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# Responding to symptoms of depression and anxiety: Emotion regulation, neuroticism, and engagement in risky behaviors

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## Abstract

The current study examined whether neuroticism, emotional regulation deficits, and/or their interaction predict increased engagement in risky behaviors following increases in symptoms of depression or anxiety over the course of 6 weeks. Results of hierarchical linear modeling analyses indicated that individuals who exhibited high levels of both neuroticism and emotional regulation deficits were more likely than other individuals to report increased engagement in risky behaviors following increases in symptoms of either depression or anxiety. Unexpectedly, individuals who exhibited high levels of neuroticism and adaptive emotion regulation strategies exhibited decreased engagement in risky behaviors following increases in depressive or anxious symptoms.
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## Introduction

For many young adults, university connotes a time of new found independence during which they explore new relationships, their identity, and different worldviews (Arnett, 2000). At the same time, for many, university marks a period of drastic transition. In addition to adjusting to new surroundings and forging new relationships, university students must face mounting pressures in both the academic and social domains. Such a transition can be stressful, and as a result, symptoms of depression and anxiety may be experienced (Hankin & Abela, 2005). While experiencing symptoms of depression and anxiety are common in these years, researchers have only recently begun to examine individual differences in coping with such symptoms.

Research suggests that individual differences exist in how people respond to depressive and anxious symptoms (Nolen-Hoeksema, 2000). Whereas some individuals utilize adaptive means to manage negative affective states, other individuals use more maladaptive strategies that may serve to perpetuate the initial disturbance. One maladaptive strategy may be the engagement in risky behaviors. Risky behaviors include but

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are not limited to unsafe sexual practices; aggressive and/or violent behaviors; rule breaking; dangerous, destructive, and/or illegal behaviors, self-injurious behaviors; and alcohol and/or drug use. While there are likely to be multiple etiological pathways leading to engagement in risky behaviors, one potential pathway is the use of such behaviors as an effort to attenuate negative emotional states.

Research examining the developmental unfolding of the relationship between depressive or anxious symptoms and risky behaviors suggests a gradual progression from subthreshold depressive/anxious symptoms and infrequent/mild forms of misbehaviors to clinically significant depressive/anxious symptoms and more chronic and severe risky behaviors (Bardone Moffit, Caspi, & Dickson, 1996; Loeber, Burke, & Lahey, 2002). As the use of risky behaviors may not address the original event that triggered the negative affect, once the risky behavior dissipates, an individual is apt to return to the same negative affective state from which he/she attempted to escape.

Individuals who utilize risky behaviors as a means of reducing negative affective states have the potential of falling into an avoidance trap. More specifically, risky behaviors are positively reinforced because of the temporary relief they provide (Cooper, Agocha, & Sheldon, 2000), and as a result, the feeling of temporary relief may increase the likelihood of individuals using such behaviors in the future. For example, individuals who have a few drinks to "forget about their problems for a while" or break something to "blow off steam" may use such behaviors again in the future as a motivation for reducing negative affective states instead of addressing the issues that triggered depressive or anxious symptoms initially (Cooper, et al., 2000). While risky behaviors may provide temporary relief, they may also result in negative consequences that serve to intensify the initial negative affect leading to an increased probability of engaging in additional risky behaviors (Bardone et al., 1996; Cooper et al., 2000). Many, although not all, may initially escape the negative consequences of risky behaviors and only experience them with prolonged engagement in such behaviors. However, prolonged engagement in risky behaviors is likely to be associated with an increased probability of adverse short- and/or long-term consequences (Bardone et al., 1996; Cooper, Pierce, & Huselid, 1994). Thus, the short- and/or long-term negative consequences contribute to the initial negative affective states and may amplify the severity and duration of depressive and anxious symptoms.

As emotions are the "fuel behind behavior" (Cicchetti, Ackerman, & Izard, 1995), recent studies have proposed that the relationship between aversive mood states and engagement in risky behaviors may arise from emotion regulation deficits (e.g., Cooper et al., 2000). Individuals who possess deficits in emotion regulation strategies may be more prone to use risky behaviors as a means of attenuating negative affect because they lack effective strategies that are thought to be important for successful functioning (Cicchetti et al., 1995; Thompson, 1994). As a result, individuals who possess deficits in emotion regulation strategies may seek alternative means such as risky behaviors to reduce negative emotional states.

Mayer and Stevens (1994) proposed that emotional repair, a specific emotion regulation strategy, regulates individuals' responses to depressive or anxious symptoms through gainful, adaptive processes including planning and positive thinking. In a multiwave, longitudinal study, Kokkonen and Pulkkinen (1999) found that emotional repair was negatively correlated with depression and anxiety as well as remained stable over time. As emotional repair plays a central role in the reduction of negative emotional states, individuals who exhibit low levels of emotional repair appear to be more likely than individuals who exhibit high levels of emotional repair to engage in risky behaviors in response to depressive or anxious symptoms as an alternative means of regulating affectivity.

While emotion regulation deficits may increase the likelihood of individuals engaging in risky behaviors, personality traits may also play a pivotal role. Research suggests that neuroticism, a core personality construct (John, 1990), is associated with elevated levels of aversive mood states and increased engagement in risky behaviors (Cooper et al., 2000). Individuals with elevated level of neuroticism experience negative affect with greater severity and for a longer duration (Suls, Green, & Hillis, 1998), and Costa and McCrae (1980) assert that high level of neuroticism manifests itself in individuals as heightened emotional lability and a propensity to focus on the negative. Murray, Allen, and Trinder (2002) found that neuroticism was the sole significant personality predictor of mood variability, and elevated levels of neuroticism predicted both increases in negative affective states and decreases in positive affectivity.

Individuals who exhibit high levels of neuroticism are more susceptible to mood aversive states, and research suggests an association between neuroticism and risky behavior engagement (Cooper et al., 2000).

Gray (1990) argues that neuroticism operates from a distinct motivational system, the behavioral inhibition system (BIS). As individuals who exhibit high levels of neuroticism are thought to be high in BIS sensitivity, they are more responsive to threat and punishment cues making them more susceptible to both mood aversive states and avoidant behaviors. Research by Cooper et al. (2000) indicates that such individuals are less likely to address issues that triggered depressive or anxious symptoms and are inclined to engage in risky behaviors as a way to attenuate negative affective states. As risky behaviors may offer immediate and temporary relief, individuals who possess high levels of neuroticism may choose short-term relief over the long-term costs (Baumeister & Scher, 1988).

Additionally, there is a strong association between neuroticism and deficient emotion regulation skills. In a 10-year longitudinal study, Kokkonen and Pulkkinen (2001) found that higher levels of neuroticism contributed to higher levels of emotion regulation deficits. More specifically, individuals who exhibited higher levels of neuroticism made fewer attempts to repair emotions toward a positive direction and to utilize active regulation to sustain positive affect. These findings are consistent with past research regarding the prospective effects of neuroticism (e.g., Boland & Cappeliez, 1997; Vollrath, Torgersen, & Alnaes, 1995).

As neuroticism and emotion regulation are both independently associated with engagement in risky behavior, individuals who exhibit both characteristics may be subject to a heightened vulnerability. More specifically, a double bind may be created whereby individuals who possess both high levels of neuroticism and low levels of emotional repair may be at increased risk for engaging in risky behaviors. Although each vulnerability factor may increase the probability of engaging in risky behaviors in response to negative affective states, the interaction of the vulnerabilities may confer the greatest risk. While these individuals are more prone to experience depressive and anxious symptoms, at the same time, they have a diminished ability to effectively repair such mood states.

The primary goal of the current study is to examine whether neuroticism, emotion regulation deficits, and/ or their interaction predict increased engagement in risky behaviors following increases in symptoms of depression or anxiety. In order to provide a powerful test of our hypotheses, we used a multiwave, longitudinal design and an idiographic approach to examine reported engagement in risky behavior following fluctuations in depressive or anxious symptoms (see Abela, Zuroff, Ho, Adams, & Hankin, 2006). More specifically, we examined whether the slope of the relationship between reported engagement in risky behaviors and depressive or anxious symptoms *within* participants varied *across* participants as a function of high levels of neuroticism, high levels of emotion regulation deficits, and/or their interaction. We hypothesized that individuals who exhibited high levels of neuroticism and low levels of emotional repair would be more likely than other individuals to engage in risky behaviors following increases in symptoms of depression and anxiety.

**Method**

*Participants*

The participants in the current study were recruited through an upper-level psychology course at McGill University. Participation was completely voluntary, and participants were informed that they could cease participation at any time. In return, participants received an additional 2.5% on their final grade. Students who chose not to participate were given an option of earning extra credit by completing an alternate assignment (refusal rate was 3.4%). The final sample consisted of 141 university students (118 women and 23 men). Participants' ages ranged from 19 to 27 (*median* = 21). The sample was 71.6% Caucasian, 7.8% Asian, 1.4% African–American, 1.4% Hispanic, and 17.7% other.

*Procedure*

Approval for the study was granted by McGill University's ethics board, and the treatment of participants was in accordance with APA ethical standards. During the initial assessment participants completed a demographics form, consent forms, and the following questionnaires: Mood and Anxiety Symptom Questionnaire—Depressive and Anxious Symptoms Subscales (MASQ-GDD and MASQ-GDA; Watson &

Clark, 1991), NEO Five Factor Inventory—Neuroticism Subscale (FFI-N; Costa & McCrae, 1992), Meta-Regulation Scale (MRS; Mayer & Stevens, 1994), and Risky Behavior Questionnaire for University Students (RBQ-US; Auerbach & Abela, 2006). Follow-up assessments occurred once a week for 5 weeks, and participants completed the following questionnaires: (1) MASQ-GDD, (2) MASQ-GDA, and (3) RBQ-US. Participant retention and compliance during the follow-up assessments ranged from 94% to 98%.

*Measures*

The MASQ-GDD and the MASQ-GDA (Watson & Clark, 1991) are self-report measures that assess levels of depressive and anxious symptoms, respectively. Items on the scale range from 0 to 4, and higher scores reflect greater depressive or anxious symptomatology. Past studies indicate that the MASQ has good test–retest reliability and high correlations with other measures of depression and anxiety (Keogh & Reidy, 2000).

The FFI-N (Costa & McCrae, 1992) is a self-report measure that assesses neuroticism by rating each of the items on a scale of 0–4. Scores range from 0 to 48, and higher scores reflect greater levels of neuroticism. The FFI-N has proven to be reliable across different cultural samples and item pools (Costa & McCrae, 1992).

The MRS-REP (Mayer & Stevens, 1994) is a 5-item self-report measure that assesses levels of emotional repair by rating each of the items on a scale ranging from 0 to 4. Higher scores reflect higher levels of emotional repair. Emotional repair is operationalized as the conscious and active reduction of negative affect, and questions include, "I'm thinking good things to come, so as to make this mood better". The MRS-REP is highly correlated with past measures assessing emotional repair (e.g., Folkman & Lazarus, 1985) and positive mood states (Kokkonen and Pulkkinen, 1999). Past studies have shown that emotional repair is negatively correlated to maladaptive emotion regulation strategies (Mayer & Stevens, 1994).

The RBQ-US (Auerbach & Abela, 2006) is a 20-item self-report measure that assesses the frequency of engagement in risky behaviors. Scores range from 0 to 4, and higher scores reflect greater engagement in risky behaviors. The RBQ-US was administered on a weekly basis, and respondents reported their engagement in such behaviors over the past week using the following scale: never, once, 2–4 times, 5–8 times, 9 times, or greater. Examples of questions include: "Have you bullied or threatened a peer(s)" and "Have you destroyed property". Subscales assessed engagement in the following subgroups of behaviors: (1) unsafe sexual practices; (2) aggressive and/or violent behaviors; (3) rule breaking; (4) dangerous, destructive, and/or illegal behaviors; (5) self-injurious behaviors; and (6) alcohol and/or drug use. In past research, the RBQ-US has demonstrated strong reliability and validity (Auerbach & Abela, 2006).

**Results**

*Descriptive data*

Means, standard deviations, and correlations between participants' gender and all Time 1 measures are included in Table 1 and weekly means of reported engagement of risky behaviors, depressive symptoms, and anxious symptoms are reported in Table 2. In order to examine the stability of symptom measures and risky behavior scores from the initial to the final assessment, test–retest correlations were analyzed (see Table 3). The internal consistency of measures is reported in Table 4.

*Risky behaviors in response to depressive symptoms*

To test our hypothesis that participants possessing both high levels of neuroticism and low levels of emotional repair would report greater elevations in risky behaviors following elevations in depressive symptoms than individuals who possess only one or neither of these vulnerability factors, we utilized multilevel modeling. Analyses were completed using the SAS (version 9.1) MIXED procedure and maximum likelihood estimation. Our dependent variable was within-subject fluctuations in risky behavior scores during the follow-up interval. As follow-up risky behavior scores are a within-subject variable, risky behavior scores were centered at each participant's mean such that scores reflect upwards or downwards fluctuations in an

Table 1
Means, standard deviations, and intercorrelations between initial depression, initial anxiety, emotion regulation, neuroticism, initial risky behavior, and gender

|  | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. Gender | 0.84 (0.37) |  |  |  |  |  |
| 2. Initial anxiety score | 0.16 | 10.73 (6.21) |  |  |  |  |
| 3. Initial depression score | 0.01 | 0.47[***] | 12.18 (7.24) |  |  |  |
| 4. Emotional repair | 0.06 | 0.11 | 0.08 | 12.45 (4.19) |  |  |
| 5. Neuroticism | 0.07 | 0.37[***] | 0.61[***] | 0.07 | 22.83 (8.03) |  |
| 6. Initial risky behavior score | −0.11 | 0.00 | −0.03 | −0.17[*] | 0.00 | 6.31 (7.55) |

*Note:* Gender = coded variable (0 = male and 1 = female); means and standard deviations (in parentheses) are on the diagonal; 1 = gender, 2 = initial anxiety score, 3 = initial depression score, 4 = emotional repair, 5 = neuroticism, 6 = initial risky behavior score.
$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 2
Mean levels of risky behaviors, depressive symptoms, and anxious symptoms

| Week number | Risky behaviors | Depressive symptoms | Anxious symptoms |
|---|---|---|---|
| 1 | 6.31 (7.55) | 12.18 (7.24) | 10.73 (6.21) |
| 2 | 2.26 (3.31) | 12.52 (8.66) | 11.35 (6.32) |
| 3 | 1.87 (2.02) | 12.68 (9.56) | 10.62 (6.71) |
| 4 | 1.63 (1.90) | 12.05 (9.34) | 10.46 (7.36) |
| 5 | 2.01 (2.40) | 11.66 (9.53) | 10.40 (6.99) |
| 6 | 1.91 (2.05) | 11.51 (9.86) | 9.92 (7.81) |

*Note*: Standard deviations are in the parentheses.

Table 3
Test–retest correlations of depressive symptoms, anxious symptoms, and risky behavior scores from the initial to the final assessment

|  | Test–retest ($r$) |
|---|---|
| Depressive symptoms | 0.40[***] |
| Anxious symptoms | 0.37[***] |
| Risky behavior scores | 0.28[**] |

*Note*: Test–retest correlations represent the initial and final assessment; $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 4
Cronbach's α for depressive symptoms, anxious symptoms, emotional repair, and neuroticism

|  | Cronbach's α | Mean (α) | Standard deviation (α) |
|---|---|---|---|
| Depressive symptoms | 0.88–0.92 | 0.90 | 0.18 |
| Anxious symptoms | 0.80–0.89 | 0.83 | 0.04 |
| Emotional repair[a] | 0.80 | — | — |
| Neuroticism[a] | 0.83 | — | — |

[a]One administration of measure.

individual's level of engagement in risky behaviors compared to his/her mean level of engagement in risky behaviors. Our primary predictors of the follow-up risky behavior scores were neuroticism, emotional repair, and fluctuations in depression scores during the follow-up interval. Prior to analyses, neuroticism and emotional repair scores were standardized. Finally, as follow-up depression scores are a within-subject

predictor, depression scores were centered at each participant's mean prior to analyses such that scores reflect upwards or downwards fluctuations in an individual's level of depression as compared to his or her mean level of depression.

In our first set of analyses, we examined the effects of neuroticism, emotional repair, and follow-up depression scores on individual's risky behavior scores during the follow-up interval. Consequently, in line with Diggle, Liang, and Zeger's (1994) recommendation that one use a "saturated" model for the mean structure while searching for an appropriate covariance structure, we chose a mean structure that included gender, neuroticism, emotional repair, and follow-up depression scores, and all two-, three-, and four-way interactions. Three additional effects were included: baseline levels of risky behaviors and depressive symptoms (controls for individual differences), random effect for intercept (account for individual variability in the average level of engagement in risky behaviors at his/her mean level of depressive symptoms), and random effect for slope (accounts for variation in follow-up depression scores amongst participants).

After choosing the covariance structure (based on Akaike and Schwarz Bayesian criterion), we next examined the random-effects component of our model. Non-significant random-effects parameters were deleted from the model prior to examining the fixed-effects component. The ARH parameter ($r = -0.01$, $p < 0.05$) and the random slope ($p < 0.01$) was significant and retained in the model. However, random intercept was not significant and was deleted from the model.

When examining the fixed-effects component of the model, we used a process of backwards deletion. More specifically, we first examined the gender × neuroticism × emotional repair × follow-up depression interaction. Given that this four-way interaction was not significant, it was deleted and the model was reestimated. We next examined the three-way interactions. Non-significant three-way interactions were deleted and the model was reestimated prior to reporting the final estimate for our model.

The final results with respect to the fixed-effects component of the model are presented in Table 5. Of primary importance, a significant three-way, cross-level interaction emerged between neuroticism × emotional repair × follow-up depression. As both follow-up risky behavior scores and follow-up depression scores are within-subject variables centered at each participant's mean, slopes are interpreted as the increase in an individual's risky behavior score that would be expected given that he or she scored one point higher on the depression measure.

Analyses were conducted for each neuroticism × emotional repair condition examining whether the slope ($b$) of the relationship between depressive symptoms and engagement in risky behaviors significantly differed from 0. Analyses indicated that individuals who possessed both high levels of neuroticism and low levels of emotional repair reported higher levels of risky behaviors when experiencing high levels of depressive symptoms than when experiencing low levels of depressive symptoms ($b = 0.10$; $t(666) = 2.39$, $p < 0.02$). Unexpectedly, analyses indicated that individuals who possessed both high levels of neuroticism and high levels of emotional repair reported lower levels of risky behaviors when experiencing high levels of depressive symptoms than when experiencing low levels of depressive symptoms ($b = -0.12$; $t(666) = -2.42$, $p < 0.02$). At the same time, level of risky behaviors did not vary as a function of level of depressive symptoms for

Table 5
Fluctuations in follow-up depression: estimates for the fixed-effects component of the final model

| Predictor | Parameter estimate ($b$) | Standard error | $t$-value | Degrees of freedom |
|---|---|---|---|---|
| Initial risky behavior score | −0.16 | 0.01 | −22.85*** | 135 |
| Initial depression score | −0.01 | 0.01 | −1.06 | 135 |
| Follow-up depression scores | −0.01 | 0.02 | −0.82 | 666 |
| Neuroticism | 0.03 | 0.06 | 0.54 | 135 |
| Emotional repair | 0.02 | 0.05 | 0.53 | 135 |
| Follow-up depression × neuroticism | 0.00 | 0.02 | 0.25 | 666 |
| Follow-up depression × emotional repair | −0.02 | 0.01 | −1.37 | 666 |
| Neuroticism × emotional repair | 0.03 | 0.05 | 0.71 | 135 |
| Follow-up depression × neuroticism × emotional repair | −0.03 | 0.01 | −2.63** | 666 |

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

individuals with low levels of neuroticism and high levels of emotional repair ($b = 0.03$; $t(666) = 0.57$, *ns*) and individuals with both low levels of neuroticism and emotional repair ($b = -0.07$; $t(666) = -1.68$, *ns*).

## Risky behaviors in response to anxious symptoms

For the second set of analyses, we were interested in examining the effects of neuroticism, emotional repair, and follow-up anxiety scores on individual's risky behavior scores during the follow-up interval. The same process outlined above for identifying mean and covariance structures, slopes, backwards deletion, and reestimation of fixed effects was utilized. The ARH parameter ($r = -0.08$, $p < 0.05$) and random slope ($p < 0.05$) were significant and retained in the model. However, the random intercept was not significant and removed from the model prior to reestimation.

The final results with respect to the fixed-effects component of the model are presented in Table 6. Of primary importance, a significant three-way, cross-level interaction emerged between neuroticism × emotional repair × follow-up anxiety. Analyses were conducted for each neuroticism × emotional repair condition examining whether the slope of the relationship between anxious symptoms and engagement in risky behaviors significantly differed from 0. Analyses indicated that individuals who possessed both high levels of neuroticism and low levels of emotional repair reported higher levels of risky behaviors when experiencing high levels of anxious symptoms than when experiencing low levels of anxious symptoms ($b = 0.15$; $t(666) = 3.12$, $p < 0.01$). Unexpectedly, analyses indicated that individuals who possessed both high levels of neuroticism and high levels of emotional repair reported lower levels of risky behaviors when experiencing high levels of anxious symptoms than when experiencing low levels of anxious symptoms ($b = -0.12$; $t(666) = -2.41$, $p < 0.02$). At the same time, level of risky behaviors did not vary as a function of level of anxious symptoms for individuals with low levels of neuroticism and high levels of emotional repair ($b = 0.04$; $t(666) = 0.73$, *ns*) and individuals with both low levels of neuroticism and emotional repair ($b = -0.06$; $t(666) = -1.59$, *ns*).

## Depressive and anxious symptoms in response to risky behaviors

As risky behaviors and symptoms were assessed contemporaneously, the above analyses cannot ascertain with certainty the direction of the effect. More specifically, they cannot determine whether personality traits interacted with symptoms to predict engagement in risky behaviors or whether personality traits interacted with risky behaviors to predict fluctuations in depressive and/or anxious symptoms. Given this ambiguity, we conducted additional analyses examining the reverse models. The same process outlined above for identifying mean and covariance structures, slopes, backwards deletion, and reestimation of fixed effects was utilized.

When examining the effects of neuroticism, emotional repair, and follow-up risky behavior scores on individual's depressive symptom ($b = -0.06$, SE = 0.07; $t(666) = -0.82$, *ns*) and anxious symptoms scores

Table 6
Fluctuations in follow-up anxiety: estimates for the fixed-effects component of the final model

| Predictor | Parameter estimate ($b$) | Standard error | $t$-value | Degrees of freedom |
|---|---|---|---|---|
| Initial risky behavior score | −0.16 | 0.01 | −22.85[***] | 135 |
| Initial anxiety score | −0.02 | 0.01 | −1.81 | 135 |
| Follow-up anxiety scores | 0.00 | 0.02 | −0.01 | 666 |
| Neuroticism | 0.04 | 0.05 | 0.70 | 135 |
| Emotional repair | 0.03 | 0.05 | 0.50 | 135 |
| Follow-up anxiety × neuroticism | 0.01 | 0.02 | 0.53 | 666 |
| Follow-up anxiety × emotional repair | −0.03 | 0.01 | −1.90 | 666 |
| Neuroticism × emotional repair | 0.02 | 0.05 | 0.41 | 135 |
| Follow-up anxiety × neuroticism × emotional repair | −0.04 | 0.01 | −3.01[**] | 666 |

*Note*: [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$.

($b = -0.02$, SE $= 0.05$; $t(666) = -0.45$, ns) during the follow-up interval, the final results indicated that both of the three-way, cross-level interactions were not significant.

## Discussion

Several findings warrant additional attention. First, the current study is the first to prospectively examine factors that moderate the relationship between either emotional repair and neuroticism and their association with engagement in risky behavior following increases in either depressive or anxious symptoms. The results suggest that low levels of emotional repair and high levels of neuroticism may act as a double vulnerability. In other words, individuals who are prone to both experience aversive mood states and have diminished capacity to effectively repair such mood states and may be more apt to utilize risky behaviors in response to negative affect than individuals who possess only one or neither of these vulnerability factors. Whereas personality traits interacted with depressive and anxious symptoms to predict increased engagement in risky behaviors, personality traits did not significantly interact with risky behaviors to predict increases in symptoms of depression or anxiety. This suggests that the effect is unique and not bidirectional. While risky behaviors may provide temporary relief, they do not address issues that triggered the initial mood state. Prolonged engagement in risky behaviors is likely to be associated with a number of long-term costs, and future research needs to examine if the negative consequences from such costs amplify the initial depressive and anxious symptoms.

Second, while past research has examined the association of neuroticism and emotion regulation with engagement in risky behaviors independently (Cooper et al., 2000; Kokkonen and Pulkkinen, 1999), the present study examined the interactive effects of these two vulnerability factors. Examining an integration of multiple vulnerability and protective factors is likely to provide a more complete picture of an individual's propensity toward engagement in risky behaviors. At the same time, future research should expand on the present findings by examining additional intrapersonal and interpersonal factors that may moderate the strength of the association between aversive mood states and engagement in risky behaviors. By examining integrative models, future research can better identify factors that govern individuals' behaviors.

Third, the present study examines the use of a wide range of risky behaviors as a means of reducing symptoms of anxiety and depression, and, in doing so, provides a more accurate depiction of an individual's life. Whereas some individuals may engage in an array of non-specific risky behaviors, others repeatedly engage in a specific cluster of behaviors in response to aversive mood states. Thus, the focus of the study was to examine any type of risky behavior that may be utilized for such a purpose. As university students are amidst a period of exploration and transition, it is likely that they may experiment with a number of risky behaviors in order to determine which behaviors provide the maximum relief or escape. Additionally, environmental factors such as age, financial means, and residency are likely to play a role in shaping the types of risky behaviors that are available to young adults. Although there is likely a difference between active and avoidant risky behaviors, by examining clusters of risky behaviors, the present study examines myriad behaviors that may be promoted or limited by an individual's environmental context. While there are advantages to examining a broader perspective, future research is needed to examine whether the same factors predict the engagement in risky behaviors at a broad level and at a specific level.

Finally, our results unexpectedly indicated that individuals who possess both high levels of emotional repair and high levels of neuroticism reported less engagement in risky behaviors following increases in depression and anxiety. While individuals who exhibit high levels of neuroticism may be particularly susceptible to negative affective states, high levels of emotional repair may buffer them from utilizing risky behaviors in response to such mood states. One possibility to explain this phenomenon may be that as a result of experiencing elevated levels of depressive and anxious symptoms on a more regular basis, individuals high in both neuroticism and emotional repair may have frequent practice attenuating negative mood states. Over time, individuals necessarily hone their emotional repair skills in order to reduce the severity and duration of depressive and anxious symptoms. Another plausible explanation may be that such individuals simply isolate from social activities and withdraw from peer groups resulting in decreased engagement in risky behaviors. As this finding was not hypothesized, future research needs to replicate it before it is explored further.

Several limitations of the current study should be noted. First the current study examined the interaction of emotional repair and neuroticism with regard to future engagement in risky behaviors. While emotional repair is an integral part of emotion regulation, it is by no means synonymous with emotion regulation as a whole. Thus, future research should examine additional emotion regulation strategies to better understand its role in the engagement of risky behaviors. Second, self-report measures were used to assess emotional repair. While the emotional repair scale is a reliable and valid measure, it is merely one of the many conscious and unconscious emotion regulation strategies. Future studies would benefit from utilizing alternative assessment methods such as experimental observation to examine emotion regulation. Last, the current study used an urban, university student sample, most of whom were Caucasian and English speaking. The homogeneity of this sample in terms of education level and social environment may limit the generalizability of our results to community or clinical populations. Future research should examine these hypotheses in more diverse populations to identify whether the current findings replicate to such settings and to utilize larger sample sizes to allow for a more powerful test of various aspects of this relationship.

In conclusion, the results provide a deeper understanding of the relationship between negative affective states and engagement in risky behavior. These findings may be important to consider with regard to the development of effective prevention and treatment programs. By identifying adults at risk for engaging in risky behaviors as a means of alleviating depressive and anxious symptoms, clinicians can better target intervention and treatment strategies. In doing so, they can emphasize building skills including teaching more adaptive emotion regulation strategies and, consequently, prevent such individuals from entering a vicious cycle involving negative affectivity, risky behaviors, and negative short- and/or long-term consequences.

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