Europe's Journal of Psychology
ejop.psychopen.eu | 1841-0413

Research Reports

Believing Is Doing: Emotion Regulation Beliefs Are Associated With Emotion Regulation Behavioral Choices and Subjective Well-Being

Catherine Nicole Marie Ortner*[a], Esther Lydia Briner[b], Zdravko Marjanovic[a]

[a] Department of Psychology, Thompson Rivers University, Kamloops, Canada. **[b]** Department of Psychology, Carleton University, Ottawa, Canada.

Abstract

Research in emotion regulation has begun to examine various predictors of emotion regulation choices, including individual differences and contextual variables. However, scant attention has been paid to the extent to which people's beliefs about the specific consequences of emotion regulation strategies for the components of an emotional response and long-term well-being predict their behavioral regulatory choices and, in turn, their subjective well-being. Participants completed measures to assess their beliefs about the consequences of functional and dysfunctional strategies, behavioral choices of emotion regulation strategies in negative scenarios, and subjective well-being. The model that fit the data indicated partial mediation whereby beliefs were associated with approximately 9% of the variance in choices. Emotion regulation choices were related to subjective well-being, with an additional direct effect between beliefs and well-being. This suggests beliefs play a role in people's regulatory choices. Future research should explore how beliefs interact with individual differences and contextual variables to better understand why people regulate their emotions in different ways and, ultimately, to help individuals make healthy emotion regulation choices.

Keywords: emotion regulation, subjective well-being, beliefs, affect, emotional intelligence

Europe's Journal of Psychology, 2017, Vol. 13(1), 60–74, doi:10.5964/ejop.v13i1.1248

Received: 2016-07-19. Accepted: 2016-10-30. Published (VoR): 2017-03-03.

Handling Editor: Nicholas Kuiper, University of Western Ontario, London, Canada

*Corresponding author at: Thompson Rivers University, 900 McGill Road, Kamloops, British Columbia, V2C 0C8. E-mail: cortner@tru.ca

Emotion regulation—the maintenance or modulation of the various components of emotional experience (Gross & Thompson, 2007)—is fundamental to human performance, health, and well-being (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Balzarotti, Biassoni, Villani, Prunas, & Velotti, 2016; DeSteno, Gross, & Kubzansky, 2013; Tamir, 2009). The process model of emotion regulation (Gross, 2001) proposes that emotion regulation strategies can be described in terms of whether they occur early (antecedent) or late (response-focused) in the emotion response. For example, reappraisal, thinking about a situation in a different way in order to change one's feelings, is thought to operate early in the generation of an emotion response. Similarly, attentional deployment (reorienting one's attention to alternative stimuli), situation selection, and situation modification are all thought to occur before the emotion has fully unfolded. In contrast, strategies such as suppression of facial expressions and acting out are thought to occur after the emotional response has started to unfold. Early research on emotion regulation in adults assessed the consequences of such strategies (in particular reappraisal and expression suppression) for expressive behavior, subjective experience, physiology, and cognition, as well as social relationships and well-being, and distinguished between putatively adaptive and

maladaptive strategies (Gross, 2001, 2002; Gross & John, 2003). Recent findings have honed this distinction, suggesting that flexibility in emotion regulation, rather than rigidly favoring one strategy, is beneficial for psychological health (Aldao & Nolen-Hoeksema, 2012a, 2012b; Kashdan & Rottenberg, 2010). It has been argued that no emotion goes unregulated (Campos, Frankel, & Camras, 2004; Kappas, 2011; Thompson, 2011). However, our understanding of *why* people choose to regulate their emotions in different ways is limited.

Several variables might drive the selection of one or another strategy in a given situation, such as the intensity of the emotional stimulus (Sheppes & Gross, 2011; Sheppes, Scheibe, Suri, & Gross, 2011), external incentives (Sheppes et al., 2014), emotional intelligence (Peña-Sarrionandia, Mikolajczak, & Gross, 2015), and other internal (e.g., cognitive control) and external (e.g., access to social support) resources (Urry & Gross, 2010). Research has also shown that beliefs about the benefits of particular emotional states for subsequent task performance predict emotion regulation choices (Tamir & Ford, 2012). However, little is known about how knowledge or beliefs about the outcomes of emotion regulation strategies for emotional responding and well-being predict implementation of those strategies and, in turn, actual well-being.

In a survey of lay beliefs about down-regulation of negative emotions, Loewenstein (2007) found that students endorsed the use of strategies that have been shown in the literature to be adaptive, such as reappraisal (changing how one thinks about a situation in order to change how one feels) and distraction, as well as strategies that have been shown to be maladaptive, such as suppression. Participants also reported that both kinds of strategies (adaptive and maladaptive) could be effective. However, the study was purely descriptive in nature and examined only a limited number of strategies in response to a small number of vignettes.

Other researchers have examined how beliefs about the controllability of emotions predict emotion regulation and well-being. Believing that negative moods can be alleviated is associated with higher positive affect (Catanzaro et al., 2014) and less negative affect and depression (Catanzaro & Mearns, 1990; Catanzaro et al., 2014). In addition, such beliefs predict use of adaptive coping strategies (Kirsch, Mearns, & Catanzaro, 1990). Similarly, research on implicit beliefs about emotions suggests that believing emotions are malleable, rather than fixed, is associated with the use of reappraisal (Schroder, Dawood, Yalch, Donnellan, & Moser, 2015; Tamir, John, Srivastava, & Gross, 2007) and that reappraisal implementation mediates the relation between implicit beliefs and well-being outcomes, including life satisfaction, self-esteem, stress, and depression (De Castella et al., 2013). In sum, believing that one can control one's emotions predicts greater use of adaptive strategies, such as reappraisal, and subsequent well-being.

The emotional intelligence literature has also tackled the relation between emotion regulation knowledge and well-being (MacCann & Roberts, 2008). In these studies, emotion regulation knowledge is assessed by asking people to select the best response to a number of vignettes (MacCann & Roberts, 2008; Mayer, Salovey, Caruso, & Sitarenios, 2003). On these measures, emotion regulation knowledge is positively associated with well-being (Burrus et al., 2012; MacCann & Roberts, 2008). However, these studies do not address people's beliefs about the specific consequences of individual emotion regulation strategies, such as their effects on affect, physiology, and long-term well-being.

An important, and as yet, unanswered question is whether or not believing that particular emotion regulation strategies have specific beneficial consequences for emotional experience and well-being predicts greater use of these strategies and, in turn, well-being. For example, does believing that reappraisal will result in advantageous changes in subjective feelings and physiology predict greater use of that strategy? Do people

who believe adaptive emotion regulation strategies to be beneficial over maladaptive strategies actually use them more often?

The current study was a preliminary exploration of this issue. We used a recently developed measure, the Emotion Regulation Profile – Revised (ERP-R; Nelis, Quoidbach, Hansenne, & Mikolajczak, 2011), which was designed to assess people's emotion regulation preferences in response to emotionally evocative scenarios. The ERP-R measures down-regulation of negative emotions and up-regulation of positive emotions. These factors are moderately correlated and both are associated with well-being (Nelis et al., 2011; Quoidbach, Berry, Hansenne, & Mikolajczak, 2010). However, because of constraints on testing time, we focused on down-regulation of negative emotions for the present study. A strength of the ERP-R is that it assesses self-reported preferences for the use of both functional and dysfunctional strategies, which have been deemed as such by the empirical literature. Instead of just focusing on suppression and reappraisal, the most commonly studied strategies in the early research on emotion regulation, the ERP-R asks about the use of four functional strategies (situation modification—changing the situation, attention reorientation—shifting attention to an alternative stimulus, positive reappraisal—thinking about the situation in a positive way, and emotion expression—sharing feelings with others) and four dysfunctional strategies (learned helplessness—doing nothing to improve one's feelings, substance use—using alcohol or other substances to change one's feelings, rumination—focusing on negative thoughts and feelings about a situation, and acting out—behaving in a way dictated by the emotion, e.g., yelling when angry) in each of several emotionally evocative scenarios. In order to examine participants' beliefs about the consequences of these emotion regulation strategies, we developed items to assess beliefs about five dimensions of emotional responding: facial expressions, bodily changes, subjective feelings, long-term well-being, and cognition. These dimensions of interest were selected based on the extant literature on the consequences of various emotion regulation strategies. For example, research has shown that attempts to suppress facial expressions of emotion are successful in changing expressions but can result in increased physiological responses and are cognitively costly (Richards & Gross, 1999). On the other hand, reappraisal, although also cognitively effortful (Ortner, Zelazo, & Anderson, 2013), results in reduced subjective feelings and better long-term well-being (Gross & John, 2003).

We hypothesized that emotion regulation behavioral choices would mediate the relation between beliefs and well-being—i.e., that believing functional strategies to be beneficial over dysfunctional strategies would be associated with more adaptive emotion regulation choices overall and, in turn, enhanced subjective well-being (Figure 1). The relation between beliefs and well-being may be both indirect (mediated by emotion regulation behavioral choices) and direct (whereby beliefs are self-confirming and directly result in changes in well-being) (cf. Kirsch et al., 1990). Therefore, we tested different models to determine which best accounted for the findings.

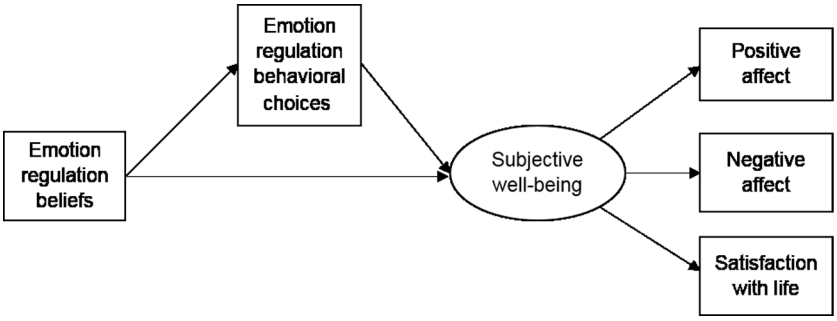

Figure 1. Hypothesized model of the relation between emotion regulation beliefs, emotion regulation behavioral choices, and subjective well-being.

Method

Participants

One hundred and seventeen undergraduate students from the introductory psychology participant pool at a small university took part in the study. Ethical approval was granted from the university Research Ethics Board. All participants gave informed consent to take part in the study and received a 2% course bonus credit for their participation.

From the original sample of 117, we deleted five cases that contained ≥ 10% of missing data based on the premise that these data were likely to bias our statistical analysis (Bennett, 2001). In SEM particularly, missing data necessitates greater sample sizes to compensate for their biasing effect (Wolf, Harrington, Clark, & Miller, 2013). Moreover, all five of the deleted cases contained non-random missing data, such that in each case responders stopped answering items partly through the questionnaire and left the later items in the questionnaire blank, showing a lack of motivation to answer items conscientiously. An additional nine were eliminated due to their low CRS scores, which identified them as random responders (i.e., cases with CRS sum score ≤ 3). This constitutes a random responding rate of 7.69% and is consistent with random responding rates found in other undergraduate samples surveyed with the CRS (e.g., Marjanovic, Holden, Struthers, Cribbie, & Greenglass, 2015; Marjanovic et al., 2014) and similar validity measures (see Meade & Craig, 2012). (Note that all statistics and indices were strengthened and improved after the deletion of the nine identified random responders). The final sample (N = 103) identified themselves as 69.90% “female,” 29.10% “male,” and 1.00% “other.” Their mean age was 20.00 (SD = 3.28).

Materials and Design

Participants completed a battery of self-report measures to assess: 1) participants’ choices of emotion regulation strategies in negative scenarios; 2) participants’ beliefs about emotion regulation strategies; and 3) participants’ subjective happiness and life satisfaction, as part of a larger study.

Measure of Emotion Regulation Beliefs

In the absence of measures to assess beliefs about the consequences of emotion regulation, we developed several items to assess participant beliefs about each of the eight strategies assessed by the ERP-R in five domains of emotional responding (cognitive effort, subjective feelings, facial expressions, bodily responses, and well-being). Participants were reminded of the eight emotion regulation strategies (four functional and four

dysfunctional) assessed in the ERP-R in statement form (e.g., for emotion expression, “Sharing your emotions with other people...”). For each strategy, participants rated on a seven-point scale (1 = *not at all* to 7 = *very much*) the extent to which they believed responding in that way would be “…mentally effortful for you,” “…reduce your negative feelings,” “…decrease your bodily reactions (e.g., heart rate, stomach butterflies, etc.),” “…decrease your facial expressions of emotion,” and “…increase your overall well-being.” A single score on the ERB was derived by first examining the item-total correlations for the five beliefs for each emotion regulation strategy separately. In each case, “mentally effortful” correlated poorly (from r = .00 to r = .39) with the other items. Furthermore, for each strategy, Cronbach’s α ranged from .65 to .78 when including all five beliefs but rose to between .81 and .91 when excluding mental effort. Therefore, the mental effort item was dropped. Subsequently, to obtain a summative estimate of the extent to which participants believed functional strategies were overall more beneficial than dysfunctional strategies, we computed mean scores for beliefs about functional strategies and dysfunctional strategies, and finally a composite score whereby beliefs about dysfunctional strategies were subtracted from beliefs about functional strategies. Higher scores reflected the tendency to believe that functional strategies are beneficial over dysfunctional strategies.

Emotion Regulation Profile-Revised (ERP-R)

The ERP-R (Nelis et al., 2011) was developed to assess individual differences in the choice of emotion regulation strategies in response to examples of real-life situations that would normally elicit mildly negative and mildly positive emotions.

For the purposes of the current study, we administered only the nine scenarios eliciting negative emotions (two for each of anger, sadness, and fear, and one for each of shame, guilt, and jealousy). Each scenario was followed by eight possible reactions: four strategies deemed by previous empirical research to be functional or adaptive (i.e., associated with positive indicators of mental and somatic health), and four strategies considered dysfunctional or maladaptive (i.e., associated with negative indicators of mental/somatic health). The functional strategies were situation modification (e.g., getting help from a friend to prepare for a presentation), attention reorientation (e.g., thinking about a happy memory), positive reappraisal (e.g., looking for the positive side of a situation), and emotion expression (e.g., sharing emotions). The dysfunctional strategies were learned helplessness (e.g., doing nothing to make a situation better), rumination (e.g., focusing on negative thoughts), substance abuse (e.g., using alcohol to escape a situation), and acting out (e.g., yelling when angry). For each scenario, respondents were asked to select the strategy or strategies that best described their most likely reactions in the situation. Total scores are obtained by summing 1 point for each functional strategy selected and -1 point for each dysfunctional strategy selected. A total overall score for the down-regulation of negative emotions was computed, higher scores reflecting more adaptive emotion regulation overall. Prior research has shown that the ERP-R correlates with measures of cognitive emotion regulation and predicts positive affect and mental health, while being distinct from non-verbal and verbal abilities (Nelis et al., 2011). The reliability for overall choices (functional-dysfunctional strategies) in the current study was α = .76.

Subjective Well-Being

We assessed the three components of subjective well-being (Lyubomirsky, Sheldon, & Schkade, 2005), by examining life satisfaction and positive and negative affect. The Satisfaction With Life Scale (SWLS; Pavot & Diener, 1993) assesses the life satisfaction component of subjective well-being. Previous research has shown 2-month test-retest reliability of .82 (Pavot & Diener, 1993). The SWLS shows good convergent validity with other measures of well-being (Diener, Emmons, Larson, & Griffin, 1985). It consists of five items (e.g., “The

conditions of my life are excellent."), to which participants respond on a seven-point scale (1 = *strongly disagree*, to 7 = *strongly agree*). A mean of scores across all items was computed. Following Huta (2013), participants responded to four items assessing positive affect ("happy," "enjoyment/fun," "joyful," and "pleased") and five items assessing negative affect ("unhappy," "frustrated," "depressed," "angry/hostile," and "worried/anxious"). For each item, the instruction was to "Please indicate how much you typically feel each of the following states" on a seven-point Likert scale (1 = *not at all*, to 7 = *extremely*). Mean scores were computed for positive and negative affect separately. Huta (2013) found that while life satisfaction resulted from motives to pursue both eudaimonic and hedonic activities, positive affect and negative affect was associated with motives to pursue hedonic activities.

Conscientious Responders Scale (CRS)

The CRS (Marjanovic et al., 2014) consists of five items that are embedded amongst other items in a questionnaire to identify non-conscientious responders. The items are instructional (e.g., "To respond to this question, please choose option number five, 'slightly agree'") and scored as correct (1) or incorrect (0). Following guidelines from Marjanovic et al. (2014), participants scoring a total of 0, 1, or 2, out of a possible 5, were considered random responders and were omitted from the analyses.

Procedures

Participants completed the measures in a group session, taking approximately 35 minutes to complete the full battery of measures. After the questionnaires were collected, participants were fully debriefed.

Results

Descriptive statistics and correlations for all the study variables are presented in Table 1. In addition, regarding demographics, sex (male = 0, female = 1) was negatively correlated with ERP-R scores (r = -.20, p = .040) and marginally positively correlated with negative affect (r = .18, p = .067). In other words, women reported less adaptive emotion regulation and more negative affect than men. Age was uncorrelated with the other variables. Regarding the study variables of interest, as predicted, beliefs (i.e., the sum of functional-dysfunctional belief scores) positively correlated with ERP-R (i.e., the sum of functional-dysfunctional behavioral choices) scores and satisfaction with life, and negatively correlated with negative affect. ERP-R scores correlated positively with satisfaction with life and positive affect, and negatively with negative affect. Specifically, individuals who reported using more functional behavioral strategies than dysfunctional strategies reported higher levels of subjective well-being. Finally, all three subjective well-being measures were strongly and significantly inter-correlated, all *r*s were above .50 and all *p*s were below .001.

Table 1

Descriptive Statistics (Means, Standard Deviations, and Cronbach's Alpha) and Pearson Correlation Coefficients Among Emotion Regulation Beliefs, Choices, and Subjective Well-Being.

	1	2	3	4	5
1. ER Beliefs	–				
2. ER Choices	.31*	–			
3. PA	.33*	.30*	–		
4. NA	-.29*	-.41**	-.66**	–	
5. SWLS	.34**	.44**	.56**	-.53**	–
M	9.72	6.79	5.05	3.27	23.84
SD	4.88	6.65	1.01	1.24	6.06
α	-	.76	.88	.85	.84

Note. α = Cronbach's alpha statistic. ER Beliefs = beliefs about functional-dysfunctional strategies; ER choices = Emotion Regulation Profile-Revised down-regulation of negative emotions; PA = positive affect; NA = negative affect; SWLS = Satisfaction With Life Scale. *p < .01. **p < .001 (two-tailed).

Model Analysis

Structural equation modeling was conducted using AMOS software with maximum likelihood estimation (Arbuckle, 2013). Model fit indices were evaluated with the standards recommended by Hu and Bentler (1999) and Kline (2011). Good or acceptable model fit was assessed with χ^2-p-value ≥ .05, Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Incremental Fit Index (IFI) ≥ .95, and, standardized root mean square residual (SRMR) ≤ .08. Emotion regulation beliefs (functional-dysfunctional beliefs) and emotion regulation behavioral choices (assessed by the ERP-R) were analyzed as discrete variables, whereas a latent variable was created for subjective well-being, which was comprised of positive affect, negative affect, and satisfaction with life as indicators (Kline, 2011). Bootstrapping was used for the analysis of mediating effects. The hypothesized model produced results which indicated a significantly mediated relationship between beliefs and subjective well-being (the 1,000 samples bootstrapped p-value of the indirect relation = .008). All of the fit indices were within the acceptable range: $\chi^2(4, N = 103) = 8.50$, $p = .075$, GFI = .969, CFI = .968, TLI = .920, IFI = .969, SRMR = .041.

Review of the standardized parameter estimates (see Figure 2) of the model showed that, as predicted, emotion regulation beliefs were significantly predictive of emotion regulation behavioral choices (β = .31, $p = .001$), which in turn were significantly predictive of subjective well-being (β = .40, $p < .001$). The latent variable for subjective well-being was strongly associated with its three indicator variables, all of which yielded standardized betas above .70. The model showed a significant indirect relation between regulation beliefs and well-being (bootstrapped $p = .008$). However, the direct path between emotion regulation beliefs and subjective well-being was also statistically significant after controlling for the influence of the mediator—behavioral choices (c' = β = .29, $p = .004$ vs. c [the relation between variables without accounting for a mediator variable] = β = .38, $p < .001$). Altogether, the path between regulation beliefs and well-being and the fit statistics indicate the relation between beliefs and well-being is only partially, not fully, mediated by emotion regulation behavioral choices[i]. Beliefs predicted 9.3% of the variance in emotion regulation choices. Together, emotion regulation beliefs and choices predicted 31.4% of the variance in subjective well-being.

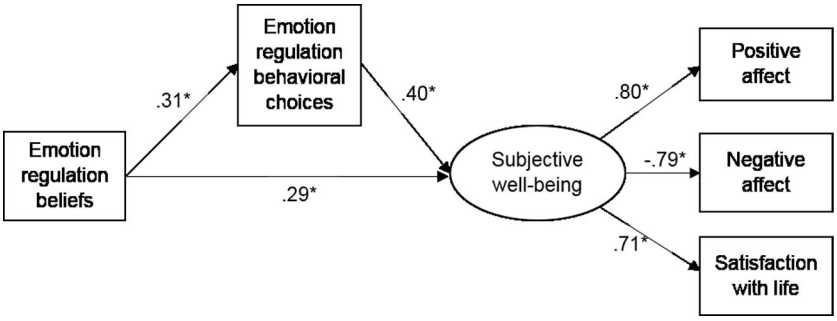

Figure 2. Model Showing Standardized Regression Coefficients for the Relation Between Emotion Regulation Beliefs, Emotion Regulation Behavioral Choices, and Subjective Well-Being. Emotion Regulation Choices Partially Mediated the Relation Between Emotion Regulation Beliefs and Subjective Well-Being.

*$p < .05$.

Discussion

The goal of the current study was to examine how beliefs about the consequences of emotion regulation strategies for emotional responding predict emotion regulation behavioral choices and, in turn, subjective well-being. We hypothesized a model where emotion regulation choices mediate the relation between emotion regulation beliefs and well-being. Results indicated that a model with partial mediation resulted in the best fit to the data.

The findings are novel in demonstrating emotion regulation beliefs as a predictor of emotion regulation choices and subsequent well-being. Prior research has examined other predictors, such as stimulus intensity (Sheppes & Gross, 2011), emotional intelligence (Peña-Sarrionandia et al., 2015), and beliefs about the consequences of emotion regulation for task performance (Tamir & Ford, 2012). We took a new approach by asking people about their beliefs about the consequences of various emotion regulation strategies for specific dimensions of emotional responding and well-being. Specifically, participants reported on the extent to which they believed functional strategies (such as reappraisal and attention reorientation) and dysfunctional strategies (such as learned helplessness and rumination) would change subjective feelings, physiological responses, facial expressions of emotion, and overall well-being. Importantly, we found that the more people believed functional strategies to be beneficial (i.e., reduce subjective feelings, physiological responses, and facial expressions, and increase well-being) relative to dysfunctional strategies, the more people reported they would choose to use those functional strategies relative to dysfunctional strategies. Furthermore, emotion regulation choices partially mediated the relation between beliefs and self-reported subjective well-being. That is, beliefs predicted well-being directly, but also via their prediction of emotion regulation choices.

The results have important implications for our understanding of why people choose to regulate their emotions in different ways. Previous research has shown that lay individuals may believe both adaptive and maladaptive strategies to be effective for regulating emotions (Loewenstein, 2007), but has not examined the relation between these beliefs, emotion regulation choices, and well-being. Believing a strategy to be beneficial might be just one precondition to using it and potentially experiencing its benefits for down-regulation of negative emotions and subsequent well-being. For example, someone may know that reappraisal is effective for changing their subjective experience of emotion, but they may not always desire to implement it, they may lack

the cognitive resources to be able to implement it effectively, or the strategy may only be effective in certain contexts. We found that beliefs predicted 9% of the variance in emotion regulation choices, demonstrating that they do play a theoretically important (when considering the numerous other variables that might predict such choices in any given moment) role in predicting emotion regulation behavioral choices. In addition, beliefs and emotion regulation choices together predicted 31% of the variance in subjective well-being.

Four of the dimensions of regulatory consequences that we examined (decreases in subjective feelings, physiological responses, and facial expressions and increase in overall well-being) had high internal consistency for each emotion regulation strategy. That is, if people believed a particular strategy to be effective for reducing their subjective feelings, they also tended to believe that it would be effective in producing the other consequences. However, beliefs about the cognitive effort required for engaging in a particular regulatory strategy did not correlate with the other consequences and so was not included in our final composite beliefs score. The finding that beliefs about mental effort did not correlate with beliefs about other consequences of emotion regulation is perhaps not surprising: people may expect that controlling their emotions will have similar consequences for their physiology, subjective experience, and facial expressions, and that these may contribute to well-being. In contrast, the mental effort required to regulate one's emotions is related more to the process of regulating one's emotions rather than the consequences for emotional experience. In addition, the extent to which regulating emotions in a particular way is effortful does not necessarily predict the effectiveness of that strategy. Other research has suggested that people do modulate their choice of emotion regulation strategy according to stimulus intensity, and hence the effort required for regulation, especially in the case of reappraisal (Sheppes et al., 2014). Future work could examine this issue in more detail with the scenarios and the range of strategies assessed in the ERP-R.

The current results also add to the existing literature on how emotion regulation choices relate to well-being and the criterion validity of the ERP-R. In the published research on the ERP-R to date, healthy emotion regulation choices (whether looking at down-regulation of negative emotions, up-regulation of positive emotions, or a score reflecting overall down- and up-regulation) have been shown to predict a range of outcomes, including mental health, physical health, and happiness (Nelis et al., 2011). In the current study, we found that subjective well-being, assessed by the three components of positive affect, negative affect, and life satisfaction (Lyubomirsky et al., 2005), was also related to emotion regulation choices.

Limitations and Future Directions

A limitation of the current study is its correlational nature. Mediation analyses imply causal relations among variables and yet we cannot be certain of the direction of the relationships examined in the models. Although we examined one plausible alternative model (that emotion regulation choices predict beliefs, rather than the other way round), there are other models that could have been tested. An important next step would be to demonstrate experimentally that modulating beliefs about emotion regulation would change emotion regulation choices and subsequent well-being. Future treatment studies could test this model. Longitudinal research would also enable us to establish temporal precedence in the current model. It would also be important to explore how beliefs and other variables, such as personality, cognitive resources, experience, motivation, and context, might interact to predict emotion regulation choices.

A second limitation is in our measurement of people's emotion regulation choices. Rather than assess emotion regulation implementation in real-time in response to a real emotionally evocative event, we asked participants,

via the ERP-R, to reflect on what their regulatory choices would be in response to several scenarios. This approach assumes that participants are willing and able to accurately report on what their behaviour might be in such scenarios. Participants may be motivated to respond in socially desirable ways about how they would behave in emotionally evocative situations. In addition, we know that at least some emotion regulation is implicit, taking place outside of conscious awareness (Gyurak, Gross, & Etkin, 2011; Hopp, Troy, & Mauss, 2011; Williams, Bargh, Nocera, & Gray, 2009). Therefore, people's ability to report on how they would regulate their emotions in given situations may be limited, even if they have previously encountered similar events. In addition, although the ERP-R was designed to assess regulation of both positive and negative emotions, we only assessed responses to negative scenarios. Future work should examine whether the same model holds for the relation between beliefs about the regulation of positive emotional states, emotion regulation choices in pleasant scenarios, and well-being.

Another limitation of the current study is the restricted range of the sample, which was a convenience sample of undergraduate students. Emotion regulation strategy use and ability, as well as experiences of positive and negative affect, change with age (Opitz, Gross, & Urry, 2012). Therefore, future research could examine the developmental trajectory of beliefs about the consequences of emotion regulation and the relation between beliefs and strategy choice, as well as how beliefs interact with other variables to predict age-related changes in emotion regulation.

We only examined the down-regulation of negative emotions. Previous research has shown that up-regulation of positive emotions is also predictive of well-being and mental health (Nelis et al., 2011; Quoidbach et al., 2010). Down-regulation of negative emotions and up-regulation of positive emotions are moderately correlated: while there is some overlap in these constructs, they are also distinct and so may have different predictors and consequences. Therefore, it would be important to examine whether beliefs also play a role in predicting emotion regulation in response to positive events.

Finally, one might say that the study sample size was on the small side (N = 104) to satisfy some recommendations for SEM analysis. We argue, however, the sample size was sufficiently large given the simplicity of the model. The model we tested contained only two observed variables and 1 latent variable with three indicator variables, and the data were all normally distributed with no missing values (see Wolf, Harrington, Clark, & Miller, 2013). With only 10 parameters in the model to estimate, it meets the conservative rule-of-thumb standard of 10 times the number of cases-to-parameters (the $N{:}q$ rule; Kline, 2011). Moreover, recent simulation studies of SEM sample size requirements have shown that small samples (e.g., $N < 100$) are adequate when models lack complexity. For example, in a recent study researchers showed a sample as small as 50 to 70 was sufficient to achieve satisfactory fit statistics for a SEM of functional brain connectivity containing four latent variables (Sideridis, Simos, Papanicolaou, & Fletcher, 2014). Thus, although our sample appears small, it is sufficient for SEM purposes given the simplicity of our model.

Despite the above limitations, the current study adds to existing experimental and correlational evidence indicating an association between both explicit and implicit emotion regulation with well-being (Denny & Ochsner, 2014; Gross & John, 2003; Hopp et al., 2011) and further confirms the validity of the negative scenarios in the ERP-R (Nelis et al., 2011).

Conclusions

In sum, we found that beliefs about the consequences of emotion regulation strategies are associated with their use, and in turn, subjective well-being. Further work assessing these constructs with positive emotional scenarios and measuring multiple contextual and individual difference predictors will help add to our understanding of the role of beliefs in emotion regulation choices.

Notes

i) We also tested the alternative model that making adaptive emotion regulation choices would predict emotion regulation beliefs and, in turn, subjective well-being. All model fit indices (i.e., χ^2, GFI, CFI, TLI, IFI, and SRMR) indicated poorer fit than in the hypothesised model.

Funding

The authors have no funding to report.

Competing Interests

The authors have declared that no competing interests exist.

Acknowledgments

The authors have no support to report.

References

Aldao, A., & Nolen-Hoeksema, S. (2012a). The influence of context on the implementation of adaptive emotion regulation strategies. *Behaviour Research and Therapy, 50*(7-8), 493-501. doi:10.1016/j.brat.2012.04.004

Aldao, A., & Nolen-Hoeksema, S. (2012b). When are adaptive strategies most predictive of psychopathology? *Journal of Abnormal Psychology, 121*(1), 276-281. doi:10.1037/a0023598

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*(2), 217-237. doi:10.1016/j.cpr.2009.11.004

Arbuckle, J. L. (2013). Amos [Computer software]. Chicago, IL, USA: SPSS Inc.

Balzarotti, S., Biassoni, F., Villani, D., Prunas, A., & Velotti, P. (2016). Individual differences in cognitive emotion regulation: Implications for subjective and psychological well-being. *Journal of Happiness Studies, 17*, 125-143. doi:10.1007/s10902-014-9587-3

Bennett, D. A. (2001). How can I deal with missing data in my study? *Australian and New Zealand Journal of Public Health, 25*(5), 464-469. doi:10.1111/j.1467-842X.2001.tb00294.x

Burrus, J., Betancourt, A., Holtzman, S., Minsky, J., MacCann, C., & Roberts, R. D. (2012). Emotional intelligence relates to well-being: Evidence from the Situational Judgment Test of Emotional Management. *Applied Psychology: Health and Well-Being, 4*(2), 151-166. doi:10.1111/j.1758-0854.2012.01066.x

Campos, J. J., Frankel, C. B., & Camras, L. (2004). On the nature of emotion regulation. *Child Development, 75*(2), 377-394. doi:10.1111/j.1467-8624.2004.00681.x

Catanzaro, S. J., & Mearns, J. (1990). Measuring generalized expectancies for negative mood regulation: Initial scale development and implications. *Journal of Personality Assessment, 54*(3-4), 546-563. doi:10.1080/00223891.1990.9674019

Catanzaro, S. J., Backenstrass, M., Miller, S. A., Mearns, J., Pfeiffer, N., & Brendalen, S. (2014). Prediction of symptoms of emotional distress by mood regulation expectancies and affective traits. *International Journal of Psychology, 49*(6), 471-479. doi:10.1002/ijop.12062

De Castella, K., Goldin, P., Jazaieri, H., Ziv, M., Dweck, C. S., & Gross, J. J. (2013). Beliefs about emotion: Links to emotion regulation, well-being, and psychological distress. *Basic and Applied Social Psychology, 35*(6), 497-505. doi:10.1080/01973533.2013.840632

Denny, B. T., & Ochsner, K. N. (2014). Behavioral effects of longitudinal training in cognitive reappraisal. *Emotion, 14*(2), 425-433. doi:10.1037/a0035276

DeSteno, D., Gross, J. J., & Kubzansky, L. (2013). Affective science and health: The importance of emotion and emotion regulation. *Health Psychology, 32*(5), 474-486. doi:10.1037/a0030259

Diener, E., Emmons, R. A., Larson, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49*(1), 71-75. doi:10.1207/s15327752jpa4901_13

Gross, J. J. (2001). Emotion regulation in adulthood: Timing is everything. *Current Directions in Psychological Science, 10*(6), 214-219. doi:10.1111/1467-8721.00152

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39*(3), 281-291. doi:10.1017/S0048577201393198

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85*(2), 348-362. doi:10.1037/0022-3514.85.2.348

Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (1st ed., pp. 3-24). New York, NY, USA: Guilford Press.

Gyurak, A., Gross, J. J., & Etkin, A. (2011). Explicit and implicit emotion regulation: A dual-process framework. *Cognition and Emotion, 25*(3), 400-412. doi:10.1080/02699931.2010.544160

Hopp, H., Troy, A. S., & Mauss, I. B. (2011). The unconscious pursuit of emotion regulation: Implications for psychological health. *Cognition and Emotion, 25*(3), 532-545. doi:10.1080/02699931.2010.532606

Hu, L.-t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55. doi:10.1080/10705519909540118

Huta, V. (2013). Pursuing eudaimonia versus hedonia: Distinctions, similarities, and relationships. In A. Waterman (Ed.), *The best within us: Positive psychology perspectives on eudaimonia* (pp. 139-158). Washington, DC, USA: APA Books.

Kappas, A. (2011). Emotion and regulation are one! *Emotion Review, 3*(1), 17-25. doi:10.1177/1754073910380971

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review, 30*(7), 865-878. doi:10.1016/j.cpr.2010.03.001

Kirsch, I., Mearns, J., & Catanzaro, S. J. (1990). Mood-regulation expectancies as determinants of dysphoria in college students. *Journal of Counseling Psychology, 37*(3), 306-312. doi:10.1037/0022-0167.37.3.306

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY, USA: Guilford Press.

Loewenstein, G. (2007). Affect regulation and affective forecasting. In J. J. Gross (Ed.), *Handbook of emotion regulation* (1st ed., pp. 180-203). New York, NY, USA: Guilford Press.

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology, 9*(2), 111-131. doi:10.1037/1089-2680.9.2.111

MacCann, C., & Roberts, R. D. (2008). New paradigms for assessing emotional intelligence: Theory and data. *Emotion, 8*(4), 540-551. doi:10.1037/a0012746

Marjanovic, Z., Holden, R., Struthers, W., Cribbie, R., & Greenglass, E. (2015). The inter-item standard deviation (ISD): An index that discriminates between conscientious and random responders. *Personality and Individual Differences, 84*, 79-83. doi:10.1016/j.paid.2014.08.021

Marjanovic, Z., Struthers, C. W., Cribbie, R., & Greenglass, E. R. (2014). The Conscientious Responders Scale: A new tool for discriminating between conscientious and random responders. *SAGE Open, 4*(3), 1-10. doi:10.1177/2158244014545964

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2.0. *Emotion, 3*(1), 97-105. doi:10.1037/1528-3542.3.1.97

Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods, 17*(3), 437-455. doi:10.1037/a0028085

Nelis, D., Quoidbach, J., Hansenne, M., & Mikolajczak, M. (2011). Measuring individual differences in emotion regulation: The Emotion Regulation Profile-Revised (ERP-R). *Psychologica Belgica, 51*(1), 49-91. doi:10.5334/pb-51-1-49

Opitz, P. C., Gross, J. J., & Urry, H. L. (2012). Selection, optimization, and compensation in the domain of emotion regulation: Applications to adolescence, older age, and major depressive disorder. *Social and Personality Psychology Compass, 6*(2), 142-155. doi:10.1111/j.1751-9004.2011.00413.x

Ortner, C. N. M., Zelazo, P. D., & Anderson, A. K. (2013). Effects of emotion regulation on concurrent attentional performance. *Motivation and Emotion, 37*(2), 346-354. doi:10.1007/s11031-012-9310-9

Pavot, W., & Diener, E. (1993). Review of the Satisfaction With Life Scale. *Psychological Assessment, 5*(2), 164-172. doi:10.1037/1040-3590.5.2.164

Peña-Sarrionandia, A., Mikolajczak, M., & Gross, J. J. (2015). Integrating emotion regulation and emotional intelligence traditions: A meta-analysis. *Frontiers in Psychology, 6*(February), Article 160. doi:10.3389/fpsyg.2015.00160

Quoidbach, J., Berry, E. V., Hansenne, M., & Mikolajczak, M. (2010). Positive emotion regulation and well-being: Comparing the impact of eight savoring and dampening strategies. *Personality and Individual Differences, 49*(5), 368-373. doi:10.1016/j.paid.2010.03.048

Richards, J. M., & Gross, J. J. (1999). Composure at any cost? The cognitive consequences of emotion suppression. *Personality and Social Psychology Bulletin, 25*(8), 1033-1044. doi:10.1177/01461672992511010

Schroder, H. S., Dawood, S., Yalch, M. M., Donnellan, M. B., & Moser, J. S. (2015). The role of implicit theories in mental health symptoms, emotion regulation, and hypothetical treatment choices in college students. *Cognitive Therapy and Research, 39*, 120-139. doi:10.1007/s10608-014-9652-6

Sheppes, G., & Gross, J. J. (2011). Is timing everything? Temporal considerations in emotion regulation. *Personality and Social Psychology Review, 15*(4), 319-331. doi:10.1177/1088868310395778

Sheppes, G., Scheibe, S., Suri, G., & Gross, J. J. (2011). Emotion-regulation choice. *Psychological Science, 22*(11), 1391-1396. doi:10.1177/0956797611418350

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*(1), 163-181. doi:10.1037/a0030831

Sideridis, G., Simos, P., Papanicolaou, A., & Fletcher, J. (2014). Using structural equation modeling to assess functional connectivity in the brain: Power and sample size considerations. *Educational and Psychological Measurement, 74*(5), 733-758. doi:10.1177/0013164414525397

Tamir, M. (2009). What do people want to feel and why? Pleasure and utility in emotion regulation. *Current Directions in Psychological Science, 18*(2), 101-105. doi:10.1111/j.1467-8721.2009.01617.x

Tamir, M., & Ford, B. Q. (2012). Should people pursue feelings that feel good or feelings that do good? Emotional preferences and well-being. *Emotion, 12*(5), 1061-1070. doi:10.1037/a0027223

Tamir, M., John, O. P., Srivastava, S., & Gross, J. J. (2007). Implicit theories of emotion: Affective and social outcomes across a major life transition. *Journal of Personality and Social Psychology, 92*(4), 731-744. doi:10.1037/0022-3514.92.4.731

Thompson, R. A. (2011). Emotion and emotion regulation: Two sides of the developing coin. *Emotion Review, 3*(1), 53-61. doi:10.1177/1754073910380969

Urry, H. L., & Gross, J. J. (2010). Emotion regulation in older age. *Current Directions in Psychological Science, 19*(6), 352-357. doi:10.1177/0963721410388395

Williams, L. E., Bargh, J. A., Nocera, C. C., & Gray, J. R. (2009). The unconscious regulation of emotion: Nonconscious reappraisal goals modulate emotional reactivity. *Emotion, 9*(6), 847-854. doi:10.1037/a0017745

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement, 73*(6), 913-934. doi:10.1177/0013164413495237

About the Authors

Catherine Ortner is an Associate Professor at Thompson Rivers University, Canada. She studies the predictors and consequences of emotion regulation, with the goal to understand ways in which we can facilitate adaptive emotion regulation and improved well-being.

Esther Briner has a background in Biological Sciences and Psychology. Currently she is a graduate student at Carleton University, in Ottawa, Canada. Her research interests focus on contributing to the area of health psychology by identifying factors to improve health outcomes and psychological well-being for individuals and community.

Zdravko Marjanovic studied psychology at York University in Toronto, Canada. His research examines the intersection of social, personality, and health psychological factors. In particular, he examines how economic crises affect perceptions of personal financial vulnerability and psychological health, and how to identify random responders in questionnaire data.