(BRIEF REPORT)

Emotion Regulation Self-efficacy Mediates the Relation Between Happiness Emotion Goals and Depressive Symptoms: A Cross-lagged Panel Design

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Abstract

The present study was designed to test the hypothesis that unrealistically high happiness emotion goals lead to decreased emotion regulation self-efficacy, which in turn, leads to depressive symptoms. A cross-lagged panel design with data collection at three time points was used to allow for causal inferences of directionality among study variables. Participants ($N = 181$) completed a battery of self-report questionnaires at a baseline assessment session (T1). The same measures were completed again at 6- (T2) and 12- (T3) month follow-up sessions. Results of a cross-lagged path analysis indicated that emotion regulation self-efficacy at T2 mediated the relation between happiness emotion goals at T1 and depressive symptoms at T3, thus confirming the primary study hypothesis. To decrease the likelihood that one will experience depressive symptoms, vulnerable individuals may benefit from preemptive efforts that help recalibrate emotion goals in a realistic manner or shift attention toward end-state goals that are not emotion related.

Keywords: happiness, depression, emotion regulation, self-efficacy, longitudinal, mediation.
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Happiness is associated with a host of positive outcomes (e.g., occupational success, physical health, longevity; Lyubomirsky, King, & Diener, 2005). Although the pursuit of happiness seems logical, evidence suggests that having unrealistically high happiness emotion goals has a paradoxical effect, increasing the likelihood that one will experience negative affective states and psychopathology (e.g., Ford, Shallcross, Mauss, Floerke, & Gruber, 2014; Mauss, Tamir, Anderson, & Savino, 2011). For example, individuals who report higher happiness emotion goals (e.g., “To have a meaningful life, I need to feel happy most of the time;” Mauss et al. 2011) also report higher levels of depressive symptoms (Ford et al., 2014). Additionally, experimentally inducing higher happiness emotion goals results in lower levels of happiness in response to positive mood induction (Mauss et al. 2011). Although, these findings suggest happiness emotion goals may confer risk for depression, recent evidence suggests that it may be important to consider one's perceived ability to effectively regulate emotional distress (i.e., emotion regulation self-efficacy) to understand the relationship between happiness emotion goals and depressive symptoms (Fergus & Bardeen, 2016).

Lower emotion regulation self-efficacy prospectively predicts depressive symptoms (Davis, Andresen, Trosko, Massman, & Lovejoy, 2005; Kassel, Bornovalova & Mehta, 2006). Catanzaro and Mearns (1990) suggested that people who have low expectations of alleviating negative affective states are less likely than those with higher expectations to put forth significant effort toward altering such states. As such, these affective states are likely to be prolonged and lead to more significant suffering among individuals with lower emotion regulation self-efficacy. Thus, having unrealistically high happiness emotion goals combined with a perceived inability to
alter emotional experience in the desired direction may result in prolonged negative affect and subsequent depression. Consistent with this hypothesis, Fergus and Bardeen (2016) found that happiness emotion goals predicted depressive symptoms, but only among those with relatively lower levels of emotion regulation self-efficacy; there was no relation between happiness emotion goals and depressive symptoms for participants with relatively higher levels of emotion regulation self-efficacy.

As an extension of their pattern of findings, Fergus and Bardeen (2016) suggested that temporal associations among happiness emotion goals, emotion regulation self-efficacy, and depressive symptoms should be examined. Specifically, they hypothesized that those with unrealistic happiness emotion goals may be less likely to reach these lofty goals, thus resulting in a discrepancy between ideal goal and goal attainment. This discrepancy may decrease emotion regulation self-efficacy, as these individuals would perceive their previous attempts at goal attainment as failures, which in turn, would increase the likelihood of experiencing hopelessness and concomitant depressive symptoms. Put more succinctly, “people who highly value happiness set happiness standards that are difficult to obtain, leading them to feel disappointed about how they feel, paradoxically decreasing their happiness the more they want it” (Mauss et al., 2011, p. 807).

The temporal influence of happiness emotion goals on emotion regulation self-efficacy and subsequent emotional distress may be particularly relevant to depression. Beck (1967) posited that individuals who are vulnerable to developing depression set unrealistically high standards, thus resulting in low levels of goal achievement and depression. Some evidence supports this assertion. For example, those who are vulnerable to developing depression set unrealistically high goals for task achievement in a laboratory setting in comparison to
individuals who are less vulnerable (Arens, Zeier, Schwieren, Huisgen, & Barnow, 2018). Moreover, participants who were less vulnerable adjusted their goals to be more realistic when the laboratory task became more difficult whereas those who were more vulnerable maintained unrealistically high goals. As such, participants who were less vulnerable were significantly more likely to meet their goals than participants who were more vulnerable. Results of this study suggest that individuals prone to depression set unrealistically high happiness emotion goals and may be less likely to make a downward adjustment (setting goals that are more realistic) even after experiencing failure. Reoccurring failure of one’s emotion goals may lead to decreased emotion regulation self-efficacy beliefs and negative affective states may become protracted, resulting in depression (e.g., Pyszczynski & Greenberg, 1987).

The purpose of the present study was to examine the temporal relations among happiness emotion goals, emotion regulation self-efficacy, and depressive symptoms. Based on the above rationale, we predicted that emotion regulation self-efficacy would mediate the prospective relationship between happiness emotion goals and depressive symptoms. That is, unrealistically high happiness emotion goals were predicted to lead to decreased emotion regulation self-efficacy, as goal attainment is less likely. In turn, relatively lower levels of emotion regulation self-efficacy were predicted to lead to greater depressive symptoms.

Cross-sectional tests of mediation do not provide evidence of temporal relations among variables of interest and have a number of other substantive limitations (see Maxwell & Cole, 2007). Because study designs with only two time-points do not adequately address questions of causality (Cole & Maxwell, 2003), three time points were used with a cross-lagged panel design in the present study to allow for causal inferences of directionality among study variables. This
approach allows one to control for prior levels of study variables at earlier time points, thus increasing confidence in causal relations (Cole & Maxwell, 2003).

Method

Participants and Procedure

Participants were recruited from a mass testing pool at mid-sized U.S. University. Eligible participants ($N = 181$ undergraduate students) were fluent in English and between the ages of 18-64 (i.e., adult participants who were of working age). Eighty-three percent ($n = 150$) of participants who completed the Time 1 (T1) laboratory session consented to follow-up contact. Participants were not formally assessed for a history of major depressive disorder. Of these participants, 81 completed a six-month follow-up assessment (Time 2 [T2]) and 67 completed a one-year follow-up assessment (Time 3 [T3]). The majority of the sample, at all three time points, was female (T1 = 72.9%, T2 = 81.5%, T3 = 79.1%), White (T1 = 90.6%, T2 = 85.2%, T3 = 85.1%), and not Hispanic or Latina (T1 = 95.6%, T2 = 96.3%, T3 = 94.0%). The average age of participants at each time point is as follows: T1 = 20.4 ($SD = 3.4, range = 19-55$), T2 = 20.9 ($SD = 2.8, range = 19.5-39.5$), and T3 = 21.5 ($SD = 2.0, range = 20-32$).

Participants completed study measures on a desktop computer in a private room in a laboratory setting at T1. Before leaving, participants were debriefed and given partial course credit for a psychology course of their choosing. Participants who agreed to follow-up contact at T1 received an invitation to complete an online battery of questionnaires at T2 and T3. Informed consent and self-report measures were administered via a secure online survey program and these sessions could be completed from any computer with internet access. Participants received partial course credit for completing T1. Twenty dollars compensation was provided for completion of each of the follow-up assessments. Qualtrics (http://www.qualtrics.com/) was used
to present self-report measures at all three sessions. These procedures were completed as part of a larger study (see: Bardeen & Daniel, 2017). Study procedures were approved by the University’s institutional review board.

**Self-report Measures**

Happiness emotion goals were assessed at all time points via the Valuing Happiness Scale (VHS: Mauss, Tamir, Anderson, & Savino, 2011). The VHS is a 7-item self-report measure. Items (e.g., “Feeling happy is extremely important to me”) are rated on a 7-point scale (1 = *Strongly Disagree* to 7 = *Strongly Agree*), with higher scores indicating higher levels of happiness emotion goals. The VHS has demonstrated adequate psychometric properties (Ford et al., 2014; Mauss et al., 2011). In the present study, internal consistency of the VHS total scale score was adequate at T1 ($\alpha = .72$, $M = 27.91$, $SD = 7.20$), T2 ($\alpha = .73$, $M = 26.78$, $SD = 7.32$), and T3 ($\alpha = .80$, $M = 27.61$, $SD = 7.92$).

Emotion regulation self-efficacy was assessed at all time points via the Strategies subscale of the Modified Difficulties in Emotion Regulation Scale (M-DERS Strategies; Bardeen, Fergus, Hannan, & Orcutt, 2016). The M-DERS Strategies subscale consists of six items. Items (e.g., “When I'm upset, I don't think that I can find a way to eventually feel better”) are rated on a 5-point scale based on how often each items applies to a participant (1 = *Almost Never* to 5 = *Almost Always*). Higher scores indicate lower emotion regulation self-efficacy. The Strategies subscale has been used in previous research as a measure of emotion regulation self-efficacy (Bardeen & Stevens, 2015; Fergus, Bardeen, & Orcutt, 2013), and has exhibited adequate psychometric properties, including internal consistency and convergent validity with measures of parallel constructs (i.e., Generalized Expectancy for Negative Mood Regulation Scale; Bardeen et al., 2016; Fergus et al., 2013). In the present study, internal consistency of the
M-DERS Strategies subscale score was adequate at T1 (α = .92, M = 9.86, SD = 4.84), T2 (α = .92, M = 10.40, SD = 5.05), and T3 (α = .92, M = 10.81, SD = 5.19).

Depressive symptoms were assessed at all time points via the Depression Scale of the Depression Anxiety Stress Scales (DASS-21 Depression; Lovibond and Lovibond 1995a). The DASS-21 Depression Scale is a 7-item self-report measure. Items (e.g., “I felt down-hearted and blue”) are rated on a 4-point scale (0 = Did not apply to me at all to 3 = Applied to me very much, or most of the time). Higher scores indicate higher levels of depressive symptoms. The DASS-21 Depression Scale has demonstrated adequate psychometric properties (Henry & Crawford, 2005; Lovibond & Lovibond, 1995b). In the present study, internal consistency of the DASS-21 Depression Scale score was adequate at T1 (α = .89, M = 2.70, SD = 3.69), T2 (α = .91, M = 3.33, SD = 4.27), and T3 (α = .92, M = 4.52, SD = 4.74).

Results

Attrition Analysis

Participants who completed T2 and T3 were compared to eligible nonresponders on demographics (i.e., sex, age) and variables of interest (happiness emotion goals, emotion regulations self-efficacy, depressive symptoms). There were no differences between those who completed T1, but not T2 and those who completed both time points on any of the following variables: age (t[179] = 0.72, p = 0.94), happiness emotion goals (t[179] = 0.10, p = 0.92), emotion regulation self-efficacy (t[179] = 0.13, p = 0.89), and depressive symptoms (t[179] = 0.76, p = 0.45). The T1 only sample consisted of a significantly higher proportion of males than the sample that completed both time points ($\chi^2[1, N = 181] = 5.43, p = 0.02$). There were no differences between those who completed T1, but not T3 and those who completed both time points on any of the variables that were examined: age (t[179] = 0.52, p = 0.61), sex ($\chi^2[1, N = 181] = 0.08, p = 0.78$), happiness emotion goals ($t[179] = 0.16, p = 0.87$), emotion regulation self-efficacy ($t[179] = 0.14, p = 0.89$), and depressive symptoms ($t[179] = 0.81, p = 0.42$).
181] = 2.60, \( p = 0.11 \), happiness emotion goals \( t[179] = 0.66, \ p = 0.51 \), emotion regulation self-efficacy \( t[179] = 0.41, \ p = 0.68 \), and depressive symptoms \( t[179] = 0.60, \ p = 0.55 \).

**Cross-lagged Path Analysis**

Amos software (Version 24; Arbuckle, 2010) was used to test a cross-lagged panel design (see Figure 1). Maximum likelihood estimation was used to account for missing data points and all variables were modeled as manifest indicators. Each variable was allowed to predict subsequent follow-up assessments of the same measure. Manifest indicators within each time point were allowed to correlate (MacKinnon, 2008). Standardized path coefficients are presented in Figure 1.

As expected, each variable predicted its subsequent measurement \( (p < .01) \). Importantly, path \( a \) (from happiness emotion goals at T1 to emotion regulation self-efficacy at T2) and path \( b \) (from emotion regulation self-efficacy at T2 to Depression at T3) were significant and positive in direction \( (\beta = .24, \ p = .007; \ \beta = .45, \ p < .001, \text{respectively}) \). Bias-corrected bootstrapping with 5,000 resamples was used to determine the statistical significance of the proposed indirect effect of happiness emotion goals at T1 on depressive symptoms at T3 through emotion regulation self-efficacy at T2 (Cole & Maxwell, 2003). The indirect effect was significant \( (\beta = .11, 95\% \ CI [.04, .12], \ p < .001) \); higher happiness emotion goals at T1 predicted poorer emotion regulation self-efficacy at T2, which in turn, predicted higher depressive symptoms at T3.\(^2\)

**Discussion**

Results of the present study are consistent with experimental evidence that higher happiness emotion goals lead to lower levels of happiness (Mauss et al., 2011). Importantly, emotion regulation self-efficacy appears to be a possible mechanism through which happiness emotion goals lead to depression. To our knowledge, the present study is the first to provide
temporal evidence of this effect. Not only are multi-wave longitudinal designs fairly rare in psychological research, but our use of a cross-lagged panel design allows us to make relatively strong causal inferences regarding the nature of temporal relations among study variables. The medium to large effects of the causal paths for the predicted mediation effect are even more compelling when one considers that the indirect effect accounted for unique variance in depressive symptoms at the 1-year follow-up session even after accounting for depressive symptoms at preceding time points.

Happiness has become somewhat of an obsession in Western culture (e.g., Eid & Larsen, 2008; Lyubomirsky, 2008). The present results further suggest that rigidly seeking happiness as a primary goal is an approach that contributes to depression (Ford et al., 2014) and, importantly, emotion regulation self-efficacy appears to be one possible mechanism behind this relationship. The conceptual meaning of these interrelations comes from theory and empirical findings that suggest that setting overly high standards for achievement serves as a risk factor for depressive symptoms (Arens et al., 2018; Beck, 1967). Although individuals with high happiness emotion goals likely experience disappointment when they do not meet these goals, they do not appear to make a downward adjustment (setting goals that are more realistic) even after experiencing such failure. Some experimental research supports this finding (Arens et al., 2018). Reoccurring failure may lead to decreased emotion regulation self-efficacy beliefs and negative affective states may become protracted, eventually resulting in depression (e.g., Fergus & Bardeen, 2016; Pyszczynski & Greenberg, 1987). The present results are consistent with this interpretation.

Such conceptual considerations point to the potential role of targeting goal pursuit and emotion regulation self-efficacy in the service of alleviating symptoms of depression. Behavioral activation for treating depression (BATD; Jacobson et al., 1996) is an approach that shifts goal
pursuit toward enacting behaviors that are consistent with one’s values. The treatment provider helps the client identify attainable goals that support the client’s values. Over time, as clients participate in positively reinforcing activities, depressive symptoms remit. In this way, BATD may reduce the emphasis on happiness emotion goals as the desired outcome and increase the likelihood that the client has mastery experiences that support increased emotion regulation self-efficacy.

Although living a value-driven life is emphasized in BATD, reducing negative affect and increasing positive affect are explicit goals. In contrast, third wave cognitive-behavioral therapies (e.g., Acceptance and Commitment Therapy; Hayes, Luoma, Bond, Masuda, & Lillis, 2006) deemphasize emotional outcomes as the primary motivation for seeking treatment. Instead, clients are encouraged to live a value-driven life and increase willingness to experience uncomfortable internal experiences (Hayes, et al., 2006). Although this approach leads to alleviation of depressed mood (Hayes et al., 2006), happiness as an end-state goal is deemphasized. Results from the present study suggest that this approach may be helpful in decreasing the likelihood that at-risk individuals (i.e., those with unrealistically high happiness emotion goals) will go on to experience depressive symptoms.

Some evidence also suggests the possibility of directly targeting emotion-regulation self-efficacy. Bigman et al. (2016) manipulated emotion regulation self-efficacy through the use of a placebo pill. Participants in the active condition (compared to control participants) reported less negative and more positive affect in response to a negative mood induction. These findings, recently replicated in a larger sample (Benfer, Bardeen, & Clauss, 2018), suggest that individuals may experience goal consistent emotion outcomes by receiving positive feedback regarding emotion-regulation self-efficacy. Although preliminary, this line of research may lead to the
development of interventions that enhance emotion-regulation self-efficacy, thus resulting in positive behavioral and emotional outcomes.

Although the study methodology was innovative for this line of research, limitations must be acknowledged. The DASS-21 Depression Scale was developed as a quantitative measure, consistent with a dimensional model of Depression (Crawford, Henry, Crombie, & Taylor, 2001). It may be important to assess for Major Depressive and related disorders, as per the *DSM-5* (American Psychiatric Association, 2013) in future research to compare observed effects using a qualitative approach (i.e., between those who meet DSM-5 criteria for major depressive disorder versus those who do not). Moreover, assessing for a broader range of pathology will be important in future research to determine the degree to which the noted mediation effect is specific to depression. Despite our use of an unselected undergraduate student sample, considerable variability in DASS-21 Depression scores was observed; approximately 15-32% of the sample reported a level of depressive symptoms that was outside of the “normal” range (Lovibond & Lovibond, 1995; i.e., T1 = 15%, T2 = 21%, T3 = 32%). In any case, it may be important to replicate these findings in clinical samples.

Although our sample size was the result of practical considerations (completion of data collection over the course of one year), a post-hoc power analysis was conducted and the results suggest that our sample size of 181 provided sufficient power to detect the hypothesized indirect effect. Specifically, as recommended by Schoemann, Boulton, and Short (2017), Monte Carlo power analysis simulation with bootstrapped confidence intervals was used to determine sample size requirements based on the results of our study. Using the standardized beta coefficients from Figure 1, with a total of nine variables in the model, power analysis suggested that a sample size > 135 would provide sufficient power (i.e., 0.80) when alpha is set at .05 to test the indirect of
interest. If the indirect effect was to be examined using only the variables that are essential to
determine mediation (i.e., T1 happiness emotion goals, T2 emotion regulation self-efficacy, T3
depression), a sample size > 40 would provide sufficient power (i.e., 0.80) when alpha is set at
.05 to test the indirect effect of interest.

Despite these limitations, the present study contributes to our understanding of the
relations among happiness emotion goals, emotion regulation self-efficacy, and depressive
symptoms. To our knowledge, the present study is the first to provide temporal evidence that
emotion regulation self-efficacy is a possible mechanism through which happiness emotion goals
influences depressive symptoms. As such, individuals with unrealistically high happiness
emotion goals may benefit from preemptive efforts that deemphasize happiness as an essential
end-state goal. More specifically, vulnerable individuals may be easily identified through the use
of the 7-item VHS during primary care visits or through institution level (e.g., workplace,
academic) mass testing and be offered brief interventions that focus on shifting goal emphasis
from emotional experience to engaging in activates that are consistent with one’s values and/or
helping people to recalibrate emotion goals in a realistic manner.
References


Footnote

1The pattern of findings exhibited in Figure 1 was unchanged when participants who had any missing data were removed the sample. That is, statistically significant path coefficients remained significant and nonsignificant findings were unchanged. Importantly, path a (from happiness emotion goals at T1 to emotion regulation self-efficacy at T2) and path b (from emotion regulation self-efficacy at T2 to Depression at T3) were significant and positive in direction and the magnitude of these effects was medium to large (\( \beta = .43, \beta = .45, \text{respectively, ps} < .001 \)). The indirect effect remained significant and was larger in magnitude in this reduced sample (\( \beta = .19, 95\% \text{CI [.06, .25]}, p < .001 \)).

2At the request of an anonymous Reviewer, we added interaction terms to the model presented in Figure 1 to examine emotion regulation self-efficacy as a moderator of the relationship between happiness emotion goals and depressive symptoms. Consistent with Aiken and West (1991), predictor variables (i.e., happiness emotion goals) were mean-centered and interaction terms were calculated as the product of the predictor and moderator variables (i.e., emotion regulation self-efficacy) at each time point. The T1 and T2 interaction terms (happiness emotion goals by emotion regulation self-efficacy) did not predict depressive symptoms at T2 and T3 (\( \beta = -.08, p = .31; \beta = -.08, p = .29, \text{respectively} \)). The magnitude of these nonsignificant path coefficients is slightly smaller than that which was observed by Fergus and Bardeen (2016) in their larger sample (i.e., \( \beta = -.14, p < .01; N = 439 \)). Importantly, the pattern of findings exhibited in Figure 1 was unchanged when these interaction terms were included in the model. Statistically significant path coefficients remained significant and nonsignificant findings were unchanged.
As can be seen in Figure 1, the standardized beta coefficients for paths a (from T1 happiness emotion goals to T2 emotion regulation self-efficacy) and path b (from T2 emotion regulation self-efficacy to T3 depression) were significant and positive in direction ($\beta = .24, p = .007; \beta = .33, p = .005$, respectively). Thus, at the request of an anonymous Reviewer, a post-hoc examination of the indirect effect from T1 happiness emotion goals to T2 emotion regulation self-efficacy to T3 depression was conducted. The indirect effect was significant ($\beta = .08, 95\% CI [.047, .148], p < .001$); higher happiness emotion goals at T1 predicted poorer emotion regulation self-efficacy at T2, which in turn, predicted higher happiness emotion goals at T3.
Figure 1. Path model with standardized path coefficients. Dashed lines indicate paths with nonsignificant coefficients. $^\wedge p = .067. * p < .05. ** p < .01. *** p < .001.$