

Behaving versus thinking positively: When the benefits of cognitive reappraisal are contingent on satisfying basic psychological needs

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ABSTRACT

A contextual view of emotion regulation argues that no single strategy is inherently effective at reducing negative affect and promoting positive affect. Rather, effectiveness depends upon the person and situation. We collected daily-diary data from 186 university students (40 men, 133 women, 13 with missing data) for an average of approximately 21 days. We measured strategies that varied in terms of the extent they were likely to be integrative, i.e., allowed one to integrate difficult experience into the sense of self and meaning (e.g., mindfulness) versus non-integrative, i.e., focused on feeling more positive or less negative emotion (e.g., positive reappraisal). Multi-level modelling was used to assess whether the effectiveness of three emotion regulation strategies (cognitive reappraisal, mindfulness, expressive suppression) depends on whether a person's psychological needs (for connection, competence, and autonomy) have been met. Cognitive reappraisal was most effective (associated with less negative affect and more positive affect) for people reporting lower need satisfactions; but was far less effective for people reporting higher levels of need satisfaction in their lives. These results are discussed considering recent advances in self-determination theory and emotion regulation.

1. Introduction

Emotion regulation (ER) is the process by which individuals change their emotions, change response to emotions, or change situations that elicit emotions (Gross, 1998, 2015). We may view regulatory strategies as “effective” if they help a person reach a desired emotional outcome, often in the short run, and adaptive if they help the person reach longer-term outcomes (Ford, Gross, & Gruber, 2019; Southward, Sauer-Zavala, & Cheavens, 2021). The present study focused on daily affect and does not assess longer term well-being. Thus, we use the term “effective” if greater strategy use is associated with more daily positive affect and/or less daily negative affect. We also focus on three highly studied regulation strategies: positive reappraisal, expressive suppression, and mindfulness.

The present paper brings together two major domains of research: Emotion regulation (Gross, 1998, 2015) and need satisfaction (Ryan & Deci, 2017). Does the effectiveness of a particular emotion regulation strategy depend on the extent that an individual's need for connection, competence, and autonomy is satisfied? To explore this question, we will test whether need satisfaction moderates the link between daily

emotional regulation strategy and daily affect. We focus on one core hypothesis. People who have their basic needs met will benefit less from “non-integrated” regulation strategies, that is, strategies that focus on altering affect (e.g., positive reappraisal), rather than psychologically integrating affective experiences with the sense of self (e.g., mindfulness; Benita, 2020).

1.1. Emotion regulation strategies

Cognitive reappraisal can be defined as an antecedent-focused strategy when its goal is to interpret an event in a way that changes the way it is emotionally experienced, as when making a benign interpretation of someone's behaviour prevents anger from occurring (Gross & John, 2003). In contrast, expressive suppression focuses on responses after the emotion is elicited, as when one hides anger (Gross & Levenson, 1993). Many studies show that reappraisal is associated with higher emotional well-being (Gross, 2002; Mauss, Cook, Cheng, & Gross, 2007) and adaptive regulatory strategies (Naragon-Gainey, McMahon, & Chacko, 2017). In contrast, expressive suppression is not useful in reducing negative emotions, and undermines a person's cognitive,

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physiological, and social functioning (Gross, 2002).

Over the past 10 years, mindfulness has been proposed to be an ‘adaptive’ emotion regulation skill (Chambers, Gullone, & Allen, 2009). Mindfulness involves paying curious attention to the present moment, in a way that is accepting and non-judgmental (Kabat-Zinn, 1994, p. 4). Mindfulness focuses on one’s relationship to cognitive content, whereas reappraisal focuses on altering that content. (Chambers et al., 2009). Mindfulness has been consistently associated with higher well-being (Arch & Landy, 2015).

The above theory and research have led to the notion that some ER strategies display a generally ‘adaptive’ profile (e.g. cognitive reappraisal, mindfulness) and others a generally ‘maladaptive’ profile (e.g. emotion suppression, rumination) (Arch & Landy, 2015; Gross & John, 2003). However, several studies suggest that the effectiveness of a strategy depends on context, including features of the environment (e.g. controllability) (Haines et al., 2016), age of the person (Brockman, Ciarrochi, Parker, & Kashdan, 2017), the purpose of the strategy (Aldao & Nolen-Hoeksema, 2012), and aspects of the person carrying out the strategy (Aldao, 2013; Ford & Troy, 2019).

1.2. Basic psychological needs and emotion regulation

Self-Determination Theory (SDT) posits that well-being is driven by satisfaction or thwarting of the basic human psychological needs of relatedness, competence, and autonomy (Ryan & Deci, 2000.) From an SDT perspective, well-being occurs to the degree that a person’s social context supports versus thwarts satisfaction of basic psychological needs (Vansteenkiste & Ryan, 2013). People will experience well-being to the extent they satisfy their need to feel a sense of *connection* to other people and groups, believe they are *competent* navigators of their internal and external environments, and experience themselves as autonomous authors of their lives (Ryan & Deci, 2017).

In SDT theory, need satisfaction is the primary object of life, and emotion regulation is in the service of need satisfaction. Key to our ability to satisfy needs is our willingness to integrate difficult experience into our sense of self and meaning, in contrast to avoiding and compartmentalizing such experience, and alienating important parts of the self (Roth, Vansteenkiste, & Ryan, 2019; Ryan & Deci, 2017). Emotion regulation strategies are considered “integrative” in SDT based on what they are intended to do (function), rather than on their form. Integrative strategies do not quickly seek to inhibit or reframe reappraisals to alter what is felt, but first receptively allow and take an interest in emotional experiences and their meaning (Roth et al., 2019). Thus, both reappraisal and mindfulness strategies could be non-integrative, if they are used to avoid feelings, or integrative, if they help people take in and understand the world, in a way that enhances needs (Benita, 2000; Benita, Levkovitz, & Roth, 2017).

In the present paper, we focus on three often-studied emotion regulation strategies: mindfulness, expressive suppression, and positive reappraisal. Mindfulness strategies, as measured here, are clearly integrative, as they are intended to accept and take in experience, rather than change it. Our measure of expressive suppression is less integrative (Gross & John, 2003), given its focus is hiding the expression of emotion. Expressive suppression could involve either integrative or non-integrative processes. For example, it is possible that some people can suppress expression of emotion but still be fully aware of and integrate emotional experience into their life. However, expressive suppression has been associated moderately with experiential avoidance (Wolgast, Lundh, & Viborg, 2013), so we would describe it as “possibly” non-integrative. Finally, whilst cognitive reappraisal may not be inherently non-integrative, our measure of cognitive reappraisal (Gross & John, 2003) is likely to involve non-integrative processes: it focuses on the extent that reappraisal is used to feel more positive emotion and less negative emotion, and does not focus on fully embracing and integrating the current situation, positive or negative, into one’s understanding. We expected, in keeping with past research reviewed above, that

within-person increases in mindfulness and reappraisal would generally be associated with well-being and increases in expressive suppression would be associated with lower well-being. Our key hypothesis focused on the interaction between these regulation strategies and need satisfaction.

Research suggests that need satisfaction results from supportive environments (Gagné, 2003; La Guardia, Ryan, Couchman, & Deci, 2000; Ryan, Bernstein, & Brown, 2010; Legate, DeHaan, Weinstein, & Ryan, 2013; Van den Broek, Vansteenkiste, Witte, Soenens, & Lens, 2010). SDT theory makes predictions that if people are unable to satisfy their basic psychological needs in their environment, they may seek well-being through other coping or soothing strategies (Vansteenkiste & Ryan, 2013), such as positive reappraisal. That is, they may seek to compensate for lack of need satisfaction by thinking positively.

The core hypothesis in this paper is that if people are getting their basic needs satisfied, then they have less need for non-integrative emotion regulation strategies such as positive reappraisal. Or to state the inverse of this hypothesis, if people are not getting their needs for connection, autonomy, and competence met, then thinking strategies like reappraisal become more important to their well-being. We have two theoretical justifications for this hypothesis. First, Ford and Troy (2019) have suggested that positive reappraisal might have drawbacks if it makes the person feel less authentic and connected with their lived experience. Second, non-integrative processes may be less necessary to well-being if one is getting needs met. To use a metaphor, just as someone with great height may have less need to jump to reach something on a shelf, someone with supportive relationships, stimulating work and hobbies, and a sense of authorship over their lives may have less need to use non-integrative ER strategies to manage their emotions. A person with such a supportive life context may instead manage negative affect by enlisting the social support of a loved one or absorbing themselves in their job or hobby. We believe the strongest case for a need by emotion regulation interaction can be made for cognitive reappraisal, which in the present study focuses on internal dialogue designed to upregulate positive emotions or downregulate negative emotions. We hypothesize that this self-talk strategy is most likely to be useful to those who don’t feel satisfied with their interactions and conversations with others, i.e., those low in connection need satisfaction. In contrast, those with satisfying social relationships are expected to upregulate and downregulate emotions by making use of their social connections, making positive self-talk less necessary.

Concerning integrative strategies like mindfulness (as measured here), we hypothesize that need satisfaction will not lessen its benefits, as it might for positive reappraisal. Integrative strategies are theorized to be compatible with need satisfaction (Roth et al., 2019). They are not seen as a way to compensate for lack of need satisfaction, as might be done with non-integrative strategies designed to change feelings through thinking. Finally, we did not have any clear moderation hypothesis for expressive suppression, given it is neither inherently integrative nor non-integrative.

2. Method

2.1. Participants and sampling

The current study made use of an existing intensive longitudinal dataset that used a daily diary design. Over 700 variables are represented in this data set, collected over 21 days. Daily diaries were completed by 186 university students (40 men, 133 women, 13 with missing data; mean age = 23.9, SD = 9.06). Data was collected through Qualtrics. Participants received multiple reminder emails per week by a team with research assistants assigned to no more than 10 participants throughout the study.

Ethnic composition of the group was 53.1% Caucasian, 11.7% Latino/Hispanic, 11.2% Asian, 7.1% African American, 1.6% Middle-Eastern, 1.1% Native-American, and 6.5% other. No participants were

excluded from final data analysis. The total 186 participants provided 3852 days of data at an average of 20.71 days per person. This large number of occasions of data (3852 days) was collected with the view to providing ample power for future research making use of this data set.

2.2. Procedure

Ethics approval was obtained through George Mason University (Approval # 477,961). Participants were students seeking to participate in research and ranged from 17 to 63 who provided informed consent to participant, who completed a 1 ½ hour induction session where they provided baseline data, including demographic information, completed a number of trait measures. Participants completed surveys before going to sleep. Participants received weekly reminder emails, research credit, and raffle tickets for a chance to win \$25 gift certificates.

2.3. Measures

2.3.1. Daily emotion regulation

Daily emotion suppression items were adapted from the Emotion Regulation Questionnaire (“ERQ;” Gross & John, 2003; Kashdan & Steger, 2006), and includes such items as ‘When I am feeling negative emotions, I make sure not to express them’. This measure has been shown in a previous study to have adequate construct validity (correlates to other daily measures) and internal consistency in the present study ($\alpha = 0.96$; Brockman et al., 2017). Daily cognitive reappraisal items ($\alpha = 0.97$) were adapted from the ERQ and included such items as ‘When I want to feel less negative emotion (such as sadness or anger), I change what I’m thinking,’ and ‘When I want to feel more positive emotion (such as joy or amusement), I change what I am thinking about.’ The two-item measure used in this study has previously demonstrated acceptable construct validity (Brockman et al., 2017).

The 5-item state Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) assesses the extent that one is sensitive to the present moment as it unfolds (Brown & Ryan, 2003). Two items drawn from the state MAAS used for the current study were (1) ‘I found myself preoccupied with the future or the past,’ and (2) ‘I found myself doing things without paying attention’. To broaden our mindfulness measure to include acceptance, we added ‘I accepted my feelings, thoughts, and bodily sensations without judging or trying to change them’ (e.g. Bishop, 2002). Participants were asked to rate frequency of each item (1 = *almost always*; 6 = *almost never*). This new 3-item daily MAAS has demonstrated adequate validity (Brockman et al., 2017), and reliability in the present study ($\alpha = 0.94$).

2.3.2. Daily positive and negative affect

Daily positive and negative affect was assessed using six positively valenced adjectives (excited, enthusiastic, happy, relaxed, calm, and satisfied) and six negatively valenced adjectives (nervous, embarrassed, upset, sad, bored, and disappointed). Participants answered using a 7-point scale with endpoints 1 = “Did not feel this way at all” and 7 = “Felt this way very strongly.” These six item Daily negative affect ($\alpha = 0.90$) and positive affect ($\alpha = 0.92$) measures have been found to have adequate reliability and construct validity in a previously reported study (Brockman et al., 2017).

2.3.3. Trait needs satisfaction

The General Need Satisfaction Scale (GNSS) (Gagné, 2003) measured three psychological needs: autonomy (7 items; $\alpha = 0.73$), competence (6 items; $\alpha = 0.72$), and relatedness (8 items; $\alpha = 0.88$). Participants rate items on a 7-point Likert scale (1 = *not at all true*; 7 = *very true*), regarding how well each psychological need is generally satisfied in their life. For example, “I really like the people I interact with (Belonging),” “Most days I feel a sense of accomplishment from what I do (Competence),” and “I feel like I am free to decide for myself how to live my life (Autonomy).” Global need satisfaction ($\alpha = 0.88$) and the

three subscales have demonstrated good psychometric properties (e.g., reliability = 0.69–0.89; Brown & Ryan, 2003). The GNSS was completed at the conclusion of the 21-day diary study.

2.4. Data and analytic strategy

All data and scripts needed to reproduce our analyses are openly available at <https://osf.io/zn3hv>. Our key analysis utilized multilevel modelling to account for time nested within participant and to test for significant variations in the link between individual-level emotion regulation strategy and well-being. We utilized the “NLME” package (Pinheiro, Bates, DebRoy, & Sarkar, 2014) of the statistical program ‘R’ Version 3.0.3 (R Core Development Team, 2016). All data were grand mean centered. In addition, we included random intercepts in all models (β_{0j}). Thus, one can understand the link between within-person emotion regulation and well-being as relative to a person’s average level well-being. If, for example, there is a positive link between reappraisal and well-being for an individual, then this would indicate that when reappraisal was high for that person, they experienced higher levels of well-being, relative to their own average (intercept) level of well-being. The key model is presented in equation form below.

$$Y_{ij} = \beta_{0j} + \beta_{1j} X_{1ij} + \beta_{2j} X_{2j} + \beta_{3ij} X_{1ij} X_{2j} + e_{ij} \quad (1)$$

This equation indicates that well-being measured at a particular time for a particular individual (Y_{ij}) is regressed on a random intercept (β_{0j}), within-person emotion regulation (β_{1j}), need satisfaction (β_{2j}), the interaction between the two (β_{3ij}), and error (e_{ij}).

We expected data to have an autoregressive error structure (i.e., Monday data was more likely to be similar to Tuesday data than to Wednesday data). As such, we incorporated an autoregressive error structure of lag-1, to ensure appropriate standard errors. The average intra-class correlation for daily reappraisal, daily mindfulness, and daily suppression was .63, .49, and 0.57 respectively. The intra-class correlation coefficient (ICC) for daily negative and positive affect was 0.33, and 0.39. It is common to have interclass correlations in the 0.20 to 0.40 range (Bolger & Laurenceau, 2013), indicating that the affect ICCs were about average and the emotion regulation ICCs were a bit more stable than average.

3. Results

We examined relationships between daily emotion regulation variables (three ER strategies and two affect variables) and need satisfaction (see Table 1). Need for connection, competence, and autonomy were positively inter-related. In addition, trait need satisfaction was significantly linked to lower daily negative affect across the board. However, only the satisfaction of connection needs linked to higher daily positive affect. We also found positive relations between mindfulness and need satisfaction. No significant relationships were found between the need satisfaction variables and daily cognitive reappraisal. The within-person correlations (bottom half of Table 1) indicate that daily reappraisal and mindfulness was linked to more daily positive affect and less daily negative affect, and daily suppression was linked to more negative and less positive affect. The correlations between emotion regulation strategies were very small to non-significant for reappraisal and mindfulness.

3.1. Moderation analyses

Our key hypothesis was that need satisfaction would moderate the relationship between daily emotion regulation and need satisfaction. Two multi-level models were conducted, focused on positive and negative affect. The results are presented in Table 2. All three regulation variables predicted unique variance in positive and negative affect in the expected direction. The interaction between reappraisal an autonomy

Table 1

Means, standard deviations, reliabilities, and correlations between need satisfaction, daily emotion regulation strategies, and daily affect.

Measure	Mean (SD) α	2	3	4	5	6	7	8	9
Between person									
1) Trait Need Satisfaction (Global)	108.48 (15.87) .88	.84**	.81**	.85**	−0.34**	0.13	0.18*	0.03	−0.11
2) Trait Autonomy	33.18 (5.72) .73	–	.61**	.54**	−0.33	0.11	0.12	0.01	−0.07
3) Trait Competence	31.06 (5.68) .72	–	–	.49**	−0.25	0.04	0.16	0.04	−0.01
4) Trait Connection	44.24 (7.59) .84	–	–	–	−0.26	0.17*	0.16*	0.01	−0.17
Within person									
5) Daily Negative Affect	9.84 (4.77) .90				–	−0.38**	−0.28**	−0.04*	0.17**
6) Daily Positive Affect	16.38 (5.84) .92						0.18**	0.17**	−0.10**
7) Daily Mindfulness	14.01 (3.49) .94							−0.02	−0.07**
8) Daily Cognitive Reappraisal	7.40 (3.43) .97								0.05**
9) Daily Emotion Suppression	8.13 (4.04) .96								–

Notes: Reliabilities for the daily measures were calculated from the ICCs. The reliabilities for the trait measures represent Cronbach’s alphas. Significance level indicated by * $p < .05$, ** $p < .01$. Above middle line are between subject correlations; below are within subject.

Table 2

Multilevel analyses of emotion regulation and need satisfaction predicting daily positive and negative affect, with all variables entered simultaneously into the model.

	Daily Positive Affect			Daily Negative Affect		
	Estimate	SE	p-value	Estimate	SE	p-value
Emotion regulation						
Daily Cog Reapp	1.56***	0.14	<.001	−0.37***	0.11	<.001
Daily Mindfulness	1.11***	0.12	<.001	−1.51***	0.1	<.001
Daily Suppression	−0.75***	0.13	<.001	0.77***	0.11	<.001
Need Satisfaction						
Auton Satisfaction	0.34	0.39	0.38	−0.76**	0.27	0.01
Compet. Satisfaction	−0.36	0.37	0.33	−0.05	0.26	0.84
Conn. Satisfaction	0.39	0.35	0.27	−0.04	0.24	0.87
Moderation tests						
Reappraise x Auton	−0.43**	0.17	0.01	0.07	0.14	0.62
Reappraise x Comp	0.25	0.17	0.14	−0.01	0.14	0.93
Reappraise x Conn	−0.40**	0.16	0.01	0.30*	0.13	0.02
Mindful x Auton	−0.08	0.16	0.61	−0.04	0.13	0.74
Mindful x Comp	−0.11	0.15	0.48	0.35***	0.12	<.001
Mindful x Conn	0.13	0.15	0.37	−0.27*	0.12	0.02
Suppress x Auton	0.07	0.17	0.69	−0.32*	0.14	0.02
Suppress x Comp	−0.07	0.17	0.68	0.14	0.14	0.29
Suppress x Conn	0.12	0.16	0.46	−0.04	0.13	0.77

* $p < .05$; ** $p < .01$; *** $p < .001$; Auton = Autonomy; Compet. = Competence; Conn. = Connection; Positive Affect Full model $R^2 = 0.41$; Negative affect full model $R^2 = 0.39$.

was significant for positive affect, and the interaction between mindfulness and competence and connection was significant for negative affect, and the interaction involving suppression and autonomy was significant for negative affect.. Only the interaction involving reappraisal and connection was significant for both positive and negative affect.

To explore the interaction effects further, we conducted simple slope analyses of the significant moderation effects. We found that reappraisal was associated with significant decreases in negative affect amongst people whose connection needs are not being satisfied ($B = -0.96$, $SE = 0.29$, [95% CI: $-1.52, -0.41$]), but no effect amongst people whose connection needs are being satisfied ($B = 0.22$, $SE = 0.28$, [95% CI: $-0.32, 0.76$]) (See Fig. 1, right panel). In addition, reappraisal was associated with increases in positive affect amongst people experiencing low connection ($B = 2.36$, $SE = 0.35$, [95% CI: $1.67, -3.05$]), and a lower beneficial effect for those experiencing low connection ($B = 0.76$, $SE = 0.34$, [95% CI: $0.09, 1.43$]) (See Fig. 1, left panel). Concerning the mindfulness \times competence interaction, daily mindfulness

was significantly associated with less daily negative affect amongst those high in competence satisfaction ($B = -0.81$, $SE = 0.27$, [95% CI: $-1.34, -0.28$]), but this association was even stronger amongst those with low competence satisfaction ($B = -2.21$, $SE = 0.26$, [95% CI: $-2.72, -1.7$]). The mindfulness \times connection moderation effect went in the opposite direction: mindfulness was more strongly linked to lower negative affect amongst those high in connection need satisfaction ($B = -2.05$, $SE = 0.26$, [95% CI: $-2.56, -1.55$]) compared to those low in need satisfaction ($B = -0.96$, $SE = 0.27$ [95% CI: $-1.48, -0.44$]). Finally, concerning the reappraisal \times autonomy interaction, daily reappraisal was not significantly associated with more positive affect amongst those with high autonomy ($B = 0.71$, $SE = 0.37$, [95% CI: $-0.01, 1.42$]), but was significantly associated amongst those with low autonomy ($B = 2.4$, $SE = 0.38$, [95% CI: $1.68, 3.15$]).

4. Discussion

Our core hypothesis was that non-integrative strategies (i.e., positive reappraisal) would be most effective if a person was not getting their core psychological needs met. Our most consistent result involved reappraisal and connection satisfaction: For both positive and negative affect, we found that cognitive reappraisal was most beneficial to those who were not getting their connection needs met. To put this another way, those who experienced genuine need satisfaction got little benefit from positively reappraising. SDT posits that ideally, people’s emotions are regulated externally through supports in their social environment (Ryan & Deci, 2017). We suggest many clients may lack access to social connection and supportive “external” voices and need to compensate by developing their own supportive internal voice’ through reappraisal.

We should note that compensation may not be the only way to understand these results. For example, there might be times when logic and reasoning (reappraisal) reduce social connection. This pathway would implicate certain kinds of reappraisal processes as a cause, rather than a consequence of low need satisfaction.

There were several moderation effects, but only the reappraisal \times connection effect was replicated across positive and negative states. Reappraisal was also less strongly linked to positive affect when people were getting their autonomy needs met, which is consistent with our core integrative-regulation hypothesis. However, inconsistent with our hypothesis, mindfulness (an integrative strategy) was less strongly associated with negative effect when a person’s competence needs were being met. However, mindfulness showed no such moderation effect for autonomy, and showed the opposite effect for connection, such that mindfulness was most strongly associated with less negative affect amongst people with high connection satisfaction. This pattern of results is potentially interesting and needs replication, given they were unexpected. The results suggest that mindfulness may amplify the benefits of positive connection.

Finally, we found that higher expressive suppression was associated

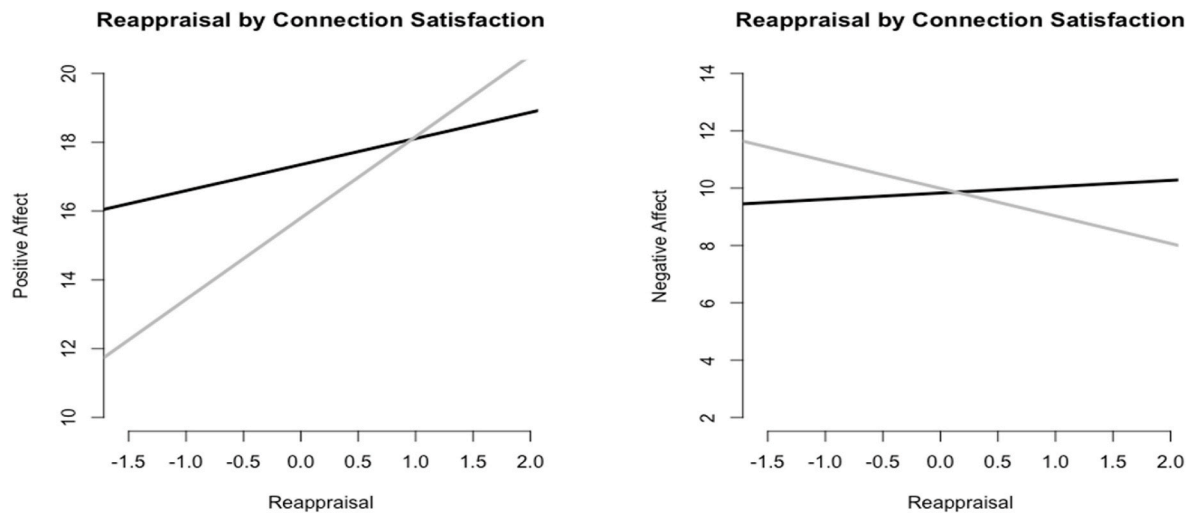


Fig. 1. Relationship between Daily Cognitive Reappraisal and Daily Affect. Note: High need satisfaction = Black line; Low need satisfaction = Grey line.

with less negative affect amongst those who felt their autonomy needs were satisfied. This was the only moderation effect involving suppression, so interpretations require caution. Expressive suppression may be integrative or non-integrative strategy, depending on whether people are merely suppression their expression (possibly integrative) or are also suppressing their actual feelings (non-integrative). We offer a speculative explanation here. If a person feels like they are in control and the “author” of their lives (high autonomy), then hiding feelings may be seen as just a mask that they put on or take off. They know who they are. In contrast, if someone feels that they lack autonomy, then masking emotions may feel aversive, as if there is no difference between themselves and the mask. They may find hiding emotions to require substantial labour (Hulsheger & Schewe, 2011). We need future research to distinguish the effects of need satisfaction on expressive suppression versus emotional suppression.

Returning to our replicated reappraisal findings, it is possible for non-integrative reappraisal to not only lack benefit, but it might also be harmful, if for example, it is associated with feeling less authentic (Ford & Troy, 2019). However, we did not find that reappraisal had any downsides. Rather, it was associated with no benefit for those high in need satisfaction.

The current findings intersect with a recent EMA study by Haines et al. (2016) who found that reappraisal was associated with beneficial emotion regulation for those perceiving their environment as uncontrollable, and more problematic emotion regulation when implementing the strategy despite perceiving a high level of controllability in the environment. Perhaps the ability to derive need satisfaction from your social context may be an important dimension of the experience of ‘controllability’. Maybe people perceive their environment as more controllable when they have more social support in their environment. Further, maybe for those experiencing social disconnection, reappraisal might give people an artificial ‘sense’ of controllability. Future studies of daily ER that implement need satisfaction and situational control in the same study are required to evaluate the above possibilities.

We need future studies to examine the effects of different integrative and non-integrative emotion regulations strategies on well-being. Theoretically, reappraisal can be integrative, if it focuses on increasing understanding of a situation, rather than feeling positively (Benita et al., 2017). Similarly, mindfulness to be non-integrative, if it focuses on feeling good, rather than being accepting and aware.

4.1. Applied implications

We might consider reappraisal to be one evidence-based process that

needs to be considered in a network of other evidence-based processes and outcomes (Hayes, Strosahl, & Wilson, 1999; Ciarrochi, Morin, Sahdra, Litalien, & Parker, 2017), such as motivation (commonly targeted in self-determination theory), affect, and attention. Process networks are idiosyncratic (Hayes, et al., 1999). Processes also need to be ordered in therapy. For example, the current study suggests that cognitive reappraisal may be most useful to clients who do not have supportive social connections. Teaching such clients positive reappraisal may be a first step to helping them to engage in a second process, building genuine social connection. This second process may then lead to social need satisfaction. Without social connection, such client will be likely to struggle with both emotional and physical health (Hawkey & Cacioppo, 2010), even if they are skilful at positive reappraisal.

Our data is consistent with the notion of emotion-regulation flexibility (Aldao & Nolen-Hoeksema, 2012; Haines et al., 2016). No emotion regulation strategy is likely to be inherently useful, in all situations, across all people, at all times. The present study showed that if people are getting their connection needs satisfied, then reappraisal is likely to be less useful. Maybe reappraisal is most useful when it is integrative, that is, it helps people make sense of their life and engage in valued, need satisfying behavior (Ciarrochi, Atkins, Hayes, Sahdra, & Parker, 2016). Future research is needed to evaluate this possibility.

4.2. Limitations and future directions

There is still too little is known about moderators of emotion regulation processes at the daily level. Our study found that substantial levels of variance in measures of ER lie at both the person and daily level. However, a limitation of the study was that trait need satisfaction was measured only at the end of the study. Future EMA research is needed to assess moment-to-moment fluctuations in both need satisfaction and emotion regulation. Such future research would help us better understand how contextually activated needs might contribute to emotion regulation choices.

Given the central finding of this study revolves around relatedness as a trait moderator, it is important to note that the belonging construct does not discriminate between different sources of social connectedness (e.g., intimate partner, friends, family, colleagues etc.). Rather, the measure simply uses the term ‘others or ‘people’ (e.g., ‘People in my life care about me’). There may be important differences in how daily affect is socially or ‘externally’ regulated depending on the type of relationship.

Our reliance in the current study on a sample of college students also limits the generalisability of our findings. Previous studies have found

trait need satisfaction to increase with age (e.g. Kang, Pai, & Kim, 2019), and that the utility of reappraisal improves with age; a so-called ‘maturity effect’ (Brockman et al., 2017). Future studies of ER should get data more representative of the full developmental spectrum to further investigate differences in ER processes across different developmental periods.

5. Conclusions

The current study adds to a growing literature that supports the view that emotion regulation strategies are not inherently ‘adaptive’ or ‘maladaptive’. This study has provided an important link between ER theories and SDT. From an SDT point of view, a key goal of the practitioner is to support need satisfaction by promoting integrative emotion-regulation strategies. The present findings suggest that non-integrative strategies like positive reappraisal may be useful when connection need satisfaction is low. The promise of studying ER using more ecologically valid methods is currently being realized, but studies such as this have only scratched the surface. The chase is on to uncover further variability in the process of ER.

Declaration of competing of interest

None.

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