 20*, 199-222.
- Tamir, M., & Millgram, Y. (2017). Motivated emotion regulation: Principles, lessons, and implications of a motivational analysis of emotion regulation. In A. J. Elliot (Ed.), *Advances in motivation science* (pp. 207-247). San Diego, CA: Academic Press.
- Uusberg, A., Taxer, J., Yih, J., Uusberg, H., & Gross, J. J. (in press). Reappraising reappraisal. *Emotion Review*.
- Webb, T. L., Miles, E., & Sheeran, P. (2012). Dealing with feeling: A meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychological Bulletin, 138*, 775-808.