

Trait Reappraisal Amplifies Subjective Defeat, Sadness, and Negative Affect in Response to Failure Versus Success in Nonclinical and Psychosis Populations

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Perceptions of defeat have been linked to a range of clinical disorders including psychosis. Perceived defeat sometimes increases in response to failure, but the strength of this association varies between individuals. The present research investigated whether trait reappraisal, a thought-focused coping style, amplified response to stressful events. Two studies (Study 1, $n = 120$ nonclinical participants; Study 2, $n = 77$ participants with schizophrenia-spectrum disorders) investigated whether trait reappraisal amplified feelings of defeat following an experience of failure versus success. Frequent reappraisers showed the largest increases in subjective defeat after failure versus success in both studies, with nonclinical participants with greater habitual reappraisal also showing larger increases in sadness and general negative affect. Frequent use of reappraisal may confer vulnerability to subjective defeat in response to stressful life events among nonclinical and clinical populations and could be an area for relapse prevention interventions to target.

Keywords: defeat, reappraisal, schizophrenia, psychosis, suicidality

Psychological defeat has been described as a sense of failed struggle or loss of social rank (Gilbert & Allan, 1998) that has been implicated in the development of a number of psychological disorders (Ehlers, Maercker, & Boos, 2000; Gilbert & Allan, 1998) including psychosis (Selten & Cantor-Graae, 2005, 2007). The extent to which perceived defeat increases after experiences of failure varies between individuals (Johnson, Tarrier, & Gooding, 2008b), but the role of emotional regulation strategies in moderating defeat is currently unknown. If such strategies either exacerbate or counter the effects of failure upon defeat then this

information could be important for informing clinical interventions. Thus, the aim of the current research was to investigate the extent to which the emotion regulation strategy of reappraisal (Gross, 1998; Gross & John, 2003) moderated the impact of failure on perceived defeat among both a nonclinical sample and individuals diagnosed with a schizophrenia-spectrum disorder, for whom perceived defeat may be particularly important (Selten & Cantor-Graae, 2005, 2007).

Perceptions of defeat have been associated with the onset and exacerbation of a range of psychiatric conditions and disorders, including depression, anxiety, and suicide (Taylor, Gooding, Wood, & Tarrier, in press; Taylor, Wood, Gooding, & Tarrier, 2010c). Defeat may also contribute to the development and maintenance of schizophrenia (Selten & Cantor-Graae, 2005, 2007). This hypothesis is based on observations that factors that can lower social status, potentially increasing subjective defeat, are known to be linked to the onset and maintenance of schizophrenia. For example, epidemiological research has found that having a lower IQ (Zammit et al., 2004), living in an urban area (Kelly et al., 2010; Krabbendam & van Os, 2005), and migrating from a lower-income country to a higher-income country (Cantor-Graae & Selten, 2005) increase risk for schizophrenia. It has been suggested that these factors may increase feelings of defeat by reducing the likelihood of employment and the elevated social status that accompanies this (Selten & Cantor-Graae, 2005). Supporting this hypothesis is evidence that among nonclinical populations, higher levels of paranoid thoughts, a common feature of schizophrenia, are associated with lower levels of social status (Freeman et al., 2005). Furthermore, among individuals with schizophrenia it has been proposed that feelings of defeat may drive suicidality (Johnson, Gooding, & Tarrier, 2008a). This possibility has been sup-

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ported by a recent empirical study, which found that higher levels of defeat were associated with elevated rates of suicidal ideation in this group (Taylor et al., 2010b). Interestingly, this study found that feelings of defeat mediated the association between positive psychotic symptoms and suicidal ideation, indicating a key role for perceptions of defeat in the development of suicide risk (Taylor et al., 2010b). Thus, it appears that subjective defeat may be an important factor to investigate to further understand both the etiology of schizophrenia and the risks it presents. However, as yet only minimal empirical research has directly investigated defeat among individuals with schizophrenia and no research has studied potential moderators of the association between risk factors for defeat and the subsequent subjective experience of this emotion.

Given the central role that defeat is thought to play in the onset and maintenance of clinical disorders, it is important to determine factors which moderate the perception of defeat in response to failure (cf., Johnson, Wood, Gooding, Taylor, & Tarrier, in press). It has been suggested that an appraisal system may underlie feelings of defeat (Johnson et al., 2008a), and if this is the case, then those cognitive-emotional processes that impact on appraisals are an important area for investigation in relation to moderating feelings of defeat (cf., Johnson, Gooding, Wood, & Tarrier, 2010a; Johnson et al., 2010b). One such process could be reappraisal, which is a component of a recently proposed emotion regulation theory (Gross & Thompson, 2007). According to emotion regulation theory, reappraisal is conceived of as an antecedent-focused strategy acting at the level of cognitive change to modulate the emotion before it arises (Gross & Thompson, 2007). Because reappraisal occurs early on in the sequence of cognitive-emotional processes arising in response to an emotion inducing event, it is thought to be an adaptive strategy that does not demand a high level of cognitive resources. Reappraisal has been contrasted with emotional suppression that involves concealing the expression of emotions being experienced. Suppression is characterized as response-focused, late occurring, and as being resource demanding. It is, therefore, considered a maladaptive regulation strategy (Gross & Thompson, 2007).

Reappraisal has been studied in two different forms. The first of these is instructed reappraisal, where participants are instructed to reappraise a stressor before exposure. Studies investigating this form of reappraisal have tended to support emotion regulation theory, showing a reduced increase in negative emotions and physiological reactivity among individuals who reappraise (Goldin, Manber-Ball, Werner, Heimberg, & Gross, 2009; Gross, 1998). For example, in an experiment where participants watched a film clip of the treatment of burn victims, those instructed to reappraise reported lower levels of subsequent disgust than those who were instructed to suppress their emotions (Gross, 1998). The second is naturally occurring, or "trait" reappraisal, which can be understood as the frequency with which individuals use reappraisal. It can be measured using the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003).

Findings from research into trait reappraisal have been less clear. There have been several studies that have examined cross-sectional associations between trait reappraisal and self-reported affect, but results from these have been somewhat inconclusive. Although some research has found that higher levels of trait reappraisal are related to more positive patterns of affect (Balzarotti, John, & Gross, 2010; Gross & John, 2003), these results

have not been consistent. For example, three studies have failed to find a correlation between reappraisal and measures of depressed mood among nonclinical participants (Abler, Hofer, & Viviani, 2008; Dennis, 2007; Henry, Rendell, Green, McDonald, & O'Donnell, 2008) and one study failed to find an association between reappraisal and negative affect among older adults, although a negative association was found among young adults (Kafetsios & Loumakou, 2007). Potentially, it may be that the association between reappraisal and affect is moderated by the presence other factors, but further research is necessary to assess this.

Only a small number of studies have investigated the impact of trait reappraisal on response to a stressor, and some findings from these have suggested that a more frequent tendency to reappraise may in fact have a negative impact upon subsequently experienced stressors (Butler, Wilhelm, & Gross, 2006; Lam, Dickerson, Zoccola, & Zaldivar, 2009). For example, in an experiment where individuals took part in a speech task, it was found that a more frequent tendency to reappraise predicted increased cortisol reactivity (Lam et al., 2009). This has led to the suggestion that while reappraising under instruction may have an attenuating impact upon stressful events, the natural tendency to reappraise situations or trait reappraisal, may have an amplifying impact (Lam et al., 2009). Thus, although a wide body of research suggests that instructed reappraisal is beneficial, research into trait reappraisal is much less clear and it appears that this form of reappraisal may have a negative impact on response to stressors. This divergence between instructed reappraisal and trait reappraisal suggests that while a single act of reappraising can be beneficial, the persistent drive to change emotions by changing thoughts, as in trait reappraisal, could potentially have a negative impact.

In contrast to the research into reappraisal, research investigating the impact of suppression has been more consistent and studies investigating both the impact of instructed suppression (Butler, Wilhelm, & Gross, 2006; Gross, 1998) and naturally occurring or trait suppression suggest that it serves to amplify negative responses to stressors (Lam et al., 2009). For example, in a study where participants were instructed to either suppress emotional expression while watching a disgust-eliciting film or to reappraise the experience, it was found that those in the suppression condition demonstrated elevated levels of physiological arousal (Gross, 1998). Similarly, in a study investigating the impact of trait suppression on response to a social-evaluative task, it was found that high-trait suppressors showed an exaggerated level of stress response (Lam et al., 2009). However, as with reappraisal, research has yet to investigate suppression in relation to feelings of defeat and among individuals with schizophrenia-spectrum disorders.

Study 1

The main aim of Study 1 was to investigate the impact of trait reappraisal and suppression on the association between a stressful experience and subsequent subjective defeat. In line with recent findings suggesting that trait reappraisal exacerbates the impact of stress (Lam et al., 2009), it was predicted that more frequent reappraisal would amplify the difference in defeat between the success and failure conditions. It was also predicted that higher levels of suppression would amplify the difference in defeat between the success and failure conditions. If found, these amplifi-

cation effects would suggest that the relative impact of failure and success upon subsequent defeat was moderated by emotion reappraisal strategy (trait reappraisal or suppression). The second aim of the study was to investigate any significant interactions to assess whether there were specific associations between emotion regulation strategy (trait reappraisal or suppression) and defeat among individuals in either the success or failure condition. If found, these associations would suggest that in the presence of an experience of either success or failure, there was a linear association between emotion regulation strategy (trait reappraisal or suppression) and defeat. The third aim of the study was to investigate whether these results were specific to feelings of defeat, or whether they generalized to other emotions and general affect. These aims were investigated using a quasi-experimental design, whereby participants completed measures of trait reappraisal and suppression together with measures of current affect at baseline, before random allocation to a condition with either a task with a fixed success outcome, or a task with a fixed failure outcome. After the task, current affect was measured a second time.

Method

Participants. Participants were 120 undergraduate students from a university in the north-west of England (28 male, M age = 20.53, SD = 2.82). Sixty participants (14 male, M age = 20.60, SD = 3.00) were randomly assigned to the failure condition and 60 participants (14 male, M age = 20.47, SD = 2.64) were randomly assigned to the success condition. Participants were recruited using a poster advertising the study and received course credits in exchange for taking part. The study was approved by a university ethics committee and all participants provided informed consent. After completion of the experiment participants were debriefed and provided with an information sheet listing contact details for help-lines and counseling services.

Materials

Emotion Regulation Questionnaire. The ERQ (Gross & John, 2003) contains two subscales measuring emotion reappraisal and emotion suppression. The six-item reappraisal subscale assesses the frequency with which individuals regulate their emotions through the use of thought-change strategies. Items for this subscale include “When I want to feel more *positive* emotion (such as joy or amusement), I *change what I’m thinking about*” and “When I want to feel less *negative* emotion, I *change the way I’m thinking about the situation*.” The four-item suppression subscale measures the extent to which individuals regulate their emotions through the use of suppression strategies, and includes items such as “I keep my emotions to myself” and “I control my emotions by *not expressing them*.” Reappraisal subscale scores have been found to be significantly associated with higher levels of peer-rated positive emotion expression (r = .44) and suppression subscale scores have been found to be associated with lower levels of peer-rated positive emotion expression (r = $-.62$). Test-retest reliability for both subscales was found to be r = .69 across 3 months (Gross & John, 2003).

Measure of current mood. Participants were asked to mark their mood on five visual analogue scales (VASs) measuring how defeated, sad, calm, happy, and frustrated they were feeling at that

moment. As the study sought to examine participants’ existing concepts of emotions, definitions were not provided as standard. However, a small number of participants did ask for the meaning of the word “defeat” to be described to them. When this occurred defeat was described as “the feeling that you have lost your fight, feeling that you have failed or feeling down and out,” consistent with previous definitions in the literature (Gilbert & Allan, 1998; Taylor et al., 2010b). Each VAS was a 10 cm vertical line, with the bottom of the line representing an absence of the emotion (e.g., “Not at all defeated”) and the top of the line representing high levels of the emotion (e.g., “Very defeated”). Participants were required to draw a dash across the line at any point that reflected their current mood. VASs were used as previous research indicates that they are an optimal method for capturing mood fluctuations that occur in response to experimental tasks (Goldstein & Willner, 2002; Johnson et al., 2008b). Furthermore, they are a brief method for measuring mood that converges with longer mood scales such as the Beck Depression Inventory (Beck, Steer, & Brown, 1996; Folstein & Luria, 1973). Test-retest reliability for VASs has been found to be r = .85 over the space of 1 hr (Ahearn & Carroll, 1996).

Positive and Negative Affect Scales. The Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988) comprises of 20 items measuring different feelings and emotions during a time period specified by the researcher (e.g., “During the past few weeks” or “During the past few days”). To detect mood fluctuations occurring in response to the task, the version used in the current study specified, “At the moment.” The PANAS contains two 10-item subscales. One of these measures positive affect (PA) and includes items such as “enthusiastic” and “proud.” The other measures negative affect (NA) and includes items such as “upset” and “guilty.” The NA scale has been found to be correlated with measures of depression (r = .60), and the PA scale has been found to be negatively correlated with depression (r = .48; Crawford & Henry, 2004). The trait version of the PA scale has been found to have a 2-month test-retest reliability of .68, and the trait version of the NA scale has been found to have a 2-month test-retest reliability of .71 (Watson et al., 1988).

Puzzles to induce success or failure. There were two tasks used to induce either success or failure. Both of these were variations of the Remote Associates Test (McFarlin & Blascovich, 1984; Mednick, 1962). This requires participants to read three words presented on a slide, which are all related to a fourth word, which is not presented. The task is to identify this fourth word. For example, participants may be presented with “Soap,” “Shoe,” and “Tissue,” where the correct answer is “Box.” Each task comprised of 20 items, and after each item participants were informed if their response was correct or incorrect. As participants were allowed up to 30 s to solve each item, the tasks took up to 10 min to complete. Items on the failure version of the task were not insoluble, but were designed to be so difficult that participants were unlikely to be able to identify the fourth word on any of the trials. In the success version, items were set to be easier, and participants were offered the option of receiving an additional “hint” to help them.

Procedure

Participants provided written consent to the take part in the study. The testing session then began with the completion of the

ERQ (Gross & John, 2003), the VASs and the PANAS scales. After this, participants were randomly allocated to either the success task or the failure task. After taking part in the tasks, participants completed all the measures of mood a second time.

Analysis Strategy

First, independent samples *t* tests were conducted to investigate differences between the two groups on baseline levels of emotion reappraisal, emotion suppression, and the VAS emotions. After this, a hierarchical regression analysis was conducted to examine (a) whether condition predicted posttask defeat and (b) whether emotion regulation strategy (reappraisal or suppression) moderated the association between condition (success or failure) and posttask defeat. Both of these were conducted while controlling for baseline levels of defeat. In the first step of this analysis, baseline levels of defeat were entered into the regression model so as to control for any residual differences between experimental groups. In the second step, condition (failure or success) was entered. In the third step, emotion regulation strategies, reappraisal, and suppression, were entered. In the final step, the interaction terms between condition and reappraisal and condition and suppression were entered. Within each step, variables were entered simultaneously, and standardized variables were used to avoid multicollinearity (Frazier, Tix, & Barron, 2004). If either of the interaction terms in the fourth step (reappraisal and condition or suppression and condition) were significant predictors, it indicated a moderating effect of that emotion regulation strategy (reappraisal or suppression) on the association between condition and subsequent feelings of defeat (Cohen & Cohen, 1983). This analysis was then repeated for each of VAS scales and the positive and negative emotion subscales of the PANAS, to investigate (a) whether the impact of failure was specific to feelings of defeat and (b) whether the interaction between reappraisal and condition was specific to feelings of defeat, or whether it had an impact on a range of moods. Furthermore, if results found using the PANAS replicated those of the VAS scales, then this would validate the use of the VAS scales for further research.

Finally, any significant interactions that were found were investigated using simple slopes analyses. Whereas the regression analyses assessed whether emotion regulation strategy (trait reappraisal or suppression) moderated the association between an experience of failure versus success and subsequent mood, these tested whether the slope for each condition (failure and success) varied significantly from zero. If the slope of a particular condition was significant, it suggested a linear association between emotion regulation strategy (trait reappraisal or suppression) and mood in the presence of an experience of either failure or success. The

simple slopes analyses were conducted using modprobe computational aide for SPSS (Hayes & Matthes, 2009). As the moderation regression included a dichotomous variable (condition), the Johnson-Neyman method was used.

Results

Baseline scores. Baseline scores on reappraisal and suppression are displayed in Table 1, and measures of mood for each condition and across conditions are displayed in Table 2. Correlation analyses revealed significant negative associations between reappraisal and baseline defeat, sadness, and negative affect, significant positive associations between reappraisal and positive affect, significant negative associations between suppression and baseline happiness, and significant positive associations between suppression and frustration (see Table 2). Results from the independent samples *t* tests suggested that there were no differences between groups on levels of either emotion suppression or emotion reappraisal, or any of the VAS or PANAS emotion scales (all *ps* > .05).

Reappraisal and suppression as moderators of defeat. A regression analysis was conducted to investigate (a) whether condition (success or failure) predicted subsequent feelings of defeat, and (b) whether emotion regulation strategy (reappraisal or suppression) could moderate this association. As can be seen in Table 3, condition (success or failure) predicted posttask defeat when controlling for baseline defeat, with individuals in the failure condition reporting higher posttask levels of defeat compared to those in the success condition (see Table 2). Reappraisal was also found to moderate the impact of condition upon subsequent feelings of defeat. The graph of this interaction (Figure 1A) shows that individuals in the failure condition who reported more frequent use of reappraisal showed the highest levels of posttask defeat, but frequent reappraisers who were in the success condition reported the lowest levels of defeat. Suppression was not found to moderate the impact of condition upon defeat.

Reappraisal and suppression as moderators of sadness, calmness, happiness, and frustration. This regression analysis was then repeated with each of the remaining emotions measured using VAS, to examine whether this pattern was specific to defeat or generalized to other emotions. These found that condition was a significant predictor of each of these emotions. Specifically, participants in the failure condition reported higher levels of sadness and frustration and lower levels of calmness and happiness posttask (see Table 2). Furthermore, reappraisal was found to moderate the impact of condition upon both feelings of sadness and calmness (see Table 3). The graphs of these interactions suggest that frequent reappraisers in the failure condition reported

Table 1
Means and SDs^a for Reappraisal and Suppression^b in Study 1

Variable	Failure condition	Success condition	Across conditions
Reappraisal (ERQ)	29.63 (7.23)	29.05 (6.41)	29.34 (6.81)
Suppression (ERQ)	13.13 (6.32)	12.57 (5.23)	12.85 (5.81)
Transformed suppression (ERQ)	3.53 (0.82)	3.47 (0.75)	3.50 (0.80)

^a SDs appear in parentheses below the means. ^b Scores on the Suppression subscale of the ERQ were transformed to reduce skew.

Table 2

Means and SDs^a for Measures of Mood^b, and Correlations Between Baseline Measures of Mood and Reappraisal and Suppression in Study 1

Variable	Failure condition		Success condition		Across conditions		Reappraisal (ERQ)	Suppression (ERQ)
	Baseline	Postinduction	Baseline	Postinduction	Baseline	Postinduction	Baseline	Baseline
Defeat (VAS)	1.62 (2.50)	4.69 (3.11)	1.45 (1.90)	1.99 (2.58)	1.53 (1.97)	3.34 (3.15)		
Transformed defeat (VAS)	3.17 (2.50)	6.37 (2.52)	2.94 (2.43)	3.45 (2.85)	3.05 (2.46)	4.91 (3.06)	-.33**	.08
Sad (VAS)	1.73 (2.17)	2.71 (28.37)	2.22 (2.44)	1.80 (2.22)	1.97 (2.31)	2.25 (2.58)		
Transformed sad (VAS)	0.93 (0.58)	1.14 (0.61)	1.09 (0.55)	0.94 (0.61)	1.01 (0.57)	1.04 (0.62)	-.31**	.00
Calm (VAS)	7.40 (2.40)	6.14 (2.44)	6.77 (2.68)	6.57 (2.60)	7.09 (2.55)	6.36 (2.52)		
Transformed calm (VAS)	6.30 (2.23)	5.12 (2.26)	5.70 (2.30)	5.40 (2.27)	6.00 (2.28)	5.31 (2.26)	.14	-.01
Happy (VAS)	7.10 (1.83)	6.10 (2.30)	6.97 (1.98)	7.04 (2.19)	7.03 (1.90)	6.57 (2.28)		
Transformed happy (VAS)	1.81 (1.77)	1.00 (2.04)	1.74 (1.93)	1.82 (1.97)	1.78 (1.85)	1.41 (2.04)	.08	-.19*
Frustrated (VAS)	3.07 (2.66)	5.90 (2.88)	3.18 (2.66)	3.29 (2.69)	3.13 (2.65)	4.59 (3.07)		
Transformed frustrated (VAS)	4.86 (2.69)		4.94 (2.74)		4.90 (2.70)		-.13	.26**
NA (PANAS)	14.03 (4.60)	16.19 (5.55)	14.38 (4.05)	13.92 (4.93)	14.21 (4.32)	15.04 (5.35)		
Transformed NA (PANAS)	0.92 (0.02)	0.93 (0.02)	0.93 (0.02)	0.92 (0.02)	0.92 (0.02)	0.93 (0.02)	-.21*	.11
PA (PANAS)	30.37 (8.29)	24.87 (9.76)	28.85 (7.20)	27.77 (8.68)	29.61 (7.77)	26.32 (9.31)	.33**	-.07

^a SDs appear in parentheses below the means. ^b Scores on the VAS scales (with the exception of postinduction frustrated) and the PANAS negative affect subscale were transformed to reduce skew. Where transformations have been conducted, correlations have been reported for transformed variables only. Transformations conducted on VAS scales were based on the results scored in millimeters.

* $p < .05$. ** $p < .01$.

the highest levels of posttask sadness (Figure 1B) and the lowest levels of posttask calmness (Figure 1C). Reappraisal was not found to have a significant moderating impact upon either happiness or frustration, and suppression did not moderate the impact of condition upon any emotion.

Reappraisal and suppression as moderators of general positive and negative affect. Regression analyses were also used to examine whether reappraisal and suppression moderated the impact of condition upon general positive and negative affect. These found that condition was a significant predictor of both positive and negative affect, with individuals in the failure condition reporting higher posttask negative affect and lower posttask positive affect. The regression analyses also found that reappraisal moderated the impact of condition upon subsequent negative affect. The graph of this interaction (Figure 1D) suggested that frequent reappraisers in the failure condition reported the highest levels of posttask negative affect. Suppression was not found to moderate the impact of condition upon either positive or negative affect.

Testing whether there is an association between reappraisal and outcome mood in each condition alone. Each of the significant interactions indicated by the hierarchical regressions were then explored using simple slopes analyses. These found a linear association between reappraisal and each of the outcome mood measures for individuals in the failure condition. Specifically, it was found that after an experience of failure, more frequent reappraisal was directly associated with higher levels of posttask defeat ($\beta = .2117, p = .018$), sadness ($\beta = .2134, p = .037$), and negative affect ($\beta = .2379, p = .011$) and lower levels of postfailure calmness ($\beta = -.2167, p = .037$). There were no specific associations between reappraisal and posttask emotions among individuals in the success condition (all $ps > .05$).

Brief Discussion

In line with the first prediction, Study 1 found that more frequent reappraisal amplified the difference in defeat between the

success and failure conditions. The graph of the interaction suggested that individuals who frequently reappraised reported higher levels of defeat after failure and lower levels of defeat after success than individuals with less frequent reappraisal. The results from the simple slopes analyses suggested a linear association between more frequent reappraisal and higher levels of posttask defeat after an experience of failure, in particular. This pattern was also found to replicate for feelings of sadness, calmness, and general negative affect. Specifically it was found that higher frequency of reappraisal was associated with greater increases in sadness and negative affect and greater decreases in calmness after an experience of failure. Contrary to the second prediction, trait suppression was not found to moderate the association between failure and defeat or any of the other emotions.

Study 2

The participants in Study 1 were from a nonclinical population, and so findings from this study cannot be generalized to clinical populations. Defeat has been linked to a range of psychopathological disorders. For example, it is thought to contribute to the development of posttraumatic stress disorder (PTSD) (Dunmore, Clark, & Ehlers, 1997, 1999, 2001; Ehlers et al., 1998), depression (Gilbert & Allan, 1998; Sloman, Gilbert, & Hasey, 2003), suicidality (Williams, 1997; Williams, Crane, Barnhofer, & Duggan, 2005), and schizophrenia (Selten & Cantor-Graae, 2005, 2007).

Thus, the main aim of Study 2 was to investigate whether emotion regulation strategy (trait reappraisal and suppression) moderated the association between a stressful experience and subsequent subjective defeat among individuals with schizophrenia-spectrum disorders. The second aim of the study was to investigate any significant interactions to assess whether there was a direct association between emotion regulation strategy (trait reappraisal or suppression) and defeat in the presence of an experience of either success or failure, in isolation. In line with

Table 3
Hierarchical Regression Analyses Predicting Postinduction Mood Measured by the VASs and the PANAS Positive and Negative Affect Subscales for Study 1

Step	Variable entered	Outcome measure of mood													
		Defeat (VAS)		Sad (VAS)		Calm (VAS)		Happy (VAS)		Frustrated (VAS)		Negative Affect (PANAS)		Positive Affect (PANAS)	
		β	SE	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
1	Baseline mood	.596***	.074	.604***	.073	.596***	.074	.716***	.064	.480***	.081	.640***	.071	.789***	.057
2	Baseline mood	.574***	.061	.638***	.071	.618***	.073	.720***	.061	.487***	.070	.662***	.065	.812***	.053
	Condition	.903***	.122	.491**	.141	-.330*	.146	-.425**	.122	.867***	.140	.606***	.130	-.470***	.105
3	Baseline mood	.609***	.065	.662***	.075	.630***	.074	.744***	.062	.504***	.074	.696***	.066	.847***	.055
	Condition	.894***	.122	.492**	.141	-.329*	.146	-.440***	.121	.871***	.141	.602***	.129	-.475***	.104
	Reappraisal	.097	.066	.078	.075	-.086	.074	.041	.061	.015	.072	.133*	.066	-.087	.055
	Suppression	-.029	.062	-.014	.071	.042	.074	.140*	.062	-.060	.074	-.053	.065	.080	.052
4	Baseline mood	.584***	.065	.653***	.073	.619***	.073	.746***	.063	.486***	.075	.667***	.066	.845***	.056
	Condition	.896***	.120	.490**	.139	-.326*	.144	-.441***	.112	.871***	.141	.597***	.126	-.475***	.104
	Reappraisal	-.080	.096	-.122	.108	.109	.109	.005	.093	-.050	.109	-.045	.098	-.098	.081
	Suppression	.055	.092	.094	.104	-.074	.108	.131	.094	.059	.111	.072	.097	.065	.079
	Reappraisal \times condition interaction	.291*	.126	.336*	.114	-.326*	.149	.073	.128	.074	.148	.283*	.132	.027	.109
	Suppression \times condition interaction	-.091	.127	-.129	.144	.146	.149	.034	.128	-.197	.149	-.167	.134	.034	.109

Note. Within each step, variables were entered simultaneously.
* $p < .05$. ** $p < .01$. *** $p < .001$.

findings from Study 1, the first prediction was that more frequent reappraisal would amplify the difference in defeat between the success and failure conditions. The second prediction was that higher levels of suppression would also amplify the difference in defeat between the success and failure conditions. The third aim of the study was to investigate whether these results were specific to feelings of defeat, or whether they generalized to other emotions.

Method

Participants. Participants were outpatients residing in the north-west of England who were recruited via their keyworker or appropriate health care professional. Community mental health teams, assertive outreach teams, early intervention services, supported housing associations, and voluntary organizations supported recruitment. After referral, participants were interviewed by a research psychologist (either the first or fourth authors). Inclusion criteria for the study were (a) a clinical diagnosis based on ICD-10 or *DSM-IV* criteria of a schizophrenia spectrum disorder (e.g., schizophrenia, schizoaffective disorder, psychosis not otherwise specified); (b) aged 18 years or over; (c) English-speaking; (d) not considered to be a current high suicide risk by their keyworker or appropriate health care professional; (e) able to provide informed consent as judged by their keyworker or appropriate health care professional. Participants were excluded if drug use or neuropsychological disorder was judged to be the major cause of the psychosis. These inclusion criteria were applied by the participant’s keyworker or appropriate mental health professional, as these were deemed the most well-informed individuals concerning the participant’s mental health history and current presentation. Participants were within the health care system and had all been formally diagnosed with a schizophrenia-spectrum disorder. This was on the basis of either the ICD-10 or *DSM-IV*, and was overseen by a psychiatrist following the guidelines of the British National Health Service (NHS). The study was approved by a national research ethics committee before commencing and took into consideration the precise needs of this population (Taylor et al., 2010a).

A total of 78 participants were recruited into the study. One of these was subsequently excluded because of missing data. Of the final sample of 77 (18 female; $M_{age} = 42.3$ years, $SD = 11.9$), 39 were pseudorandomly allocated to the success condition and 38 were allocated to the failure condition. The participants were predominantly White ($n = 60, 77.9\%$), followed by Mixed British ($n = 6, 7.8\%$), Asian ($n = 4, 5.2\%$), Afro-Caribbean ($n = 2, 2.6\%$), Iranian ($n = 1, 1.3\%$), and Black British ($n = 1, 1.3\%$) with ethnicity data missing for three participants. The majority of participants had a diagnosis of schizophrenia ($n = 69, 89.6\%$) then schizoaffective disorder ($n = 5, 6.5\%$), psychosis not otherwise specified ($n = 2, 2.6\%$), and atypical psychosis ($n = 1, 1.3\%$).

Materials

Materials used in the present study were the ERQ, 10.5 cm VAS of defeat, sadness, calmness, happiness, and frustration and the two versions of the Remote Associates Test, all of which are described in Study 1.

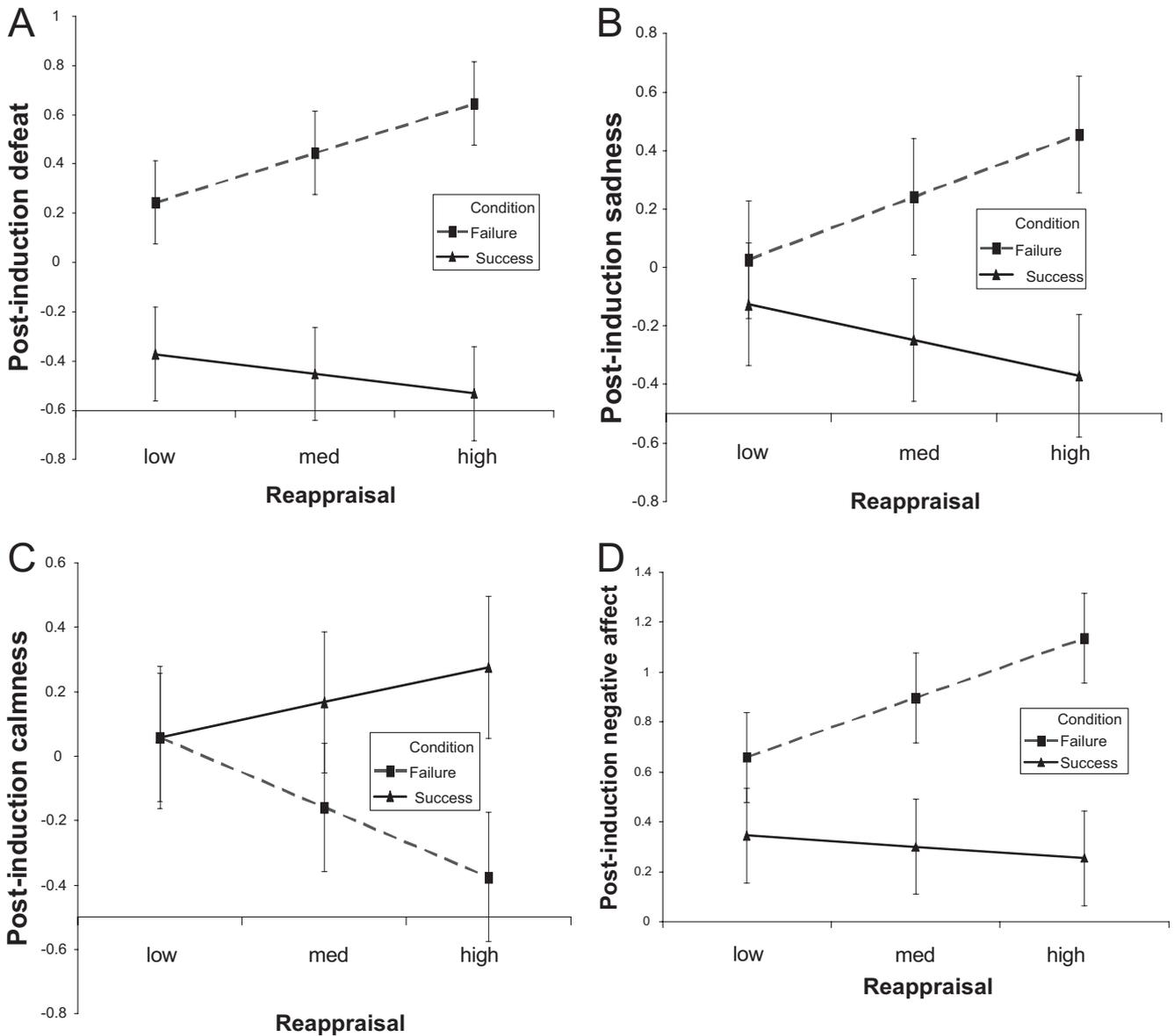


Figure 1. Reappraisal moderates the impact of failure upon subsequent feelings of defeat (A), sadness (B), calmness (C), and negative affect (D) among nonclinical participants (Study 1).

Procedure

Participants provided written consent to take part in the study. The testing session then began with the completion of the ERQ and the VASs. After this, participants were randomly allocated to either the success task or the failure task, after which they completed the measures of mood a second time.

Analysis Strategy

Initially, a Mann–Whitney U test was conducted to check that the manipulation was effective and the individuals in the defeat condition scored lower on the task than individuals in the success condition. Next, correlations were conducted to examine whether

there was an association between reappraisal and task performance in each of the conditions. After this, independent samples t tests were conducted to investigate differences between the two groups on baseline levels of emotion reappraisal, emotion suppression and the VAS emotions. A series of hierarchical regression analyses were then conducted and any significant interactions were investigated using simple slopes analyses, as described in Study 1.

Results

Behavior performance. Individuals in the success condition gained higher scores on the Remote Associates Task (median = 19, $M = 18.69$, $SD = 1.52$) than individuals in the failure condition (median = 0, $M = 0.89$, $SD = 1.23$). A Mann–Whitney U test

was conducted to check that this difference was significant. The results of the test were in the expected direction and significant, $z = -7.67, p < .001$.

To test that the impact of reappraisal upon mood was not mediated by its impact upon performance, two correlation analyses were conducted which assessed whether there was an association between trait reappraisal and score in each of the conditions. These suggested that there was no association between trait reappraisal and score in either the success condition ($r = -.076, p = .644$) or the failure condition ($r = -.292, p = .075$).

Baseline scores. Baseline scores on reappraisal and suppression are displayed in Table 4. Means and *SDs* for mood scores and correlations for baseline mood with reappraisal and suppression are displayed in Table 5. There was no association between either reappraisal or suppression and any baseline VAS emotion score. Results from the independent samples *t* tests suggested that there were no differences between groups on levels of either emotion suppression or emotion reappraisal or the emotions of sadness and frustration (all $ps > .05$). There were, however, significant differences on baseline levels of defeat, $t(75) = 2.438, p = .017$, calm, $t(75) = -2.085, p < .040$, and happy, $t(75) = -2.474, p = 0.016$, with individuals in the defeat condition reporting lower initial levels of defeat and higher levels of calm and happy. Because of this, the analysis used investigated postinduction levels of mood while controlling for baseline levels.

Reappraisal and suppression as moderators of defeat. A regression analysis was conducted to investigate (a) whether condition (success or failure) predicted subsequent feelings defeat, and (b) whether emotion reappraisal or emotion suppression could moderate this association. As can be seen in Table 6, condition (success or failure) predicted posttask defeat when controlling for baseline defeat, with individuals in the failure condition reporting higher posttask levels of defeat compared to those in the success condition (see Table 5). Neither reappraisal or suppression predicted changes in defeat in addition to condition, but reappraisal was found to moderate the impact of condition. The graph of this interaction (see Figure 2) shows that individuals with more habitual trait reappraisal reported greater levels of defeat in response to an experience of failure relative to an experience of success. The graph also suggested that more frequent reappraisers in the success condition showed greater decreases in defeat relative to those in the failure condition. The interaction was then investigated using a simple slopes analysis, which suggested the presence of a trend indicating a linear association between reappraisal and defeat after an experience of failure, in particular ($\beta = .2917, p = .065$). Reappraisal did not appear to be linearly associated with defeat after an experience of success ($\beta = -.1811, p = .225$).

Reappraisal and suppression as moderators of sadness, calmness, happiness, and frustration. This regression analysis was then repeated with each of the other emotions, to investigate

whether this interaction was specific to perceptions of defeat. As can be seen in Table 6, emotion reappraisal and emotion suppression were not found to predict any of these emotions either in addition to or when interacting with condition.

Discussion and General Discussion

Two studies were conducted with the main aim of investigating whether naturally occurring or trait reappraisal exacerbated the impact of an experience of failure versus success on subsequent perceived defeat. Supporting the prediction, it was found that reappraisal amplified the difference in defeat between individuals in the failure and success conditions. Specifically, results suggested that the highest increases in self-reported defeat were among frequent reappraisers who experienced failure. Furthermore, among nonclinical participants, more frequent reappraisal was found to amplify increases in sadness and negative affect and decreases in calmness after failure. These results extend the previous literature in three main ways.

First, these results demonstrate that there are cognitive processes that can moderate perceptions of defeat in response to experiences of failure versus success. Defeat has been implicated in a range of mental health disorders including psychosis (Ehlers et al., 2000; Gilbert & Allan, 1998; Rooke & Birchwood, 1998; Seltzer & Cantor-Graae, 2005, 2007) and is thought to be a key factor in the development of suicidality (Williams, 1997; Williams et al., 2005). Perceived defeat sometimes increases after an experience of failure, but the strength of this relationship varies between individuals (Johnson et al., 2008b). The current results extend this previous research by identifying a cognitive process, specifically trait reappraisal, which may account for these interindividual differences. Furthermore, these results could have relevance for psychological theories that incorporate concepts of defeat. One such theory is the Cry of Pain model of suicidality (Williams, 1997; Williams et al., 2005), which suggests that when stressful life events are appraised in terms of defeat and this is then compounded by concomitant perceptions of entrapment and hopelessness, suicidality increases. The current studies have identified one mechanism that may moderate the likelihood that stressful events will lead to subsequent suicidality.

Second, results from Study 2 provide the first evidence that trait reappraisal is a relevant factor to consider when predicting response to experiences of failure and success among individuals with schizophrenia-spectrum disorders. Previously, cross-sectional research among individuals with schizophrenia has suggested that reappraisal is not associated with either the positive or negative symptoms of psychosis (Henry et al., 2008). The current research extends this by showing that although trait reappraisal does not appear to be significantly associated with the specific emotions of defeat, sadness, calmness, happiness, or frustration cross-

Table 4
Means and *SDs*^a for Reappraisal and Suppression in Study 2

Variable	Failure condition	Success condition	Across conditions
Reappraisal (ERQ)	27.16 (8.50)	24.31 (7.53)	25.63 (8.10)
Suppression (ERQ)	17.55 (6.42)	15.49 (5.94)	16.54 (6.19)

^a *SDs* appear in parentheses below the means.

Table 5
Means and SDs^a for Measures of Mood^b, and Correlations Between Baseline Measures of Mood and Reappraisal and Suppression in Study 2

Variable	Failure condition		Success condition		Across conditions		Reappraisal (ERQ)	Suppression (ERQ)
	Baseline	Posttask	Baseline	Posttask	Baseline	Posttask	Baseline	Baseline
Defeat (VAS)	2.11 (2.41)	5.25 (3.50)	4.03 (3.56)	2.64 (2.78)	3.09 (3.16)	3.93 (3.40)		
Transformed defeat (VAS)	1.82 (0.86)		1.72 (1.05)		1.46 (0.99)		-.11	.09
Sad (VAS)	2.68 (2.53)	2.91 (2.88)	3.41 (3.04)	2.49 (3.22)	3.01 (2.80)	2.70 (3.05)		
Transformed sad (VAS)	1.39 (0.88)	1.43 (0.94)	1.58 (0.97)	1.20 (1.04)	1.47 (0.92)	1.32 (0.99)	-.14	.13
Calm (VAS)	7.96 (2.32)	6.89 (2.99)	6.63 (3.16)	7.14 (3.04)	7.28 (2.82)	7.02 (3.00)		
Transformed calm (VAS)	2.45 (0.23)	2.37 (0.27)	2.34 (0.25)	2.40 (0.28)	2.39 (0.24)	2.38 (0.27)	.20	.01
Happy (VAS)	7.21 (2.93)	6.11 (3.10)	5.50 (3.12)	6.80 (2.50)	6.30 (3.13)	6.46 (2.81)	.17	-.03
Frustrated (VAS)	3.11 (3.12)	5.78 (3.50)	3.38 (3.00)	2.62 (2.74)	3.26 (3.00)	4.18 (3.50)		
Transformed frustrated (VAS)	1.50 (0.95)		1.58 (0.95)		1.55 (0.94)		-.03	.09

^a SDs appear in parentheses below the means. ^b Scores on the VAS scales (with the exception of preinduction and postinduction happy and postinduction defeat and frustrated) were transformed to reduce skew. Where transformations have been conducted, correlations have been reported for transformed variables only.

* $p < .05$. ** $p < .01$.

sectionally, it does moderate response to experiences of failure and success among this group.

Third, the current studies found that trait reappraisal did not attenuate the impact of a stressor as emotion regulation theory would predict (Gross & Thompson, 2007), but in fact amplified the impact of failure relative to success on defeat in both studies, and to amplify sadness, happiness, and general negative affect in the first study. This supports recent evidence that reappraisal amplifies physiological responses to stressors (Butler et al., 2006; Lam et al., 2009), and suggests that trait reappraisal may have a different moderating effect compared to instructed reappraisal (Lam et al., 2009). Previously, much research into reappraisal has used an experimental approach, whereby participants follow instructions to either reappraise or suppress, which has tended to report a benefit

of using reappraisal over suppression, or no regulation strategy (Goldin, McRae, Ramel, & Gross, 2008; Gross, 1998; Hermann, Pejic, Vaitl, & Stark, 2009). By contrast, the current studies investigated naturally occurring trait reappraisal and response to a subsequent stressor. It could be that while reappraising under instruction is beneficial, trait reappraisal is not.

Although explanations for this discrepancy were not investigated by the study, it is possible that trait reappraisal may reflect an underlying thought-focused cognitive coping style that converges with concepts of rumination. Rumination refers to thought processes that are repetitive, abstract, and analytical (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Smith & Alloy, 2009), but there has been some debate over the definition of rumination, and it has been suggested that rumination could be related to a

Table 6
Hierarchical Regression Analyses Predicting Postinduction Mood Measured by the VASs and the PANAS Positive and Negative Affect Subscales for Study 2

Step	Variable entered	Outcome measure of mood									
		Defeat (VAS)		Sad (VAS)		Calm (VAS)		Happy (VAS)		Frustrated (VAS)	
		β	SE β	β	SE β	β	SE β	β	SE β	β	SE β
1	Baseline mood	.257*	.111	.590***	.093	.463***	.102	.591***	.093	.361**	.107
2	Baseline mood	.390***	.101	.608***	.092	.504***	.103	.676***	.091	.382***	.093
	Condition	.978***	.202	.356	.183	-.349	.206	-.613**	.180	.937***	.186
3	Baseline mood	.384***	.104	.595***	.096	.502***	.107	.677***	.093	.388***	.095
	Condition	.949***	.210	.337	.189	-.352	.213	-.583**	.186	.960***	.193
	Reappraisal	.023	.104	-.021	.098	.011	.109	-.039	.093	.004	.099
	Suppression	.052	.104	.070	.098	.001	.107	-.049	.092	-.070	.099
4	Baseline mood	.381***	.102	.605***	.095	.510***	.105	.653***	.095	.372***	.093
	Condition	.956***	.206	.347	.188	-.332	.211	-.580**	.187	.957***	.189
	Reappraisal	-.181	.148	-.175	.141	-.044	.155	.086	.138	-.147	.141
	Suppression	.089	.145	.081	.136	-.202	.150	-.026	.131	.021	.138
	Reappraisal \times condition interaction	.473*	.214	.352	.203	-.036	.224	-.247	.200	.393	.205
	Suppression \times condition interaction	-.228	.213	-.143	.203	.427	.223	.029	.195	-.310	.205

Note. Within each step, variables were entered simultaneously.

* $p < .05$. ** $p < .01$. *** $p < .001$.

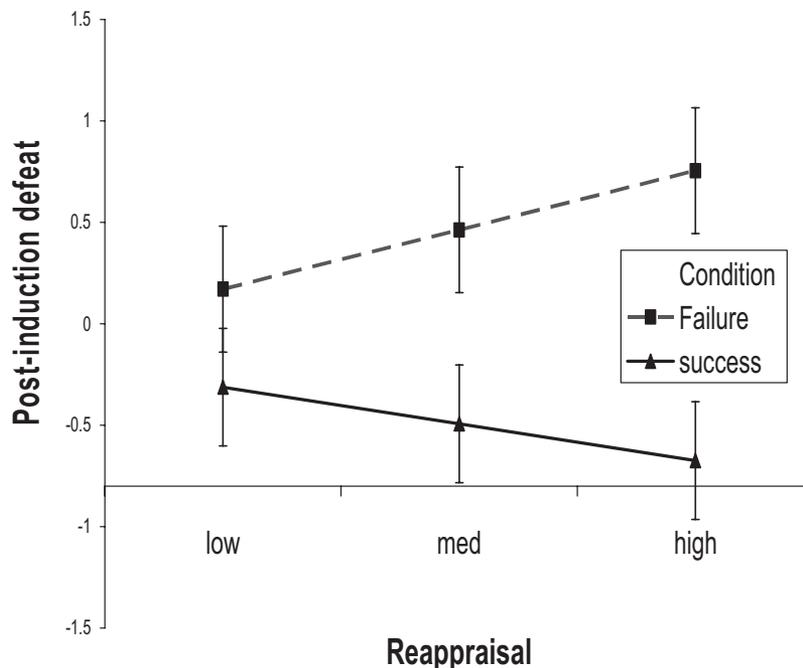


Figure 2. Reappraisal moderates the impact of failure upon subsequent feelings of defeat among clinical participants (Study 2).

more general process of repetitive thinking (Watkins, 2008). Potentially, it may be that both trait reappraisal and rumination are aspects of this tendency toward repetitive thought. Like trait reappraisal, rumination can be viewed as trait or tendency to use thought-focused coping strategies, and both may have an impact over a period of time. Rumination has also been found to amplify negative affect and emotional reactivity in response to negative experiences (Watkins, 2004; Watkins, Moberly, & Molds, 2008), consistent with the current findings. It should be noted that one previous study found a negative association between reappraisal and a measure of rumination (Gross & John, 2003). However, the particular measure of rumination used (Trapnell, 1999) focused on self-oriented thoughts, rather than the repetitive thought processes alone. It may be that there is a distinction between self-oriented thought and repetitive thought processes used in relation to coping.

Furthermore, if reappraisal does indeed reflect the repetitive thinking process captured by the concept of rumination, it might be expected that it is not an inherently negative trait but only negative when the content of the thought has a negative focus. Consistent with this were findings from the current study. That is, in both studies it was found that while more frequent reappraisers in the failure condition felt more defeated after failure, more frequent reappraisers in the success condition did not feel more defeated after an experience of success.

However, it must also be considered that whether reappraisal attenuates or amplifies the impact of stressors may depend upon the particular type of stressor, rather than the type of reappraisal (instructed or trait). That is, much of the research that has found reappraisal to be beneficial has used a nonsocial stressor such as an unpleasant film, as well as instructed reappraisal rather than trait reappraisal (Goldin et al., 2008; Gross, 1998). By contrast, re-

search that has found trait reappraisal to amplify stress has also used a social stressor, rather than a nonsocial stressor (Lam et al., 2009). Supporting this view, in the present studies the stressor was failure at a task where each item was administered by an experimenter who also provided ongoing verbal feedback, and as such was failure experienced within a social context. As social stressors are among the strongest risk factors for mental health disorders and suicidality (Harwood, Hawton, Hope, Harriss, & Jacoby, 2006; Liu & Tein, 2005; Rudolph & Flynn, 2007), the present results may be the most relevant when considering psychopathology and mental health interventions.

The current findings may also provide explanations for discrepancies from correlational research into trait reappraisal. Such studies have found that reappraisal is sometimes associated with more positive patterns of affect (Balzarotti et al., 2010; Gross & John, 2003), but this finding does not always replicate (Abler et al., 2008; Dennis, 2007). Similarly conflicting results were found in the present research, where in Study 1 a baseline association between more frequent reappraisal and positive mood states were found, but in Study 2 this did not replicate. Potentially, the association between trait reappraisal and affect may be moderated by the presence of positive and negative events. For example, while a tendency to reappraise may be neutral or positive when an individual is experiencing and reflecting upon generally neutral or positive events, it may be negative when an individual is experiencing elevated levels of negative events. This possibility is supported by findings from the current study that suggest that frequent reappraisers did not feel more defeated than less frequent reappraisers after an experience of success, but only after an experience of failure. Also supporting this is that it was participants in the clinical sample, who may be expected to experience a relatively

higher rate of negative events (Kendler, Hettema, Butera, Gardner, & Prescott, 2003) who showed no general association between reappraisal and affect. By contrast, participants in the nonclinical sample—who may be expected to experience lower levels of stressors and higher rates of positive events—did show an association between reappraisal and more positive affect.

The finding that reappraisal amplified defeat in response to failure, relative to success, may initially appear counterintuitive when considered against the methods used in cognitive behavior therapy (CBT). Part of the CBT process involves the reappraisal and reattribution of negative experiences, which is designed to enable clients to consider alternative, potentially more positive explanations (Wells, 1997). However, it is likely that trait reappraisal is not measuring this process but a natural tendency to use thought-focused coping strategies, as discussed above. In CBT individuals are encouraged to consciously and purposefully reappraise experiences in more positive terms, and it could be that while this is beneficial, a tendency to focus on changing thoughts is not. Supporting this possibility are findings from studies that have instructed participants to reappraise events. These have found those participants who are consciously reappraising a negative experience demonstrate attenuated emotional responses (Gross, 1998). A second possibility is that although trait reappraisal amplifies immediate emotional response to experiences of failure and success, this effect does not last in the long term. However, further research would be necessary to investigate this.

The second aim of the studies was to investigate whether trait suppression moderated the impact of failure upon perceived defeat. It was predicted that suppression would amplify the impact of failure, but this was not upheld by results from either study. Although this finding was unexpected, there are three possible explanations. First, although suppression may be a detrimental strategy to approach in response to disgust eliciting films, for example (Goldin et al., 2008; Hermann et al., 2009), it could be a neutral strategy to use in relation to feelings of defeat in response to failure or success. Related to this, the second possibility is that suppression may be detrimental in relation to nonsocial stressors, but could be neutral when used in response to social stressors, such as the one used in the current research. However, as research from a previous study using a social stressor found that suppression was detrimental (Lam et al., 2009), this possibility may be unlikely. Third, it could be the result of study design, which involved comparing different degrees of trait suppression. As described above, much previous research investigating the effect of suppression on subsequent negative events has compared instructed suppression to instructed reappraisal or no instructions, as opposed to investigating levels of trait suppression (Gross, 1998; Hermann et al., 2009). This would suggest that higher levels of suppression were not necessarily detrimental. It should be noted though, that only a small amount of research has been conducted into trait suppression and further research is necessary to elucidate the specific reasons for the divergence in findings.

The third aim of the studies was to investigate whether the moderating impact of reappraisal on an experience of failure would be specific to perceptions of defeat. Results from Study 1 found that reappraisal also amplified feelings of sadness and general negative affect following failure, and attenuated decreases in calmness. Results from Study 2 found that the amplifying impact of reappraisal was specific to feelings of defeat. Together,

these results suggest that the amplifying impact of reappraisal is consistent in relation to defeat, which is an emotion with important clinical relevance. They also suggest that among nonclinical populations, reappraisal may have a wider-reaching effect.

The current studies have two main clinical implications. First, the present findings emphasize the importance of cognitive processes, specifically reappraisal, in explaining the association between experiencing failure and subsequent perceptions of defeat. In particular, the present studies investigated trait reappraisal, which is a thought-focused coping strategy that may share the same underlying cognitive processes as rumination. As reappraisal was found to intensify feelings of defeat in response to failure, these findings suggest that measures of trait reappraisal could be used as a tool to inform assessments of relapse vulnerability. Furthermore, they suggest that reappraisal could be an area for relapse prevention interventions to target. No interventions for reappraisal have yet been developed, but there have been several recommendations for targeting rumination which may also be relevant to reappraisal. These suggest that interventions such as mindfulness meditation (Jain et al., 2007), and cognitive behavior therapy for rumination (Watkins et al., 2007) are effective for reducing rumination and could be useful avenues for investigating reappraisal interventions.

Second, the current studies demonstrate a strong association between the experience of failure and subsequent perceptions of defeat in both a nonclinical sample and a sample of individuals with a diagnosis of schizophrenia. Previous research has suggested that life events are an important aspect to consider in the development of psychopathology (Finlay-Jones & Brown, 1981; Kendler et al., 2003). The current study extends this by demonstrating that this relationship may be quite specific, with particular events leading to particular negative emotions and perceptions, even among individuals with severe mental health problems. This suggests that clinicians should be careful to take detailed information concerning recent stressful events when creating formulations to explain a client's current emotional difficulties.

The main limitation of the study is the use of self-report measures, as individuals may not accurately report their own coping strategies. However, this has been the standard method of measuring trait reappraisal and currently appears to be an effective way of measuring thought-focused coping strategies (Gross & John, 2003; Lam et al., 2009). A second limitation is the use of an experimental manipulation to induce failure, as this may not have closely resembled experiences of failure in natural situations. However, it was not possible to study the impact of naturally occurring failures and the use of an experimental task enhanced the internal validity of the study. Furthermore, the task was conducted in a social context to increase resemblance to naturally occurring failures. A third limitation concerned the failure to investigate rumination or other general cognitive processes as a moderator of reappraisal. In particular, trait reappraisal has a conceptual overlap with the cognitive process of rumination and the results for reappraisal were similar to that which might have been expected to be found for rumination, but as a measure of rumination was not included, it was not possible to investigate this directly. A fourth limitation is that the clinical study did not control for the possible presence of comorbidity, so it is not clear whether this effect is specific to individuals with a diagnosis of schizophrenia. However, the goal of the research was not to identify a process specific to schizo-

phrenia, but to investigate a process which may generalize to a range of populations. This possibility is supported by the replication of results in both a nonclinical and clinical sample. A fifth limitation concerns the absence of a baseline condition as we only tested whether reappraisal moderated failure relative to success. Despite this, the graph of each of the significant interactions provides a clear and consistent pattern suggesting that higher levels of reappraisal amplify defeat and other negative emotions in response to failure. Furthermore, this finding was also supported by results from the simple slopes analyses. These suggested that there was a significant relationship between more frequent reappraisal and defeat in the failure condition of Study 1, and there was a similar trend in Study 2. A sixth limitation is that the PANAS was not included in Study 2. Results from the PANAS would have been a useful addition to the results from the visual analogue scales, and future research would benefit from including this measure.

In conclusion, the current studies found that high levels of reappraisal amplified the association between experiencing failure and subsequent perceptions of defeat among a nonclinical sample and a sample of individuals with a schizophrenia-spectrum disorder. This identifies a cognitive process that may be used to improve identification of individuals at risk from relapse, and may also be an effective area to target in relapse prevention interventions.

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