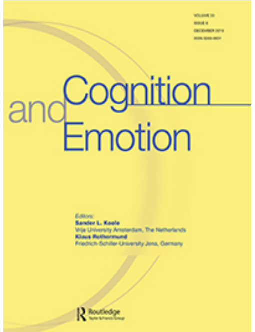

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BRIEF ARTICLE

The relation between emotion regulation choice and posttraumatic growth

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ABSTRACT

Previous research has examined emotion regulation (ER) and trauma in the context of psychopathology, yet little research has examined ER in posttraumatic growth (PTG), the experience of positive psychological change following a traumatic event. ER typically involves decreasing negative affect by engaging (e.g. reappraisal) or disengaging (e.g. distraction) with emotional content. To investigate how ER may support PTG, participants who experienced a traumatic event in the past 6 months completed a PTG questionnaire and an ER choice task in which they down regulated their negative emotion in response to negative pictures of varying intensity by choosing to distract or reappraise. Latent growth curve analyses revealed that an *increase* in reappraisal choice from low to high subjective stimulus intensity predicted *higher* PTG, suggesting that individuals who chose reappraisal more as intensity increased reported higher PTG. Findings suggest that reappraisal of negative stimuli following a traumatic event may be a key component of PTG.

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Emotion regulation; trauma; reappraisal; posttraumatic growth

Individuals vary significantly in their reactions to traumatic events. While some individuals respond adversely and develop psychopathology, others may also display posttraumatic growth (PTG), the experience of positive psychological change during the aftermath of a traumatic event, such as a greater sense of personal strength and closer relationships with others (Tedeschi & Calhoun, 2004). PTG is associated with a wide variety of positive outcomes, such as increased life satisfaction (Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2012) and decreased posttraumatic distress over time (Groleau, Calhoun, Cann, & Tedeschi, 2013). One critical component of PTG is the management of distressing emotions evoked by traumatic events. Emotion regulation (ER), the processes by which individuals influence the magnitude, duration, and expression of their emotions (Gross & John, 2003), is critical for managing distressing emotions and can have downstream effects on trauma recovery. Therefore, investigating the role of ER choice in PTG may elucidate the regulatory mechanisms that facilitate constructive recovery from trauma – a goal the present study begins to address.

A traumatic event is defined as an event that causes actual or threatened harm to oneself or others (American Psychiatric Association, 2000). Moreover, for PTG to occur, the traumatic event must challenge an individual's core beliefs about themselves, others, and the world in general (Tedeschi & Calhoun, 2004). Like an earthquake – the impact of the traumatic event can shake or shatter one's core beliefs, yet in the aftermath of this psychological earthquake an individual may engage in purposeful reflection to revise and rebuild their belief system and make sense of the traumatic event in a way that fosters growth and development (Tedeschi & Calhoun, 2004). Accordingly, research has found that PTG also tends to be positively associated with

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posttraumatic stress (PTS), as greater PTS is associated with greater disruption of core beliefs (Shakespeare-Finch & Lurie-Beck, 2014). While greater PTG requires greater PTS, PTS may occur without PTG. Interestingly, most previous PTG research has focused extensively on the association between PTS and PTG, as well as the thought processes that underlie PTG (i.e. core belief disruption and deliberate rumination (see Tedeschi & Calhoun, 2004 for more information)), yet less research has focused on how distressing emotions are managed to promote PTG, which may clarify the complexities of PTS, PTG and trauma recovery.

Post-trauma, ER typically involves disengaging from or sustaining engagement with distressing emotional information (Parkinson & Totterdell, 1999). Two commonly used ER strategies, distraction and reappraisal, represent fundamentally distinct disengagement and engagement routes for managing distressing emotions. Distraction, the disengagement of attention from negative emotions (Sheppes, Scheibe, Suri, & Gross, 2011), can facilitate coping with intense distressing emotions (Levy-Gigi et al., 2016) and satisfy hedonic regulatory goals of seeking short-term relief (Sheppes et al., 2014). However, habitual distraction can be costly as it may promote an avoidant pattern of behaviour (Thiruchselvam, Blechert, Sheppes, Rydstrom, & Gross, 2011). Reappraisal, in contrast, involves engaging with and reinterpreting the meaning of emotional content (Sheppes et al., 2014). Although effortful to implement (Sheppes et al., 2014), reappraisal is proactive and successful reframing of negative emotions can persist beyond the current environmental context (Thiruchselvam et al., 2011) to change the long-term meaning of a stimulus (Denny, Inhoff, Zerubavel, Davachi, & Ochsner, 2015) and increase long-term adaptive outcomes (Moore, Zoellner, & Mollenholt, 2008).

To examine the contexts under which individuals choose distraction and reappraisal, Sheppes et al. (2011) designed an ER choice (ERC) task in which participants chose to implement distraction or reappraisal in response to low and high-intensity negative photos. Results revealed that participants predominantly choose reappraisal in low-intensity situations and distraction in high-intensity situations. Follow up work examined emotional, cognitive and motivational determinants for this regulatory preference profile (Sheppes et al., 2014). Of direct relevance to the present work, when participants were motivated to obtain long-term adaptation (i.e. informing participants that emotional events they are regulating will be re-encountered in the future), reappraisal choice was increased.

These findings provide a framework for how ERC may support PTG. The PTG model proposes that as an individual rebuilds their disrupted core beliefs, they attempt to regulate their emotions in a way that fosters constructive thinking and allows them to willingly engage with trauma-related memories and emotions (Tedeschi & Calhoun, 2004). Because reappraisal involves engagement with negative stimuli in a way that changes its meaning, the ER strategy of reappraisal fits within the PTG model as a potential ER mechanism that could promote greater PTG, though this has been minimally tested.

Current research investigating the association between reappraisal and PTG suggests that ER strategies that involve engagement with an emotional stimulus (e.g. reappraisal) could facilitate PTG by helping individuals extract meaning from their traumatic experiences (Larsen & Berenbaum, 2015; Park, 2010). While no experimental research has examined the association between ERC and PTG, Levy-Gigi et al. (2016) have examined the role of ERC in the context of chronic PTS in a firefighter population. Findings revealed that for firefighters with *increased trauma exposure*, an increased preference for distraction as intensity increased was associated with lower PTS symptoms. However, there was no association between ERC choice and PTS symptoms in firefighters with low trauma exposure, suggesting that the adaptiveness of an ER strategy may depend on trauma chronicity. Importantly, while the Levy-Gigi et al. (2016) study did not examine PTG, recent ER and PTG research suggesting that reappraisal could facilitate PTG, and existing ERC research illustrating that activating instrumental goals increases reappraisal (Sheppes et al., 2014), suggests that different regulatory strategies may support distress management in a chronic exposure population and recovery and PTG in non-chronic trauma population – a question the present study begins to answer.

The present study

To explore how ERC may support PTG, participants who had experienced a traumatic event in the past 6 months completed a measure of PTG and a modified version of the ERC task (Sheppes et al., 2011). Our hypotheses for the present study are three-fold. One, in replication of Sheppes et al. (2011), we predicted that participants would choose to reappraise more in response to low-intensity stimuli and less in response to high-intensity stimuli. Two, given that reappraisal, is associated with meaning finding and that meaning finding is associated with PTG (Park, 2010), we predicted that regardless of intensity, higher levels of reappraisal choice would be associated with greater PTG. Finally, as a different choice pattern across intensity would be predicated for managing distress amidst chronic trauma and meaning finding following trauma, we will examine associations between reappraisal change across intensity and PTG. Previous research has found that when instrumental goals motivate participants to obtain long-term adaptation, reappraisal of high intensity negative stimuli increases (Sheppes et al., 2014). As PTG is characterised by reframing highly negative intense situations to find meaning and reconstructing core beliefs in accordance with long-term goals, we predicted that participants who show an *increased* tendency to choose reappraisal as intensity increased would also demonstrate *greater* PTG.

Method

Participants

Two hundred and twenty-five participants were recruited to participate in a larger study examining ER, stress management and health behaviours. For the present study, only participants who had experienced a traumatic event in the past 6 months were included. The final sample consisted of 109 undergraduate students (75% female; $M = 20.75$ years [$SD = 3.75$ years]) at a state university who completed the study in exchange for course research credit. Of the participants, 62% identified as White, 13% as African American, 10% as Hispanic, 3% as Asian or Pacific Islander, and 12% chose not to specify.

Screening measure

Trauma history. A Trauma History Questionnaire (THQ; Hooper, Stockton, Krupnick, & Green, 2011) was used to identify eligible participants. Participants reported an average of 1.65 traumatic events in the last 6 months ($SD = .95$, range of 1 to 6). Importantly, one event (e.g. a car accident in which the participant and someone else was injured) could result in multiple event endorsements (see Supplementary Materials for additional sample characteristics).

Study measures

Posttraumatic growth (PTG). Participants were asked to describe a traumatic event that had occurred within the past 6 months and to think about this event while completing the 21-item Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). The PTGI assesses reported change in all five dimensions of PTG (new possibilities, personal strength, relating to others, spiritual change, and appreciation of life) using a 6-point Likert response scale ranging from 0 ("no change as a result of the event") to 5 ("a great degree of change as a result of the event"). The PTGI demonstrates strong internal consistency (Cronbach's $\alpha = .90$) and acceptable test-retest reliability in other samples ($r = .71$; Tedeschi & Calhoun, 1996).

Emotion regulation choice (ERC). Participants completed a modified version of the ERC task (Sheppes et al., 2011) with 50 pictures from the International Affective Picture System (Lang, Bradley, & Cuthbert, 2008) as stimuli. In addition to the low and high-intensity conditions of the original task (Sheppes et al., 2011), the present study included a moderate intensity condition to better capture choice variance across intensity. Pictures were selected based on normative valence and arousal ratings which varied from low ($n = 15$; $M = 4.35$), to moderate ($n = 20$; $M = 5.72$), to high ($n = 15$; $M = 6.63$) negative intensity.

Stimuli rating task. As recent research has shown that subjective ratings confer unique value in the prediction of ERC (Shafir, Thiruchselvam, Suri, Gross, & Sheppes, 2016), subjective ratings were obtained for all 50 photos. At the onset of the ERC task, participants were shown a fixation cross, followed by a picture, after which they rated how negative they found the picture to be, using a scale of 1 ("Not negative at all") to 9 ("Very negative").

Experimental choice task. Participants were next instructed in how to implement distraction and reappraisal, after which they completed 6 practice trials followed by 50 experimental trials. For each trial (practice and experimental), participants viewed a fixation cross on the computer, followed by a 500 ms. presentation of the picture. Next, participants viewed a choice screen where they indicated if they would like to distract or reappraise by pressing a keyboard button that corresponded to each strategy. Participants were next shown the picture again for 5000 ms. during which they implemented their chosen ER strategy. Finally, participants provided a subjective rating of how negative they felt after implementing their chosen strategy.

Covariate measures

As depressive symptoms and perceived stress can affect perceptions of trauma (Boals, 2018), and emotional stimuli (Joormann & Gotlib, 2006), both were included as covariates.

Depressive symptoms. Depressive symptoms were measured by the 10-item Center for Epidemiology Studies-Depression scale (CESD-10; Radloff et al., 2012), which assesses mood symptoms during the past 7 days using a 4-point Likert scale. The CESD demonstrates strong internal consistency ($\alpha = .86$) and test-retest reliability in other samples ($r = .85$; Radloff et al., 2012).

Perceived stress. Perceived stress was assessed using the 10-item Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) which assesses the degree to which general life situations are perceived as stressful using a 5-point Likert scale. The PSS demonstrates strong internal consistency (Cronbach's $\alpha = .84–.86$) and test-retest reliability ($r = .85$; Cohen et al., 1983).

Trait reappraisal. To control for the impact of habitual reappraisal on ER choice, the 6-item reappraisal subscale of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) was included as a covariate. Using a 7-point Likert scale the ERQ demonstrates strong internal consistency ($\alpha = .79$) and acceptable test-retest reliability ($r = .69$; Gross & John, 2003).

Procedure

The findings reported here are part of a larger study examining ER, stress management and health behaviours. Informed consent was obtained upon arrival. Next, participants completed the ERC task, followed by a battery of questionnaires that differed based on participants' experiences and mental and physical health status. The questionnaire battery prompted participants to report their sex, age, race/ethnicity and complete the THQ, the PTGI, the covariate measures, as well as additional PTG measures. Health and stress-management items which were included for exploratory purposes.[1] The ERC task was administered on a computer using E-prime software. All questionnaires were administered using Qualtrics survey software. The experiment session took approximately one hour and 15 min to complete. This research was approved by the Institutional Review Board of the University.

Data analysis

Reappraisal choice proportion. Subjective ratings from the stimuli rating phase were used to rank order each photo (1 through 50). Next, the lowest 15 ranked negative intensity photos formed the low-intensity stimulus set, the 15 highest ranked photos formed the high-intensity set, whereas the remaining set of stimuli formed the moderate intensity set.[2] Therefore, while every participant viewed low, moderate, and high-intensity stimuli based on normative ratings, the photos that comprised those groups differed based on each participant's subjective intensity ratings. Given that responses for this task were bi-modal (i.e. participants choose either distraction or reappraisal), ER choice was coded as reappraisal choice proportion (RCP) for each subjective intensity level.

Statistical analyses

Descriptive statistics and correlations were calculated for RCP at each intensity and PTG (Hypothesis 2). A one-way ANOVA of RCP across intensity was conducted to test whether RCP across intensity replicated observations by Sheppes and colleagues (Hypothesis 1). To test whether increasing RCP across intensity was associated with greater PTG (Hypothesis 3), we conducted a latent growth curve model (LGCM) analysis using AMOS 23.0 (Arbuckle, 2014). LGCM is well-suited for studies in which the dependent variable is continuous. LGCM determines if there is sufficient variability in the dataset to model change, and estimates growth trajectories and error variance to determine whether it contains meaningful information about individual differences in change (Duncan & Duncan, 2009). Using LGCM to examine changes in RCP across intensity yields two latent variables: an intercept, which estimates RCP at low intensity, and a slope, or change, which estimates the average rate of growth in RCP.

For an LGCM analysis, a measurement model containing only the two latent variables and no predictor or control variables is first estimated. If the measurement model demonstrates strong model fit, a structural model adding predictor and covariate paths is estimated. Three fit indices were examined to provide a conservative and comprehensive index of both the measurement and structural model fit: (a) root-mean-square-error-of-approximation (RMSEA;Li & Bentler, 2011), where a value less than .05 is considered a good fit and below .08 an acceptable fit, (b) comparative fit index (CFI; Bentler, 1990), in which the value should be equal or greater than .90, and (c) maximum likelihood ratio chi-square (χ^2), where $p > .05$ indicates an acceptable fit. Detailed descriptions of LGCM can be found elsewhere (e.g. Duncan & Duncan, 2009).

Results

Hypotheses 1 and 2: RCP and PTG across intensities

Descriptive statistics and zero-order correlations for all variables are presented in Table 1. A one-way ANOVA of RCP across intensity was significant, $F(1,107) = 228.69$, $p < .001$, $\eta = 0.163$, with paired sample t-tests confirming that RCP decreased from low to medium, $t(108) = 10.91$, $p < .001$, and medium to high, $t(108) = 10.64$, $p < .001$, subjective intensities, thus replicating Sheppes et al. (2011). Although RCP decreased significantly as intensity decreased, the decrease was not universal. Figure 1(A) illustrates that there is sufficient variability in RCP across intensity for testing the association between RCP and PTG. Finally, zero-order correlations revealed that THQ positively correlated with PTG, ERQ positively correlated with PTG, and average RCP and high-intensity RCP positively correlated with PTG. In addition, stress and depression symptoms were positively correlated.

Hypothesis 3: RCP and PTG as intensity increases

Our LGCM analyses, tested both the intercept (estimate of low-intensity RCP) and slope (estimate of RCP change across intensity) as predictors of PTG. To account for the potential influence of depression, stress, and trait reappraisal, we included these variables as covariates in the model. All covariates had paths onto the intercept, slope, and PTG.

The measurement model was a good fit by all indices, $\chi^2(1) = 1.863$, $p = .172$; RMSEA = .089; CFI = .99. The mean of the intercept was .76 ($p < .001$), indicating that, on average, participants chose to reappraise 76% of the time during low-intensity trials. The mean of the slope was −.17 ($p < .001$), indicating that, on average, reappraisal choice decreased as intensity increased, further replicating Sheppes et al. (2011). Variance estimates of the intercept ($SD = .03$) and slope ($SD = .01$) were both significant ($p < .001$) indicating that there were significant amounts of variability/individual differences in both RCP at low intensity and the trajectories of RCP as intensity increases.

The structural model with predictor and covariate paths was also a good fit by all measures, $\chi^2(5) = 3.23$, $p = .67$, RMSEA = .00, CFI = 1.0, as shown in Figure 1. Although these RMSEA and CFI values can reflect an over-fit of the data in some circumstances, our structural model had 5 degrees of freedom (df), indicating it was not a saturated or identified model, which would be characterised by 0 df. As the goal of testing the structural model in this instance is estimating the magnitude of structural paths, not comparing a full theoretical structural model to a different model, the key statistics of interest in this model are the effect sizes of PTG and the control variables (Byrne, 2010). Indeed, the LGCM analyses predicting PTG revealed that the intercept significantly predicted PTG ($\beta = .24$, $p < .05$); specifically, greater RCP at low intensity predicted greater levels of PTG. In addition, as predicted, the LGCM analysis also revealed that the slope significantly predicted PTG ($\beta = .24$, $p < .05$). This positive association indicates that *increases* in RCP as negative intensity increased predicted *greater*

Table 1. Descriptive statistics and zero-order correlations among target variables.

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. PTG	65.50	27.33	–								
2. THQ	1.65	.95	.2*	–							
3. ERQ	29.14	8.01	.24*	−.04	–						
4. CESD	9.70	5.37	.03	.11	−.06	–					
5. PSS	15.6	6.5	.1	.13	−.13	.72**	–				
6. RCP (Low)	.76	.21	.11	.08	−.09	.17	.06	–			
7. RCP (Mod)	.57	.21	.15	−.00	−.02	.04	−.06	.61**	–		
8. RCP (High)	.42	.23	.27*	.00	.11	−.03	−.11	.39**	.75**	–	
9. Ave RCP	.58	.18	.21*	.03	.00	.06	−.05	.76**	.94**	.84**	–

Note. $n = 109$. $^*p < .05$. $^{**}p < .01$. PTG = Posttraumatic Growth. THQ = Trauma History Questionnaire, number of traumatic events reported in the las 6 months (range of 1 to 6). ERQ = Emotion Regulation Questionnaire (reappraisal subscale). CESD = Center for Epidemiology Studies-Depression. PSS = Perceived Stress Reactivity Scale. RC*P* = Reappraisal Choice Proportion.

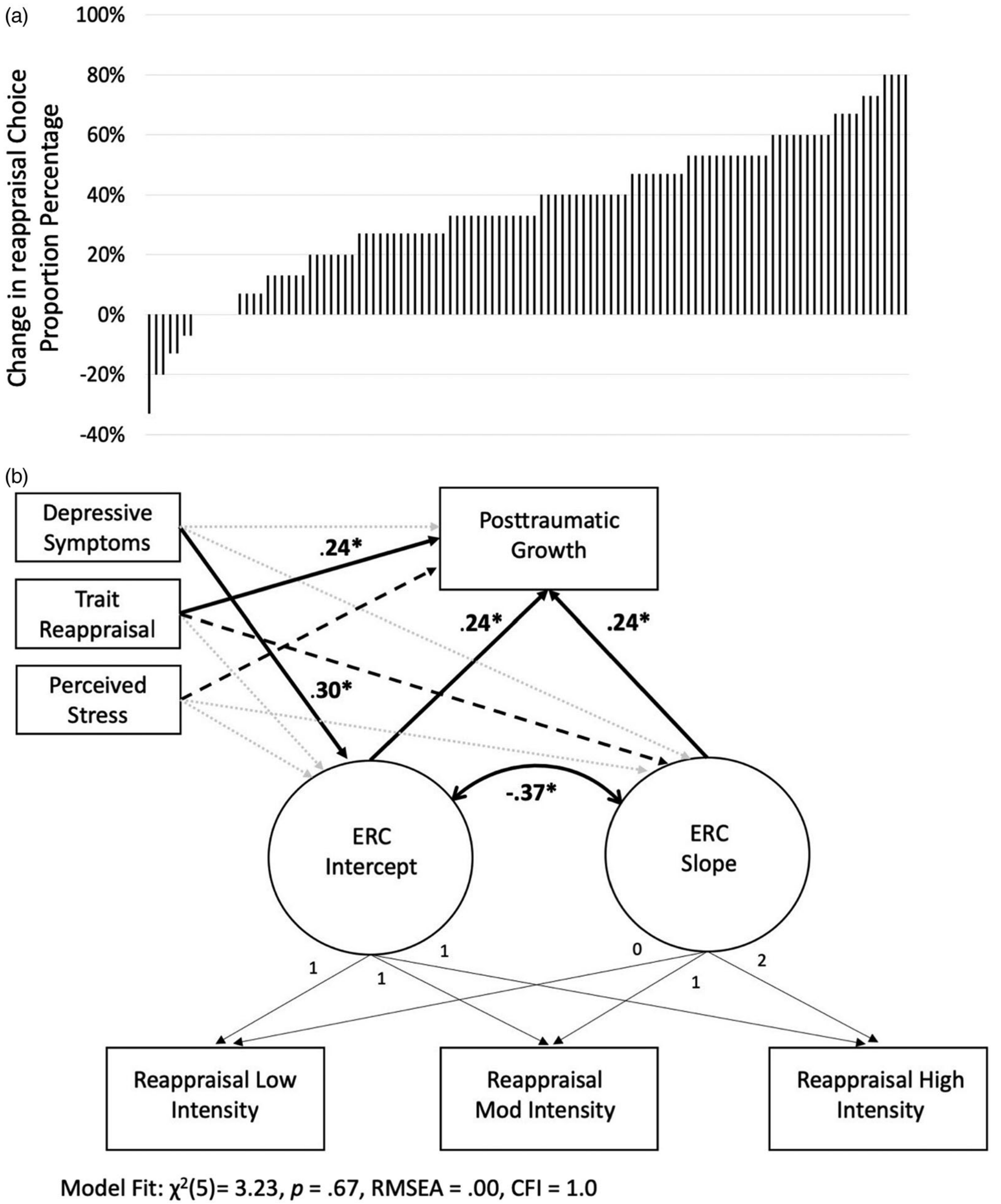

Figure 1. (A) This graph illustrates variability in reappraisal choice proportion (RCP) change from low to high intensity. Each bar represents a participant, ordered by difference in RCP from low to high intensity. Positive values indicate a decrease in RCP from low to high intensity, whereas negative values indicate an increase in RCP from low to high intensity. (B) Latent growth curve model for RCP at low intensity and change in reappraisal choice proportion across intensity predicting posttraumatic growth. Standardised coefficients are reported. Dashed lines indicate marginal findings where $p < .10$. Light dotted lines indicate non-significant findings where $p > .10$. Depressive symptoms, trait reappraisal use, and perceived stress were included as covariates. *$p < .05$.

PTG, whereas decreases in RCP as negative intensity increased predicted *lower* PTG.

Regarding the covariates, depressive symptoms were not related to PTG or the slope but were significantly related to the intercept ($\beta = .30$, $p < .05$). Trait reappraisal use was not related to the intercept, yet it demonstrated a relation with RCP slope which was marginal in the present model ($\beta = .18$, $p = .06$) and significant when the model did not include CESD as a covariate.[3] Additionally, trait reappraisal significantly predicted PTG ($\beta = .24$, $p < .05$), indicating that greater trait reappraisal is related to greater PTG. Perceived stress was not related to the intercept or slope, yet it was marginally related to PTG ($\beta = .25$, $p = .056$).

Discussion

The present study sought to examine how ERC contributes to PTG. Results support each of our three hypotheses. First, replicating findings by Sheppes et al. (2011, 2014), individuals who had experienced a traumatic event in the last 6 months predominantly choose reappraisal in low-intensity situations, and distraction in high-intensity situations. Second, zero-order correlations revealed that both high-intensity and average levels of reappraisal were positively associated with PTG. Finally, LGCM analyses revealed that the slope of change in RCP across intensities predicted PTG. Specifically, results revealed that *increased* reappraisal choice as intensity increased predicted *greater* PTG, whereas *decreased* reappraisal choice as negative intensity increased predicted *lower* PTG. This pattern of findings was present regardless of whether covariates were included in the model or not. Moreover, when depressive symptoms and trait reappraisal were controlled for, baseline rates of reappraisal also predicted PTG.

PTG theory states that for growth to occur, an individual must engage with the distressing emotions elicited by the traumatic event to derive meaning (Tedeschi & Calhoun, 2004). Reappraisal is well suited for this purpose because it is a proactive ER strategy that requires individuals to engage with negative content, and then re-evaluate its meaning in a more positive light. Our finding that increased reappraisal choice as negative intensity increases is associated with greater PTG suggests that reappraisal may mechanistically support PTG. Furthermore, this finding was observed even when controlling for trait reappraisal and depressive symptoms – which suggests that trait reappraisal is not driving our findings. Rather, choosing to reappraise increasingly intense negative stimuli may facilitate meaning finding and PTG. This interpretation is strengthened by the fact that the stimuli used in the present study featured generically negative events of varying intensity, not stimuli specific to the participants' traumas.

When considered alongside previous research by Levy-Gigi et al. (2016), the present findings highlight the nuances of contextually adaptive ER. Levy-Gigi et al. (2016) found that greater distraction as negative intensity increased was associated with *less* PTS symptoms in chronically high-risk firefighters, yet no association was present for firefighters with low trauma exposure. In the present study, greater reappraisal as negative intensity increased was associated with *more* PTG in a non-chronic trauma sample. The differences in trauma exposure (chronic vs. non-chronic trauma) and ERC associations with an adaptive outcome (distraction reduces PTS vs. reappraisal promotes PTG) between Levy-Gigi et al. (2016) and the present study highlight the importance of context and suggest that regulatory goals should be a focus of future ER research. For first responders coping with profession-related distress, distraction may meet their hedonic regulatory goals and protect against PTS. In contrast, PTG (which was not assessed in Levy-Gigi et al. (2016)) occurs *after* trauma, when the stressors are less immediate and the regulatory goals less hedonic, allowing a shift in focus from distress management to meaning finding. Cumulatively, the present results and those by Levy-Gigi et al. suggest that utilising reappraisal or distraction at different phases in the trauma recovery process may minimise PTS and maximise PTG, a hypothesis that future research should test.

Although this study advances the ER and PTG literature, there are several notable limitations. The sample size, while sufficient, is somewhat low for LGCM analysis. In addition, although the sample is non-clinical by design, participants were college undergraduates and the results need to be replicated in a non-clinical community sample. Moreover, future research should assesses both PTS and PTG in the same sample to draw firm conclusions about the role of ER in PTS versus PTG. Furthermore, the study provides a snapshot of ERC at a specific point; as discussed above, future research should explore how ERC and PTG may vary over time and as a function of time since trauma. In addition, real-world situations vary in whether an individual is able to prepare and decide which strategy to use, or not. Thus, the present findings might not generalise to situations in which participants are unaware of what stimuli they will encounter in the future. Future research should also probe if the same pattern of findings is observed when trauma-specific stimuli are used. Despite these limitations, the present study contributes significantly to our understanding of the relations among ERC and PTG. Our finding that *increased* reappraisal choice as negative intensity increases predicts *greater* PTG suggests that reappraisal is a possible mechanism facilitating growth. Considering that reappraisal is a proactive ER strategy that allows individuals to engage with negative emotions to re-evaluate their meaning, an increased tendency to choose reappraisal in response to intense negative content may increase PTG by facilitating meaning finding and promoting the management of distressing emotions following trauma.

Notes

1. Details on all measures collected can be found in the online supplemental materials.
2. When normative ratings were used, the measurement model was a good fit by all measures, $\chi^2(5) = 6.21$, $p = .29$, RMSEA = .047, CFI = .994. Similar to the subjective ratings model, the mean of the intercept was .74 ($p < .001$) and the mean of the slope was -.16 ($p < .001$). Variance estimates of the intercept (*SD* = .03) and slope (*SD* = .01) were also both significant ($p < .01$) indicating sufficient variability/individual differences in RCP across intensity. Similar to the subjective ratings model, results of the LGCM analyses predicting PTG revealed that the intercept ($\beta = .23$, $p < .05$) and slope ($\beta = .22$, $p < .05$) significantly predicted PTG. Regarding the covariates, however, depressive symptoms were not related to PTG, the intercept, or slope. Trait reappraisal use was not related to the intercept or slope, yet it significantly predicted PTG ($\beta = .25$, $p < .01$), indicating that greater trait reappraisal is related to greater PTG. Finally, perceived stress was not related to the intercept or slope, yet it significantly predicted PTG ($\beta = .27$, $p < .05$).
3. To confirm the consistency of the present pattern of findings we conducted additional LGCM analyses in which we included only one or none of the covariates. Analyses confirm that RCP across subjective intensities consistently predicts PTG. The non-covariate model predicting PTG from reappraisal choice proportion across intensity was a good fit by all measures: χ2(2) = 2.72, $p = .26$, RMSEA = .06, CFI = 1.0 with the intercept and slope each significantly predicting PTG, $\beta = .213$, $p < .05$ and $\beta = .266$, $p < .05$, respectively. Similarly, we modeled the relation between PTG and reappraisal choice proportion across intensity with only ERQ included as a covariate. This model too was a good fit ($\chi^2(3) = 2.86$, $p = .41$RMSEA = .000, CFI = 1.0) with both the intercept ($\beta = .220$, $p < .05$) and the slope ($\beta = .227$, $p < .05$) predicting PTG. In addition, in this model responses on the ERQ also predicted slope, $\beta = .194$, $p < .05$, with greater trait reappraisal use predicting a steeper increase in reappraisal choice proportion across intensity. Finally we modeled the relation between PTG and reappraisal choice proportion across intensity with only CESD included as a covariate; this too was a good fit ($\chi^2(5) = 7.07$, $p = .22$, RMSEA = .06, CFI = .99) with the intercept marginally predicting PTG ($\beta = .209$, $p < .05$) and the slope significantly predicting PTG ($\beta = .272$, $p < .05$).

Author notes

The current manuscript is part of a larger umbrella study aimed at examining the role of emotion regulation in individual differences in stress management, mental health, and health behaviours. As such, participants complete various batteries of questionnaires that differ depending on their experiences, mental health, and physical health status. All measures are declared in the methods or supplementary materials sections of the present manuscript. In addition, a portion of the participants in the present study (50% of the sample) also form a subsample of the participant sample reported in Study One of a multi-study manuscript that is currently in preparation. All publications derived from the larger umbrella dataset declare all acquired measures and sample overlap.

Disclosure statement

No potential conflict of interest was reported by the authors.

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