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ABSTRACT

For some American voters, the news of Mr. Trump's victory in the 2016 presidential election caused recurrent emotions that were negative, persistent, and intense enough to elicit repeated attempts at emotion regulation. This afforded a rare opportunity to analyse the regulation of recurrent emotions in a natural, non-laboratory context. The regulation of recurrent emotion involves additional considerations relative to single-instance emotion, such as representations of past and future encounters with the emotion-eliciting variables, ongoing consequences of each regulatory episode, and a tendency to repeatedly deploy emotion regulation strategies that one is most familiar with in the context of the particular recurrent emotion. Despite the ubiquitous nature of recurrent emotions, its associated regulatory processes have been infrequently examined and are not well-understood. Over eight days (11/10/16–11/18/16), we administered four surveys to 202 participants who voted against Mr. Trump. We examined the determinants and outcomes of regulatory strategies in the context of recurrent emotion. We found that (1) reappraisal (compared to distraction and acceptance) was associated with greater decline in emotion intensity, (2) high-intensity emotions were more likely to be distracted, whereas low-intensity emotions were more likely to be reappraised, and (3) strategy variability was associated with greater affective adaptation.

In November 2016, Donald Trump, a celebrity businessman representing the Republican Party, won the presidential election of the United States of America. For some, this was a reason to celebrate. For others, however, the unexpected nature of the outcome, the divisiveness of the preceding campaign, and the personal and political attributes of Mr. Trump made the election results a profound source of negative emotion. Among a sample of voters for the principal opposing candidate, Democrat Hillary Clinton, large majorities reported feeling uneasy (90%), sad (77%), and scared (76%; Pew Research Center, 2016). Indeed, the level of emotional distress appeared high enough for several media outlets to offer advice on emotion regulation (e.g. Davis, 2016).

Many voters reported frequent attempts to manage their recurring negative emotions following the election. These attempts included deploying cognitive emotion regulation (ER) strategies, as well as efforts to initiate opposing political action (Ford, Feinberg, Lam, Mauss, & John, 2019).

From a scientific perspective, Mr. Trump's victory afforded a rare opportunity to observe strong, recurrent emotions and their regulation in a natural, non-laboratory context. Generally, affective researchers need to choose between one of two broad approaches (Quigley, Lindquist, & Barrett, 2014; Wilhelm & Grossman, 2010). Researchers may elicit one-time emotions in experimental settings that allow for tight control over numerous contextual

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variables, but at the expense of the ability to examine naturally arising, often recurrent, emotions; or they may rely on correlational designs that generalise well – but are confounded by large variability in the emotion-eliciting events and contexts across people. The election of Mr. Trump allowed us to partially side-step this tradeoff by investigating naturalistic, recurrent emotional reactions to a single, causal event.

Recurrent emotion

It is well known that people use different strategies to regulate their emotions (Gross, 1998). Despite the ubiquitous nature of recurrent emotion, little is known about how these strategies operate in the context of recurrent emotion. While previous studies using trait-based or experience sampling methods may capture instances of recurrent emotion, such studies also include instances of single-instance emotion. The heterogeneity of emotional situations reported in such studies make it impossible to draw conclusions that are specific to the realm of recurrent emotion. The purpose of the present work is to isolate recurrent emotion, caused by a single precipitating event, so that we can make inferences about this particular class of emotional episode. The regulation of recurrent emotion involves additional considerations relative to single-instance emotion, such as representations of past and future encounters with the emotion-eliciting variables, ongoing consequences of each regulatory episode, and a tendency to repeatedly deploy emotion regulation strategies that one is most familiar with in the context of the particular recurrent emotion.

In this study, we seek to examine similarities and differences between recurrent emotion regulation and single-episode emotion regulation with respect to which strategies people use, how they use them, and the affective outcomes associated with those strategies.

The present study

The field of emotion regulation has frequently been concerned with three central questions: (1) Are some emotion regulation (ER) strategies more effective than others in reducing the intensity of negative emotion? (2) What situation-related factors shape the particular strategy people choose to deploy to regulate their emotions? (3) Does variability in ER strategy choice lead to preferred outcomes? In the context of non-recurrent (i.e. single-shot emotions),

reappraisal has often been shown to be more effective than other ER strategies (e.g. McRae et al., 2010), intensity of emotion has been shown to be an important driver of ER choice (Sheppes, Scheibe, Suri, & Gross, 2011), and increased variability in ER strategies has been linked to more positive outcomes (Birk & Bonanno, 2016).

The aim of the present study was to investigate whether or not, *in the context of recurrent emotion,* related to the U.S. presidential election (1) reappraisal was the most effective strategy in reducing intensity of negative emotion (2) emotional intensity was an important determining factor of ER choice,[1] and (3) whether increased variability in the strategies chosen to regulate a recurring emotion was associated with more rapid affective adaptation.

Importantly, and as noted above, in the context of non-recurring emotion, there is evidence in the affirmative for each of these hypotheses. However, it is unclear whether these affirmative findings can be extrapolated to the case of recurrent emotion. While some aspects of the ER process are linked to characteristics of the immediate context, such as available cognitive resources (Sheppes & Meiran, 2008), others are related to more stable characteristics of the emotion-triggering situation, such as controllability (Haines et al., 2016). It is possible that in the context of recurrent emotion, immediate as well as stable contextual factors influence the antecedents and consequences of emotion regulation.

First, related to the effectiveness of reappraisal, it is unclear whether trying to repeatedly reappraise the same underlying emotional antecedent will continue to effectively decrease undesirable negative emotions. Reappraisal repetition may plausibly reinforce the regulatory impact; but the repetition may also be a needless overhead providing no additional benefit after the first instance of use. Evidence has suggested the initiating reappraisal later in the emotion generation process is less effective and comes at increased cognitive cost relative to initiating reappraisal early in the emotion generation process (Sheppes & Meiran, 2007, 2008; Vohs & Schmeichel, 2003). In the case of recurrent emotion where antecedent situational factors have already generated full-scale emotional responses in the past, reappraisal may be a less effective choice than alternative strategies compared to single-episode ER.

Second, related to the impact of intensity in determining ER choice, it is unclear to us whether higher intensity increases preferences for distraction over

reappraisal the same way it does in the single-episode case. In the recurrent case, the benefits of increased short-term modulation of high-intensity emotion must be balanced against the potential for lasting gains over the long term that may be on offer via reappraisal – despite the aforementioned increased cognitive costs associated with reappraisal. Further, participants' prior ER choices bear influence on subsequent ER choices (Ghafur, Suri, & Gross, 2018). Thus, it is possible that the effect of emotion intensity on ER choice observed in the singe-episode case may be overshadowed by the effect of this inertia in ER choices.

Third, it is unclear whether variability in ER strategy choice is an unambiguous benefit in recurrent emotion cases, particularly when characteristics of the emotion-triggering event (e.g. controllability) are unchanging. On the one hand, participants may benefit from the ability to adapt their regulation responses to according to internal monitoring of fluctuating emotional states (as is known to be the case in single-episode ER). On the other hand, it may be that absent of changing situational circumstances, finding one effective regulation strategy appropriate to the situation and sticking to it, garners the greatest decline in intensity of undesirable negative emotion.

To advance on these three questions, we sought to characterise the ER strategy preferences and outcomes of a sample of Amazon MTurk workers who had voted against Donald Trump using a series of four surveys (i.e. Waves 1–4), spanning eight days in the immediate aftermath of the election.

We focused primarily on three ER strategies frequently studied in the context of single-instance emotion: reappraisal, distraction, and acceptance (Webb, Miles, & Sheeran, 2012). Given the fact that the election result would likely be relevant not only to our participants, but also to the majority of their social network, we also measured the extent to which people engaged in interpersonal ER. While interpersonal regulation can take a variety of forms (Zaki & Williams, 2013), we classed interpersonal regulation broadly under the umbrella of reaching out to others in response to the election results.

Method

Over eight days (11/10/16–11/18/16), we administered four waves of surveys to the same set of

participants recruited over the internet to quantify their negative emotion and ER strategy choices.

Participants

Initially, the sample consisted of 202 paid participants ($N_{Male} = 102$; $N_{Female} = 100$; $M_{Age} = 36$ years) on Amazon's Mechanical Turk (MTurk) survey platform. This sample size is in accordance with simulation-based recommendations for latent growth models (Hamilton, Gagné, & Hancock, 2003). Selected participants had been screened to select only U.S. citizens who had voted against Donald Trump and rated the intensity of their negative emotion regarding the result as greater than a three on a 9-point Likert scale. Out of 202 participants, 169 voted for Hillary Clinton and 33 voted for third-party candidates. Total attrition across the four waves was 35.1% ($N_{wave2} = 152$; $N_{wave3} = 139$; $N_{wave4} = 131$). The age, gender, and response patterns of the participants who dropped out did not differ from the participants who completed all four surveys.

Procedure

Participants on the MTurk survey platform were invited to complete the first survey under the condition that they would complete three subsequent surveys to be emailed to them. If a participant did not complete a survey in one wave, they were not invited to complete surveys in subsequent waves. Participants that did not meet our screening criteria (voted against Donald Trump and rated the intensity of their negative emotion greater than three out of nine) were not permitted to complete the first survey and were not invited to future surveys.

Survey

The primary variables of interest relating to the three main questions were intensity of negative emotion and ER strategy choice. The intensity of negative emotion was measured on a 9-point Likert scale. Since the data in Wave 1 was collected a day after the election result first became public, Wave 1 consisted of two intensity measurements – one concerning intensity of negative emotion upon first hearing the election result (T1) and one concerning intensity of negative emotion at the current moment (T2). Therefore, Wave 2 contained intensity rating T3,

Wave 3 contained intensity rating T4 and Wave 4 contained intensity rating T5.

ER strategy choice was measured via a multiple-choice question describing the three strategies of interest (distraction, reappraisal, & acceptance) in layperson's English. Additionally, an "Other" option coupled with a free-response text box was also included. The multiple-choice style of response mirrored ER choice measures used in previous lab studies (Mehta, Young, Wicker, Barber, & Suri, 2017; Sheppes et al., 2011). Following Wave 1, we found that numerous participants reported not regulating their emotion. To avoid an overestimation in the frequencies of strategies caused by an implicit assumption of regulation, we included an option for "No attempts to regulate emotion" in subsequent surveys. To capture the degree of interpersonal regulation, we also asked participants to indicate if they had reached out to others. Additional measures unrelated to the three primary questions are reported in the Supplementary Online Material.

Data analysis

To estimate change in post-election emotion intensity over time we used latent growth curve modelling (LGCM). The LGCM approach permits the estimation of individual variation in the baseline emotion intensity (i.e. intercept) and rate of change of emotion intensity over time (i.e. slope). In addition, LGCM permits the examination of how other variables relate to the changes over time. The goodness-of-fit of the model was assessed using the non-significant chi-square and conventional cut-off values – the Comparative Fit Index (CFI) with a cut-off value of 0.95, and the Root Mean Square Error of Approximation (RMSEA) with a cut-off value of 0.06 (Hu & Bentler, 1999).

Our approach was to first estimate the growth curve based on the five time points (T1–T5) without any predictors or control variables. Second, we tested whether the hypothesised covariates (predominant strategy use and the number of strategies used) had an effect on the initial level of emotion intensity (i.e. intercept) and/or the rate of change (i.e. slope). Finally, we tested whether intensity of negative emotion could predict subsequent strategy choice.

In order to examine whether reappraisal tends to be associated with greater decline in intensity of negative emotion, we tested the relationship between dominant strategy use and slope of the emotion intensity decline. We defined dominant strategy as the ER strategy used in the greatest number of regulation instances. We included two dummy variables as covariates; one variable for predominant use of acceptance (D1) and one variable for predominant use of distraction (D2). Thus, reappraisal served as the reference category (a value of 0 indicates predominant use of reappraisal). If no single strategy was used more than the others, then we did not code a dominant strategy for that participant.

In order to examine questions regarding ER choice, we used emotion intensity measurements from Wave 1 to Wave 2 to predict subsequent strategy choice. These two waves were delivered 24 h apart. Therefore, we could use the emotion intensity measurement of the previous timepoint to predict the subsequent strategy choice (where the strategy choice question refers to ER strategies used in the past 24 h). In Waves 3 and 4, the question of which ER strategy had been implemented referred to the preceding 24 h, but the intensity measurement from the previous wave had been taken more than 24 h prior. Thus, these two waves were not used to examine ER strategy choice in the primary analysis since there may have been other regulation attempts made that were not covered in our question regarding strategy choice. In order to examine whether experienced intensity of negative emotion was related to the subsequent choice of ER strategy, we conducted two multinomial logistic regressions – one for intensity at T1 and one for intensity at T2. In each analysis, the subsequent ER strategy was used as a three-category nominal dependent variable. In these models, the reappraisal outcome group is used as the reference group, so the coefficients for all other outcome groups (acceptance and distraction) describe how the emotion intensity was related to the probability of being in that outcome group versus the reappraisal group. In order to examine the relationship between variability in regulation strategy choice and decline in intensity of negative emotion, we included the number of unique strategies used as a covariate in the growth model.

Results

Latent growth curve model

To begin, we modelled the change in the emotion intensity scores using a latent growth curve model (Curran & Hussong, 2003). The latent growth curve

model estimates a latent slope and intercept for a variable measured at multiple time points (i.e. intensity of negative emotion), as well as the relationships between this latent trajectory and various covariates. For a full description of the model fitting procedure, please refer to the Supplementary Online Material.

Since the observed mean pattern did not follow the linear trend, we explicitly modelled the change in emotion intensity between T1 and T5 (by fixing T1 to 0 and T5 to 1 and freeing all other time scores). This approach resulted in a very good model fit X^2 (8) = 10.16, $p = 0.25$; CFI = 0.99, RMSEA = 0.04. The standardised covariance between the intercept and the slope was negative ($r = -0.17$, SE = 0.08, $p = 0.03$) indicating that a higher initial value for intensity of negative emotion was associated with a steeper the rate of decline between T1 and T5. In the further description of the results, we use unstandardised coefficients.

Next, the intercept and slope were regressed on to the two dominant strategy dummy variables, the number of different strategies used, and whether participants reached out to others for interpersonal ER following the elections. Two paths from this model were not significant and thus, were fixed to 0, see Figure 1 (a). The final model resulted in a good fit X^2 (22) = 22.83, $p = 0.41$; CFI = 1.00, RMSEA = 0.02. The unstandardised coefficients of the effects of covariates on the intercept and slope are presented in Table 1.

The impact of reappraisal

In total, 44 participants used acceptance as their dominant strategy (21.8%), 59 participants used distraction as their dominant strategy (29.2%) and 58 participants used reappraisal as their dominant strategy (28.7%). No dominant strategy could be determined for 41 (20.3%) participants because there was no single strategy used more frequently than the others.

The results for the effect of the dominant strategy covariates on the slope indicated that repeated use of reappraisal was associated with a steeper rate of decline in the intensity of negative emotion compared to acceptance or distraction, see Table 1.

Emotion regulation choice

The results for the intercept indicated that the set of participants who predominantly used distraction or acceptance throughout the study had higher initial intensity of negative emotion upon hearing the news of the election than participants who

predominantly used reappraisal, see Table 1. It is not entirely clear, however, whether intensity of negative emotion predicts the immediately subsequent choice of a particular ER strategy.

In order to better understand whether the intensity of negative emotion predicted subsequent ER decision-making, we used data from Wave 1 to Wave 2. We conducted two multinomial regressions where the strategy choice was regressed on to the preceding emotion intensity measurement. The analysis indicated that a one-unit increase in the intensity of negative emotion at T1 is associated with a 0.60 increase in the relative log odds of choosing acceptance vs. reappraisal at T2 (SE = 0.14, $p < 0.001$, OR = 1.82) and with a 0.38 increase in the relative log odds of choosing distraction vs. reappraisal at T2 (SE = 0.13, $p = 0.003$, OR = 1.46). In the second analysis, the intensity experienced at T2 was similarly related to the subsequent choice of the ER strategy. The analysis indicated that a one-unit increase in the emotion intensity at T2 is associated with a 0.43 increase in the relative log odds of choosing acceptance vs. reappraisal at T3 (SE = 0.14, $p = 0.002$, OR = 1.53) and with a 0.30 increase in the relative log odds of choosing distraction vs. reappraisal at T3 (SE = 0.14, $p = 0.03$, OR = 1.35).[2]

These results indicate that experiencing greater intensity of negative emotion increases the likelihood of choosing distraction or acceptance over reappraisal in subsequent instances of a recurring emotion.

The impact of emotion regulation strategy variability

The number of unique strategies used in the study could be either 1 indicating consistent use of the ER strategy (103 participants – 51%), 2 indicating 2 ER strategies (73 participants – 36.1%) or 3 indicating the use of all three ER strategies (15 participants – 7.4%). Controlling for the effect of dominant strategy use, the number of strategies employed was a negative predictor of the slope, indicating the wider the variety of strategies a participant used, the faster the intensity of their negative emotion declined.

Discussion

Political behaviour is inherently emotional. The election of Mr. Donald Trump in the U.S. presidential election of 2016 was particularly polarising, and for some, elicited recurring, high-intensity negative emotion
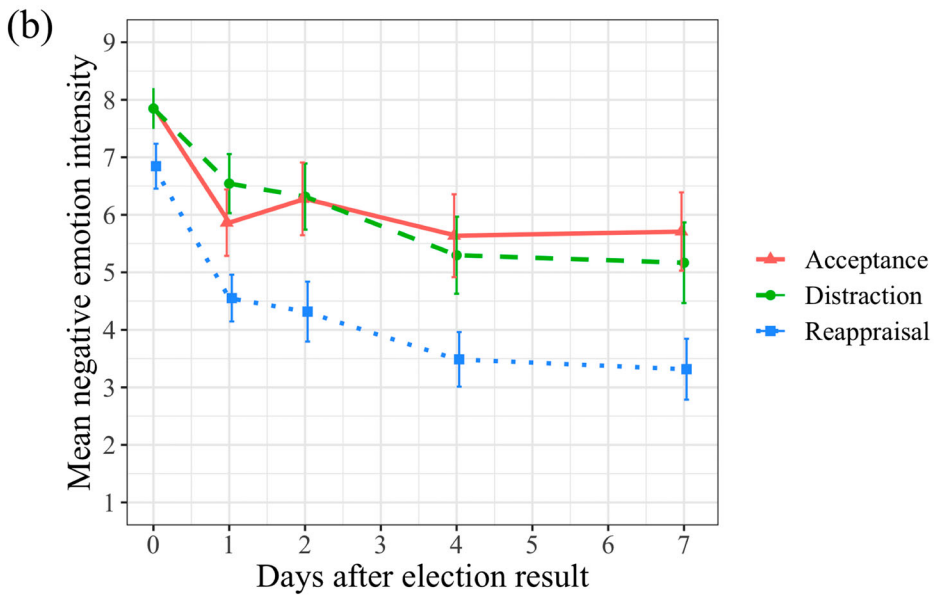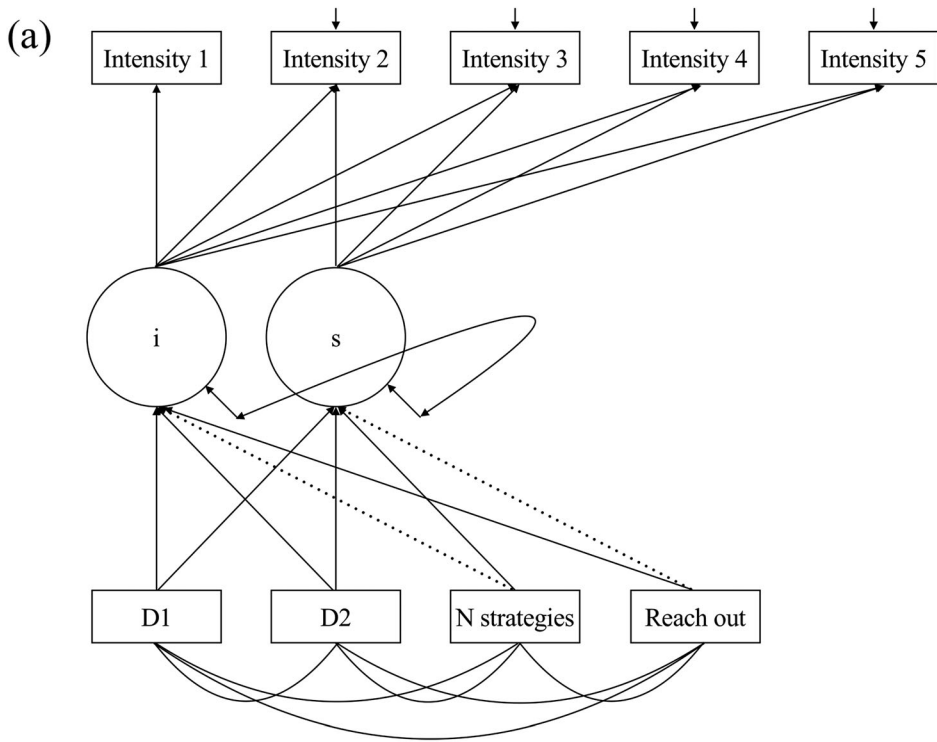
Figure 1. (a) The growth model with predictors. Dotted lines indicate insignificant paths that were constrained to 0. "D1" and "D2" are dummy variables for predominant use of acceptance and distraction respectively. "N strategies" is the number of unique ER strategies used. "Reach out" indicates whether the participant reached out to friends or family after the election result. (b) Mean intensity of negative emotion over time by predominant strategy group with 95% CI bars. Notably, predominant reappraisers started with the lowest emotion intensity, but still experienced the steepest intensity decline over time. This is in contrast to the general trend in which participants with higher initial intercepts experienced steeper declines over time.

Table 1. Unstandardised coefficients for the model with covariates.

	B	SE
Latent Intercept		
Intercept (Reappraisal reference)	6.55***	0.24
Dummy 1 (Acceptance = 1)	0.84**	0.31
Dummy 2 (Distraction = 1)	0.94**	0.29
Number of strategies	*0.00*	*0.00*
Reaching out to others (0 = no; 1 = yes)	0.62*	0.24
R^2 for Intercept	0.15*	0.06
Latent Slope		
Intercept (Reappraisal reference)	−2.59***	0.55
Dummy 1 (Acceptance = 1)	1.15*	0.45
Dummy 2 (Distraction = 1)	0.96*	0.44
Number of strategies	−0.59*	0.26
Reaching out to others (0 = no; 1 = yes)	*0.00*	*0.00*
R^2 for Slope	0.12*	0.06

Note: *$p < 0.05$, **$p < 0.01$, *** $p < 0.001$. The coefficients in italics represent the two non-significant paths fixed to 0.

that often required regulation. We took this opportunity to characterise the choices and consequences of ER in the context of real-world, recurrent emotion. Specifically, we were interested in how emotion decline was related to which regulation strategy was used, how these ER choices varied with emotion intensity, and how emotion decline was related to strategy variability.

Reappraisal effectiveness

As expected, the intensity of negative emotion declined over time. Importantly, participants who predominantly chose reappraisal had the steepest rate of emotion decline compared to participants that predominantly used distraction or acceptance. Given that reappraisal-users had a lower initial intensity of negative emotion (intercept), this difference in slope is especially striking. In general, participants with higher initial negative emotion regressed to the mean faster (i.e. had a steeper slope), however, reappraisal-users overcame this trend in that they had lower initial intensity *and* a steeper rate of decline.

This finding coincides with literature examining single-instance emotion that suggests that reappraisal may be more effective than distraction at regulating negative affect (McRae et al., 2010). Fewer studies have been conducted comparing acceptance to reappraisal. However, like distraction, in the realm of single-instance emotion, researchers have found greater emotion reduction following reappraisal use compared to acceptance (Hofmann, Heering, Sawyer, & Asnaani, 2009).

The drivers of this increased effectiveness of repeated reappraisal in recurrent emotion are

unclear. One possibility is that participants come up with new, independent reappraisals at each instance of usage, and that these different reappraisals have an additive effect greater than the sum of their parts. Another possibility is that reappraisal is a strategy most effectively employed in recurrent emotion by building and developing upon prior reappraisals. This latter possibility would have important implications for therapeutic interventions and invites closer examination. For example, interventions could place greater weight on reaffirming previously cognised reappraisals rather than solely improving the skill of conjuring new reappraisals. These speculations provide an important topic for future research.

Finally, it is important to note that while reappraisal of recurrent emotion may result in immediate hedonic benefits, such benefits may come at a cost. Emotions evolved to signal that something in the environment may cause harm to the organism. Dampening this signal without consideration for its source can result in not taking action that may prove beneficial in the long-term. This is particularly true in the case of recurrent emotion where the stimulus is arising time and time again. Indeed, it has been shown that with regard to politically fuelled emotion, reappraisal can reduce the propensity to engage in subsequent political action such as calling representatives, donating, or volunteering (Ford et al., 2019).

Emotion regulation choice

Our results showed that a higher initial intensity of negative emotion at T1 was associated with predominant use of distraction across waves. Conversely, a lower initial intensity of negative emotion at T1 was associated with predominant use of reappraisal throughout the study. Similarly, in a logistic regression, greater intensity of negative emotion predicted the immediately subsequent use of distraction or acceptance, while lower intensity of negative emotion predicted the subsequent use of reappraisal. These results suggest that findings in the context of single-episode ER (e.g. Sheppes et al., 2011) do appear to extend to the recurrent case.

This result was surprising to us. We believed that in the single-episode case it is natural for participants to avoid the high cognitive cost of reappraising a high-intensity stimulus when they are aware that it will soon disappear from the screen never to be seen again (Sheppes, Catran, & Meiran, 2009). However, in the recurrent emotion case, participants

must factor into their decision the expectation that they will encounter the stimulus repeatedly in the future. For this reason, we believed that it is possible that participants may choose to attempt reappraisals, even when confronted with high-intensity negative emotion. One possibility is that this was not the case because highly intense emotions are often accompanied by low affordances for reappraisal (Suri et al., 2018; Young & Suri, 2019). Another explanation for this finding is that reduced action readiness decreases the probability that the most adaptive choice will be made (Ghafur et al., 2018). If people frequently distract from their high-intensity single-shot emotions, they will be less likely to deviate from this pattern even when the context of recurrent emotion arises. The latter explanation may inform a target for interventions to improve regulation skills in the realm of recurring negative emotion.

A notable feature of participants' regulatory choices in this study was the prevalence at which people chose not to use any regulation strategy at all. We observed that in both high- and low-intensity situations, during Waves 2–4,[3] approximately 23% of participants chose not to regulate their emotions. Given that the design of our survey had an obvious demand characteristic towards reporting emotion regulation, we suspect it is likely that this number underestimates instances of people not regulating despite feeling emotion. This finding must be interpreted with caution as participants may have reported no regulation when they did in fact use alternative, unlisted strategies. Nonetheless, it is congruent with laboratory studies of the same phenomenon (Suri, Whittaker, & Gross, 2015). We believe this to be an important area for further study.

Regulatory variability

Context-sensitive variability in ER responding has been linked to positive outcomes such as greater life satisfaction (Birk & Bonanno, 2016). In this capacity, researchers have largely emphasised the benefit of being able to tailor responses to highly variable situational circumstances (Aldao, Sheppes, & Gross, 2015). Indeed, it has been shown that characteristics of an emotional situation moderate the adaptiveness of different strategy choices (Haines et al., 2016; Zakowski, Hall, Klein, & Baum, 2001). However, the results of prior studies do not elucidate whether varying regulation strategy choice is linked to better

affective outcomes in cases where emotion is recurrent and the external emotion-inducing situation is unchanging. In the present study, participants experienced steeper declines in negative emotion when they were able to more flexibly adjust their strategy use, despite the characteristics of the emotion-triggering event remaining relatively static.

It is possible that one mechanism behind this effect is that as emotional intensity declines with time, regulators are able to switch from a strategy that is easier to implement during high-intensity emotion, (e.g. distraction), to a strategy that is more conducive to long-term adaptation, but perhaps unavailable during high-intensity emotion (e.g. reappraisal; Shafir, Schwartz, Blechert, & Sheppes, 2015).

Limitations and future directions

This work has some noteworthy limitations and exciting avenues for future research. One limitation of this study concerns our measure of ER variability. The benefits of ER variability may be due to context sensitivity in ER choice (Birk & Bonanno, 2016). However, our measure of variability does not distinguish context-sensitive strategy switching from haphazard strategy switching which is less likely to result in the same benefits. If this is the case, one would expect to find a larger effect size for the benefit of strictly context-sensitive switching, as opposed to both context-sensitive and haphazard switching. Secondly, this study takes a nomothetic approach, likely overlooking individual differences that exist between participants in the realm of recurrent emotion regulation. It is important for future research to address the possibility that the findings presented in our report may be moderated by person-specific factors such as age, gender, or SES, as well as situation-specific factors such as controllability and affordances (Haines et al., 2016; Suri et al., 2018; Uusberg, Taxer, Yih, Uusberg, & Gross, 2019; Young & Suri, 2019). Thirdly, given the novelty of research in recurrent emotion, we would like to see converging sources of evidence for the findings presented in this paper. Specifically, we believe experience sampling is a powerful method to address this. Since reflection on prior instances of an emotion experience are affected by the current state of that emotion, it is possible that reporting ER strategy use even hours after its occurrence, such as in the present work, may be coloured by the regulator's current emotional state (Levine & Safer, 2002). This possibility also begets a need for caution

particularly in interpreting the T1 emotion intensity measurement which was taken simultaneously with T2. Future experience sampling studies could achieve greater temporal granularity and provide a valuable source of convergent evidence to address this limitation.[4] However, it is critical that such studies effectively isolate recurrent emotion episodes from single-instance emotion. Finally, given the influences we found of strategy choice on the intensity of negative emotion and the influence of intensity negative emotion on strategy choice, there may be interesting reciprocal causal relationships yet to be explored when emotions reoccur. Such bidirectional causal relationships could be best parsed apart using lab-based paradigms.

In this work we have operated on the theoretical premise that emotion episodes are brief in duration, lasting only seconds or minutes (Ekman, 1992). We see these individual episodes as constituting local peaks or valleys in a continuous flow of affect. An alternative conception is that an individual emotion episode spans from the start of the emotion-eliciting situation to the moment the affect generated by the situation reaches an intensity of zero. This alternative more readily allows for emotion episodes that last for hours or even days at a time (Verduyn & Lavrijsen, 2015). Importantly, in either case, reappraisal has been shown to increase the speed that emotion intensity declines (Brans & Verduyn, 2014). The present work invites further consideration of the boundary conditions at which recurring emotions should be separated from ongoing affect and mood.

We believe that the present work provides a valuable first look into the regulation of recurrent emotion in a naturalistic context. Notably, we found that people who predominantly used reappraisal experienced greater reductions in the intensity of their negative emotion with each reoccurrence compared to participants that predominantly used other distraction or acceptance. Additionally, participants were more likely to choose reappraisal relative to distraction or acceptance, when the intensity of their negative emotion was lower. Finally, our study suggested an additional benefit of flexibly switching between strategies. The more strategy switching participants engaged in, the steeper their emotional decline.

Although these findings happen to align with findings from the single-instance realm, we caution against extrapolating all single-instance emotion findings to recurrent emotion situations. Recurrent emotion adds an additional dimension to how people make regulation-related decisions and what consequences will result from those decisions. Considering that many of the emotions we encounter in daily life are likely to reoccur, we believe this to be an important area of study rich with opportunities for future research.

Notes

1. To be clear, we do not distinguish between conscious and unconscious choices in the context of this report. Participants' ER choices likely span the spectrum from deliberate, conscious decisions to unconscious, automatic decisions.
2. Despite the increased time interval between the intensity measurement and strategy report in Wave 3, the same pattern of significant results was found. However, in Wave 4, where the period between surveys was greatest, no significant relationship was found.
3. "No regulation" was only added as an option starting at Wave 2 given the prevalence of free-response answers that implied no regulation in Wave 1.
4. We would like to thank an anonymous reviewer for calling attention to this important point.

Disclosure statement

No potential conflict of interest was reported by the authors.

Data availability statement

The data and analyses that support the findings of this study are openly available on the OSF website at https://osf.io/vcfb8/.

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