Effects of Emotion Regulation Through Context, Controllability Moderates the Relationship Between Depression and Reappraisal

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Introduction

Depression is an important mental health problem, with greater than 280 million cases worldwide resulting in global disability and decreased quality of life (World Health Organization, 2023). Untreated depression that is not addressed has significant individual and social consequences including less daily function and increased dependency on health care services. It is important to identify factors that can protect against the impact of these factors and reduce their effect. Emotion regulation is a key role in mitigating depression by affecting how people respond to negative emotional experiences. One effective strategy is reappraisal as that involves reinterpreting a situation to change its emotional impact (Mauss & Troy, 2023). Reappraisal would reduce depressive symptoms by reducing negative affect and promoting adaptive responses to problems. Empirically through multiple studies, increased use of reappraisal has been associated with reduced symptoms of depression for different groups and settings (Gross & John, 2003; Mauss et al., 2007).

Cognitive reappraisal has been associated with decreased depressive symptoms, the impact of cognitive reappraisal is significantly different across studies. Mauss et al. (2007) found that reappraisal could predict less depression, where others such as (Troy et al., 2010) found insignificant to no effect, meaning moderating factors in its impact. One potential explanation of the variability in the effectiveness of reappraisal is stressor controllability, which is to what extent individuals perceive that their stressors are changeable, and this may affect whether reappraisal is used for a positive effect or negative effect in the decrease of depression. Mauss and Troy (2023) state that reappraisal's effectiveness is context dependent based on if the stressor is seen as controllable. During an uncontrollable situation, reinterpretation of the situation is the most effective and beneficial to handling the situation. When stressors are controllable, reappraisal can interfere with problem solving or reduce attempts through direct action and causing it’s versatile usage to be limited. Troy et al. (2017) found that reappraisal was associated with decreased depressive symptoms in individuals who were low in socioeconomic status as they were individuals who were also more likely to encounter stressors that are not susceptible to change. Reappraisal didn’t decrease depression for individuals from higher socioeconomic status and backgrounds.

Although Troy et al. (2017) provides beneficial evidence for the moderating effect regarding context, since it was represented by socioeconomic status it means that stressor controllability was not measured directly. An alternative explanation is that stressor severity, which also occurs with low controllability, could be the actual factor of the reappraisal and depression relationship. For example, some extremely uncontrollable events including a devastating loss or illnesses are more prevalent, and would be very difficult to distinguish whether low controllability or high severity is the true factor for depressive outcomes. In the current study, (1) it aimed to test whether perceived controllability moderates the association between reappraisal and depressive symptoms, and (2) if the moderation is consistent after controlling for stressor severity. They recruited undergraduate student participants who did a

validated self report measures of reappraisal, perceived severity, and controllability for the most recent stressors and depressive symptoms. They hypothesized that reappraisal should be less associated with lower depressive symptoms for those who experienced low controllability stressors. In contrast, reappraisal should have weaker or insignificant association with depression compared to when stressors were highly controllable.

Method

Participants

There were a total of 300 undergraduate students that participated in the study. Participants were recruited through an online university post and advertisements and completed the study online for partial course credit. The sample was 48.3% female with n = 145, 43.7% male with n = 131, and 8.0% non-binary with n = 24. The average age was 32.28 years (SD = 7.81), ranging from 18 to 45. Participants races were White (31.0%), Black (29.0%), Latino/a (17.0%), Asian (12.7%), Mixed Race (7.0%), and Other (3.3%).

Procedure

Participants completed an online survey through Qualtrics. After providing consent, participants completed self-reports regarding their use of reappraisal, perceived severity and controllability of their recent stressors, and current symptoms of depression. The responses were anonymous, and the participants were debriefed upon completion.

Measures

Table 1 has descriptive statistics and Cronbach's alpha for all measures.

Reappraisal. Participants did the six-item reappraisal subscale of the Emotion Regulation Questionnaire (Gross & John, 2003) which was used to measure the tendency to regulate through reappraisal of the situation in order to alter its impact. The items were scored on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). One of the items is, "I control my emotions by changing the way I think about the situation I'm in." The internal consistency was high (Cronbach's α =.82).

Stress Severity: Participants completed the Life Experiences Survey (Sarason, Johnson, & Siegel, 1978), asking about major events in the previous year. Participants rated the extent of their negative impact on every event endorsed, from −3 (max. negative) to +3 (max. positive). Severity scores were calculated from summing the absolute values of the negative impact ratings.

A example item is, "Death of a close family member." There was medium internal reliability (Cronbach's α =.75).

Stress controllability: For each stressful event supported on the Life Experiences Survey, participants also rated how controllable they perceived the event to be on a 1 (very uncontrollable) to 4 (very controllable) scale. These ratings were averaged over supported stressors in order to yield an overall score of controllability. Internal reliability was high (Cronbach's α =.88).

Depression: Depressive symptoms were evaluated with the 20-item Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), which measures frequency of depression symptom experiences over the past week. The scale ratings ranged from 0 (none or rarely of the time) to 3 (most or all of the time). One example is, "I felt depressed." Internal consistency was high for the scale (Cronbach's α =.92).

Analytical Approach

For the relationship between reappraisal and stressor controllability, if they interact to predict depressive symptoms, a hierarchical multiple regression analysis was used. First the main effects of reappraisal and controllability were entered. Then the interaction term of reappraisal × controllability was entered to test for moderation. Fom Aiken and West (1991), to examine the difference in the simple slopes of the relationship between reappraisal and depression as a function of the controllability of stressors, simple slopes analysis for high (+1 SD) and low (−1 SD) in controllability were done. This was to see if the depression and reappraisal relationship varies depending on the perceived controllability of stressors. A Johnson-Neyman analysis was also done to identify the specific values of controllability where the simple slope of reappraisal that predicted depressive symptoms was statistically significant, shown in figure 1.

Figure 1

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> probe_interaction(mod, pred = 'reappraisal', modx = 'controllability',
+                   x.label = 'reappraisal',
+                   y.label = 'depressive symtptoms',
+                   modx.labels = c('low controllability', 'mean', 'high controllability'))
JOHNSON-NEYMAN INTERVAL

When controllability is OUTSIDE the interval [7.63, 11.97], the slope of reappraisal is p < .05.

Note: The range of observed values of controllability is [1.00, 10.00]

SIMPLE SLOPES ANALYSIS

Slope of reappraisal when controllability = 2.516533 (low controllability):

   Est.   S.E.   t val.      p
------- ------ -------- ------
  -3.30   0.41    -8.00   0.00

Slope of reappraisal when controllability = 5.400000 (mean):

   Est.   S.E.   t val.      p
------- ------ -------- ------
  -1.85   0.29    -6.34   0.00

Slope of reappraisal when controllability = 8.283467 (high controllability):

   Est.   S.E.   t val.      p
------- ------ -------- ------
  -0.40   0.42    -0.96   0.34
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Table 1

Descriptive Statistics, Cronbach's Alphas, and Bivariate Correlations Among Study Variables

	vars	n	mean	sd	median	trimmed	mad	min	max	range	skew	kurtosis	se
reappraisal	1	300	3.91	1.66	3.83	3.89	2.22	1	7	6	0.08	-1.11	0.10
controllability	2	300	5.40	2.88	5.00	5.40	2.97	1	10	9	0.02	-1.29	0.17
severity	3	300	4.28	2.42	4.00	4.15	2.97	1	10	9	0.33	-0.93	0.14
cesd_sum	4	300	41.75	10.89	43.00	42.38	10.38	4	60	56	-0.65	0.65	0.63

N = 300. Depression = CES-D total score. $p < .05$. $p < .01$. $p < .001$.

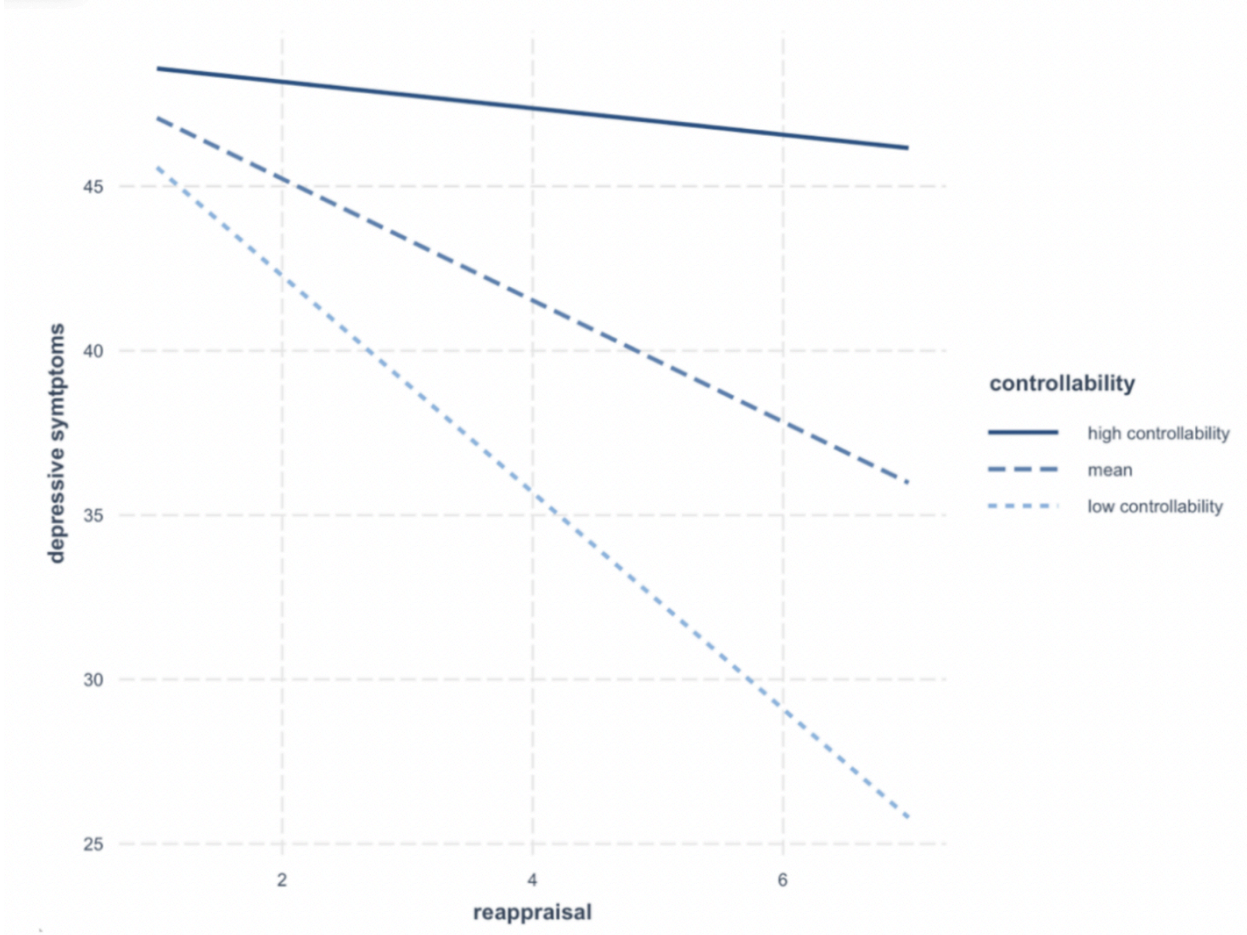
Results

To test the hypothesis that controllability of stressors moderates the relation between reappraisal of emotion and depression symptoms , a linear regression with depression symptoms as the criterion, reappraisal, controllability, and their interaction as predictors was fit.

The analysis produced a main effect of reappraisal, b = –4.56, SE = 0.62, t(296) = –7.34, p < .001, such that increased use of reappraisal was associated with fewer depression symptoms. The main effect of controllability wasn't significant, b = 0.02, SE = 0.44, t(296) = 0.04, p = .965. The reappraisal × controllability interaction was statistically significant, b = 0.50, SE = 0.10, t(296) = 4.91, p < .001. Simple slopes analyses were performed for this interaction. At low controllability (–1 SD), reappraisal significantly predicted fewer symptoms of depression, b = –3.30, SE = 0.41, t = –8.00, p <.001. The relationship was significant at the mean level of controllability, b = –1.85, SE = 0.29, t = –6.34, p <.001. Under conditions of high controllability (+1 SD), the relation between reappraisal and depressive symptoms was not statistically significant, b = –0.40, SE = 0.42, t = –0.96, p =.34. The effect of reappraisal then on depressive symptoms was most significant under conditions of low controllability and decreased under conditions of high controllability. After controlling for the severity of the stressor as well as its interaction with reappraisal, the reappraisal × controllability interaction remained significant, b = 0.52, SE = 0.09, t = 5.95, p <.001, meaning that the moderation effect of controllability not explained by severity itself, This is depicted in Figure 2..

Figure 2

Interaction between reappraisal and stressor controllability predicting depressive symptoms



Discussions

The current study examined if controllability of the stressor moderates cognitive reappraisal's relation with symptoms of depression. There was a significant interaction found where reappraisal was associated with fewer depression symptoms, when participants reported low or average controllability of the stressor. When controllability was high, reappraisal wasn't significant for symptoms of depression. The results supported the hypothesis that effectiveness of reappraisal varies as a function of perceived controllability of the stressor and continued when controlling for severity of the stressor.

Previous work stated that reappraisal is not always positive. Previous work has shown that reappraisal is successful when individuals have uncontrollable stressors (Troy et al., 2010; Troy et al., 2013). The current results states that individuals with uncontrollable stressors benefit from reappraisal from reduced depressive symptoms, because of context dependency for emotion regulation strategies (Aldao et al., 2015). Also similar to Mauss and Troy's (2023) theoretical

model that matching regulation strategies with situational demands is important for emotional health.

These finidngs support and expand upon emotion regulation models. Specifically they provide empirical evidence that the value of regulation mechanisms including reappraisal is situation dependent when stressors are uncontrollable. Reappraisal is one of the most effective strategies where people can reframe the situation to reduce emotional distress. When stressors are controllable, active coping problem solving strategies like problem solving can be more effective, rendering reappraisal as redundant and overuses These results suggest that use of reappraisal isn't a complete solution but is dependent on situational and context features including the degree of control an individual has over the stressor.

These findings have implications for applied and clinical interventions. Reappraisal based intervention could be used for chronic or uncontrollable stressors including financial strain, caregiving, or illness. Context of emotion regulation techniques could maximize the cognitive behavioral intervention efficacy. Also mental health professionals could aid from surveying the controllability of stressors in their client's environment in determining the use of reappraisal based intervention. Emotion regulation training programs can be changed or improved on flexibility so it can enable individuals to select the strategies that best match the situational context.

There are also some limitations. There is the cross sectional design which leaves out conclusions about directionality or causality inferences between depression, controllability, and reappraisal. The effects would need to be replicated in future studies over time in longitudinal or experimental work for better inference. Although controllability of the stressor was assessed, measure was dependent on self reported opinion of controllability and is susceptible to bias and mood. Future studies should incorporate behavioral or objective measures of controllability to have such constructs captured in the moment more consistently. Finally although stressor severity was controlled for, there are also some potential unmeasured variables such as the covarying stressor domains that covary with reappraisal in clinically useful patterns. This would be good to examine so there is more information on the personal context in emotion regulation.

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