MINDFULNESS BUFFERS THE RELATIONSHIP BETWEEN EMOTIONAL REACTIVITY AND SUICIDAL IDEATION IN COLLEGE STUDENTS

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Megan Chesin, PhD., Dissertation Chair

Aileen Torres, PhD., 2nd Committee Member

Dianna Boschulte, PhD., 3rd Committee Member

Dedication

This dissertation is dedicated to the memory of my Grandma and Poppy. I lost them both during my time at William Paterson, and their unconditional love and encouragement meant the world to me. They were so excited to see me graduate, and I hope this accomplishment makes them proud!

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Abstract

Suicidal ideation and behaviors (SIBs) are prevalent among college students, with prior engagement in suicidal ideation (SI) increasing the risk of future engagement in SIBs. Emotional reactivity has been identified as a significant correlate of SI specifically, with a strong positive association established between the two. While resilience has been shown to moderate this relationship, limited research has examined whether mindfulness also serves as a buffer between emotional reactivity and SI. This study investigated whether mindfulness and resilience moderated the relationship between emotional reactivity and SI in a sample of 757 emerging adult college students from a diverse public university. Survey data measuring mindfulness, resilience, SI, and emotional reactivity was collected and then analyzed using Hayes' (2022) PROCESS macro (Model 2). Findings revealed that mindfulness significantly moderated the emotional reactivity–SI relationship ($\beta_{ER*mindfulness} = -.005$, $p < .001$). Simple slope analysis revealed a significant association between emotional reactivity and SI at low levels of mindfulness ($\beta = .07$, $p < .001$), while a weaker, nonsignificant association was found at high levels of mindfulness ($\beta = -.01$, $p = .445$). A Johnson-Neyman post-hoc analysis also indicated that this relationship was significant when mindfulness was at or below the mean but became nonsignificant when mindfulness was at 1.2 standard deviations above the mean or higher. Resilience did not significantly moderate the emotional reactivity–SI relationship ($\beta_{ER*resilience} = .00$, $p = .94$). These findings suggest mindfulness is a protective factor against SI in college students with heightened emotional reactivity, suggesting that mindfulness-based interventions (MBIs) may help mitigate suicide risk. Future research should explore interventions to enhance mindfulness and reduce SI in emotionally reactive college students specifically.

Mindfulness Buffers the Relationship Between Emotional Reactivity and Suicidal Ideation in College Students

Emerging adulthood, defined as the stage of development between ages 18 and 29 years (Arnett et al., 2014), is a period of time in which suicidality is of great concern. According to data obtained by the World Health Organization (WHO) (2023), suicide is one of the leading causes of death worldwide among young people aged 15 to 29 years. Among the general adult population, the 12-month prevalence rate of suicidal ideation and behaviors (SIBs) ranges from 2.0% for suicidal ideation (SI), 0.6% for suicidal planning, and 0.3% for suicide attempts, with some studies finding higher prevalence rates of SIBs among emerging adults (Borges et al., 2010; Han et al., 2014; Omary, 2021). Research has also shown that the prevalence of SIBs among emerging adults has been steadily increasing since the mid-2000s and increasing at a faster rate than among other adult age groups (Twenge et al., 2019).

Emerging adulthood is also a period of development when attending college is very common. About 38% of 18- to 24-year-olds in the United States (US) enrolled in and attended an undergraduate university in 2021 (National Center for Education Statistics, 2023). Considering the large proportion of emerging adults attending college combined with the relative ease with which emerging adults in college can be studied, the prevalence of SIBs among college students in particular has been studied extensively (Mortier et al., 2018). A meta-analysis conducted by Mortier et al. (2018) found that, on average, about 10.6% of college students worldwide reported SI within the past 12 months. The researchers also found that about 3.0% of college students had created a suicide plan within the past 12 months, and about 1.2% of students attempted suicide at some point during the past year.

A history of suicidality may be a risk factor for future engagement in SIBs in college students (Husky et al., 2024), as in other groups (Piscopo et al., 2016; Nock, Borges, Bromet et al., 2008). According to data collected by the US Substance Abuse and Mental Health Services Administration, about 32% of suicide ideators aged 18–25 years also engage in suicide planning, and about 20% attempted suicide in 2015 (Piscopo et al., 2016). SIBs among undergraduate college students have been associated with several maladaptive outcomes beyond risk for future SIBs, including poor academic performance, social isolation, poor social support, and increased risk for substance use, depression, and other psychological distress (Asfaw et al., 2020; Bakken, 2019; Li et al., 2019).

Emotional Reactivity

Emotional reactivity, which refers to the frequency and intensity of an individual's emotional reaction to stressors (Nock, Wedig, Holmberg et al., 2008), has been shown to increase risk for SIBs and non-suicidal self-injury (Hamza et al., 2021; Liu et al., 2020; Polanco-Roman et al., 2018; Rajappa et al., 2012). When examining the relationship between emotional reactivity and SI among college students specifically, several studies have established a close, direct relationship between the two variables whereby they are positively related (Arria et al., 2009; Chesin & Cascardi, 2018; Muneeb & Hassan, 2023; Nezu et al., 2023; Polanco-Roman et al., 2018; Shapero et al., 2019). Emotional reactivity differs from emotion regulation, which focuses on one's ability to control or regulate the frequency and intensity of an emotional response (Gross, 1998). Higher levels of emotional reactivity have also been associated with other negative outcomes, including increased risk for internalizing and externalizing behaviors, such as depression and aggression, in children, adolescents, and college students (Kalvin et al., 2016; Liu et al., 2020; Nock, Wedig, Holmberg et al., 2008; Shapero et al., 2016). In turn,

depression and aggression have both been shown to increase risk of engagement in SI among college students (Farabaugh et al., 2012; Mousavi et al., 2012). Thus, emotional reactivity may directly, as well as indirectly through depression and aggression, be linked to SI.

Given the significant relationship between emotional reactivity and SI, including among college students, potential factors that may moderate the relationship have been tested. Social problem-solving, regulatory emotional self-efficacy, impulsive-aggressive behaviors, resilience, and childhood adversity are all established moderators of emotional reactivity–SI relationship (Chesin & Cascardi, 2018; Liu et al., 2020; Nezu et al., 2023; Shapero et al., 2019).

Protective Factors in Suicidal Ideation and Behaviors

As a result of the significant risks associated with SIBs, there has also been extensive research examining potential protective factors. Identified protective factors for SIBs in college students include perceived social support, belongingness, subjective life satisfaction and well-being, strong religious affiliation, and positive self-esteem (Brener et al., 1999; Hefner & Eisenberg, 2009; Heisel & Flett, 2014; Oh et al., 2022; Owusu-Ansah et al., 2020; Park & Park, 2017). Other research has also established that resilience, defined as the ability to adapt well to stressors and maintain psychological well-being in the face of adversity (Connor & Davidson, 2003) is a key protective factor against SIBs in college students and other groups (Jeong & Noh, 2023; Kim et al., 2020; Yu et al., 2021). With respect to resilience, Shapero et al. (2019) also examined resilience as a potential moderator of the emotional reactivity–SI relationships and found resilience did in fact moderate the relationship between emotional reactivity and SI in college students, with higher levels of resilience weakening the relationship between the two constructs. These results may suggest that resilience not only protects against SI but also disrupts the relationship between emotional reactivity and SI among college students.

Mindfulness, which is distinct from resilience and defined as the ability to maintain focused awareness, nonreactivity, and nonjudgmental acceptance of present-moment experiences (Segal et al., 2018), has also been probed as a potential protective factor against SIBs. Several studies have established negative associations between mindfulness and SIBs in college students specifically (Anastasiades et al., 2017; Chesin & Jeglic, 2016; Lamis & Dvorak, 2013; Per et al., 2022; Wu et al., 2021). Trait mindfulness can be developed through training. As a result, other research has focused on how mindfulness-based interventions (MBIs) may reduce SIBs. For example, mindfulness-based cognitive therapy (MBCT) (Segal et al., 2018) and brief mindfulness meditation have both been found to be effective treatments for SIBs in college students and have also been found to significantly reduce symptoms associated with SIBs, including depressive symptoms, stress, and insomnia, when compared to control groups (Galante et al., 2018; Hajaliani et al., 2021; Liu et al., 2023; Ma et al., 2019; McIndoo et al., 2016; Schmelefske et al., 2022; Wu et al., 2021). Furthermore, MBCT has shown promising effects as a preventative treatment for suicide and the reoccurrence of SIBs in adults with a history of suicidality and depression (Forkmann et al., 2014; Interian et al., 2021).

Mindfulness and Emotional Reactivity

Additional research has focused on the effect of MBCT on emotional reactivity. Britton et al. (2012) examined whether MBCT reduced emotional reactivity to a social-evaluative threat among depressed adults. Compared to a wait-list control group, MBCT participants had significantly lower levels of emotional reactivity in response to stress post-treatment. The MBCT group was also able to return to their euthymic baseline immediately following recovery from the stressor posttreatment, whereas pretreatment, the group took about 40 minutes to return to their baseline. This suggests that MBCT can reduce emotional reactivity.

Several studies have also established negative associations between mindfulness and emotional reactivity among college students specifically. For example, Himes et al. (2021) studied the impact of trait mindfulness on emotional reactivity under stress. The results showed that certain qualities of mindfulness, including acting with awareness, nonreactivity, and nonjudgment, were negatively associated with emotional reactivity in response to stress (Himes et al., 2021). Weinstein et al. (2009) also found that college students with greater trait mindfulness exhibited lower levels of emotional reactivity in response to a laboratory-induced social stressor. They were also able to recover from negative affect faster in comparison to less mindful students. These findings suggest that mindfulness, either trait mindfulness or trained using an MBI, may help college students modulate emotional reactivity.

The Present Study

The purpose of the present study was to build upon Shapero and colleagues' (2019) finding and determine if mindfulness, in addition to resilience, moderates the relationship between emotional reactivity and SI in undergraduate college students. Given findings from past research showing that resilience moderates the relationship between emotional reactivity and SI and that mindfulness is negatively associated with both emotional reactivity and SI (Anastasiades et al., 2017; Chesin & Jeglic, 2016; Himes et al., 2020; Lamis & Dvorak, 2013; Per et al., 2022; Weinstein et al., 2009; Wu et al., 2021), it was hypothesized that the relationship between emotional reactivity and SI in college students would be moderated by both mindfulness and resilience. Specifically, the relationship between emotional reactivity and SI in college students would be weaker among students who reported more mindfulness and greater resilience.

Method

Participants

The present study used archival data collected from 807 undergraduate college students who were enrolled at William Paterson University between November 2015 and May 2017. The parent study aimed to investigate risk and resiliency factors for impulsive-aggressive behaviors in undergraduate college students. Participants ranged in age from 18 to 29 years, and were, on average, 19.4 years old (*SD* = 2.0). Sixty-eight percent of participants identified as female (*n* = 460) and 38.7% identified as male (*n* = 293). Participants primarily identified as White (45.3%, *n* = 343), heterosexual (89.4%, *n* = 677), and as freshmen in college (63.4%, *n* = 480) (Table 1). Participants who were outside the ages of 18–29 years old were excluded from analyses (*n* = 13). Participants who did not complete at least 80% of a measure of interest for the present study were also excluded from the analyses (*n* = 21). Three validity questions were included in the survey. In these items, participants were asked to select a specific response item to rule out random responding. Participants who failed any of the three validity questions were excluded from the analyses (*n* = 16). In total, the sample for the present study was comprised of 757 participants.

Procedures

The Institutional Review Board (IRB) at William Paterson University in New Jersey approved both the present archival study and the parent study. All participants provided written informed consent prior to completing the survey. The measures were administered through Qualtrics, with participants completing the survey online using their own devices. The present study included data from measures of SI, mindfulness, emotional reactivity, and resilience. The students elected to participate in the study of their own volition. In exchange for their participation, partial credit toward a research requirement for an undergraduate Psychology course was provided.

Measures

Suicidal Ideation. The Beck Scale for Suicidal Ideation (BSS) (Beck et al., 1979) is a self-report scale that measures the presence and severity of SI, including both active and passive SI. The BSS consists of 21 items that are scored on a 3-point Likert scale (0 to 2) (Beck et al., 1979). Total scores are calculated by summing all item scores, with scores ranging from 0 to 38. Higher scores on the BSS indicate increased severity of current SI (Beck et al., 1979). The BSS is a reliable measure (Beck et al., 1979). The BSS also demonstrates adequate construct and concurrent validity with self-report measures of hopelessness and depression (Beck et al., 1979). Such psychometric properties hold in studies examining college students (Chioqueta & Stiles, 2006; Derogatis et al., 1974). In the current sample, the BSS maintained good reliability, as indicated by Cronbach's alpha equal to .85.

Emotional Reactivity. The Emotion Reactivity Scale (ERS) (Nock, Wedig, Holmberg et al., 2008) is a self-report measure that assesses the intensity, persistence, and sensitivity of an individual's emotional reactions. It consists of 21 items and is scored by summing items. Items are rated 5-point Likert scale (0 to 4) (Nock, Wedig, Holmberg et al., 2008). Thus, total scores range from 0 to 84, with higher scores indicating greater emotional reactivity (Nock, Wedig, Holmberg et al., 2008). The ERS demonstrated strong internal consistency in a sample of adolescents and emerging adults (Nock, Wedig, Holmberg et al., 2008). It is a valid measure of emotional reactivity, with strong convergent validity and divergent validity when compared to measures of related or distinct constructs (Nock, Wedig, Holmberg et al., 2008). In the current sample, the ERS maintained excellent reliability, as indicated by Cronbach's alpha equal to .96.

Mindfulness. The Freiburg Mindfulness Inventory, Short Form (FMI-SF; Walach et al., 2006) was used to assess trait mindfulness. This self-report scale is composed of 14 items, which

are scored on a 4-point Likert scale (1–4) (Walach et al., 2006). Total scores range from 14 to 56 (Walach et al., 2006). Higher scores indicate greater trait mindfulness, including mindful presence, nonjudgmental acceptance, openness to experiences, and insight (Walach et al., 2006). The FMI-SF has been shown to be a valid and reliable measure in both experienced meditators and individuals without meditation experience (Walach et al., 2006). In studies, internal consistency of the FMI indicates strong reliability (Walach et al., 2006). Intraclass correlations between the short form and the 30-item scale demonstrate high agreement among the two forms (Walach et al., 2006). Adequate convergent validity with another mindfulness scale and divergent validity with a scale measuring depression and anxiety have also been established (Hickey, 2011; Kotzé & Nel, 2016). In the current sample, the FMI-SF maintained good reliability, as indicated by Cronbach's alpha equal to .87.

Resilience. The Connor-Davidson Resilience Scale, 10-Item Version (CD-RISC-10) (Campbell-Sills & Stein, 2007) is a self-report measure of resilience that was adapted from the original 25-item scale (Connor & Davidson, 2003). Each item is rated on a 5-point Likert scale (0–4), and item scores are summed to calculate the total score (Campbell-Sills & Stein, 2007). Scores on the scale thus range from 0 to 40, with higher scores indicating greater resilience. The CD-RISC-10 has been established as a reliable measure of resilience in college students and other groups (Campbell-Sills & Stein, 2007; Kuiper et al., 2019). The CD-RISC-10 has also shown good convergent and divergent validity when compared to measures of passive coping and life satisfaction, as well as anxiety and depression, respectively (Campbell-Sills & Stein, 2007; Kuiper et al., 2019). In the current sample, the CD-RISC-10 maintained excellent reliability, as indicated by Cronbach's alpha equal to .92.

Statistical Analyses

Statistical analyses were conducted using SPSS software, Version 30.0.0 (IBM Corp., 2024). Univariate descriptive statistics (i.e., mean scores, standard deviations, and proportions, as appropriate) were calculated for demographic and clinical characteristics. Skewness and kurtosis statistics were also calculated for the clinical characteristic variables to determine whether assumptions for normality were met utilizing a threshold of ±1 as is convention (George & Mallery, 2024). Prior to the moderation test, Spearman's Rho correlation coefficients were calculated between SI, emotional reactivity, mindfulness, and resilience to determine the significances and strengths of the bivariate relationships. Variance inflation factors (VIF) were also calculated to test for multicollinearity utilizing a threshold of 10, as is standard practice (O'Brien, 2007). Hayes' (2022) PROCESS macro, model 2 was used to test whether resilience and mindfulness moderated the relationship between emotional reactivity and SI. Simple slope and Johnson-Neyman analyses (Johnson & Neyman, 1936) were conducted to probe any significant moderating effects. The proposed theoretical and statistical moderation models are depicted in Figures 1 and 2, respectively.

Results

Of the 757 participants, 138 (18%) endorsed any SI in the past week. Among those with any SI, the mean score was 6.6 (*SD* = 5.8). Bivariate analyses showed that emotional reactivity and SI were significantly correlated in the sample ($\rho(755) = .27$, $p = < .001$) (Table 2). Emotional reactivity was also significantly correlated with both mindfulness ($\rho(755) = -.39$, $p = < .001$) and resilience ($\rho(755) = -.33$, $p = < .001$). SI was significantly correlated with both mindfulness ($\rho(755) = -.34$, $p = < .001$) and resilience ($\rho(755) = -.28$, $p = < .001$), as well. Analyses also revealed that mindfulness and resilience were significantly correlated in the sample ($\rho(755) =$

.59, p = <.001). Descriptive statistics for the exogenous variables indicated approximately normal distributions. Resilience scores demonstrated a mild negative skew ($skewness_{*resilience}$ = -0.59, $kurtosis_{*resilience}$ = 0.24) that still fell within an acceptable range and did not require transformation to meet assumptions of the multivariate analysis.

The multivariate model—which included emotional reactivity as the exogenous variable, SI as the endogenous variable, and mindfulness and resilience as moderators—was significant (R^2 = .21, $F(5, 751) = 41.10$, $p < .001$). Mindfulness significantly moderated the relationship between emotional reactivity and SI ($\beta_{ER*mindfulness}$ = -.005, s.e. = .00, $p < .001$). There was no significant moderating effect for resilience ($\beta_{ER*resilience}$ = .00 s.e. = .00, p = .936) (Table 4). VIFs for the mindfulness and resilience terms were calculated (VIF Resilience = 1.60; VIF Mindfulness = 1.70), which indicated that there was no severe multicollinearity between these terms in the model.

The significant interaction between emotional reactivity and mindfulness was probed using simple slope analysis, examining the association between emotional reactivity and SI at low (-1 *SD*), mean, and high (+1 *SD*) levels of mindfulness, while controlling for all other factors in the model. The analysis revealed that emotional reactivity was most strongly associated with SI at low levels of mindfulness (β = .07, $p < .001$). This association remained significant, but weaker at mean levels of mindfulness in the sample (β = .03, $p < .001$). Emotional reactivity was not significantly associated with SI at high levels of mindfulness (β = -.01, p = .445). A Johnson-Neyman analysis (Johnson & Neyman, 1936) also confirmed that the emotional reactivity–SI relationship was significant when mindfulness was at or below the mean but became nonsignificant when mindfulness was at 1.2 standard deviations above the mean or higher. The

interaction plot (Figure 4) visually demonstrates the buffering effect of mindfulness, on the relationship between emotional reactivity and SI.

Discussion

It was hypothesized that both mindfulness and resilience would moderate the relationship between emotional reactivity and SI, such that the emotional reactivity–SI relationship would be weaker among those who endorsed greater trait mindfulness and more resilience. As hypothesized, the findings of the present study confirmed that mindfulness is a significant moderator of this relationship, showing that higher levels of mindfulness buffer against the association between emotional reactivity and SI. No significant moderating effect was found for resilience on the emotional reactivity–SI relationship despite previous research that suggests that resilience acts as a buffer against the effect of emotional reactivity on SI (Shapero et al., 2019).

A significant relationship between emotional reactivity and SI has been previously established in the literature in both emerging adult and college student samples (Arria et al., 2009; Chesin & Cascardi, 2018; Muneeb & Hassan, 2023; Polanco-Roman et al., 2018). Prior research has also suggested that college students and adults with heightened emotional reactivity may be at greater risk for suicide attempts and non-suicidal self-injury (Hamza et al., 2021; Liu et al., 2020; Nock, Wedig, Holmberg et al., 2008; Polanco-Roman et al., 2018; Rajappa et al., 2012). The present findings confirm this relationship in a sample of emerging adult college students from a diverse public university, with a small-to-moderate correlation between emotional reactivity and SI observed ($\rho(755) = .27$, $p < .001$).

The finding that mindfulness significantly buffered the relationship between emotional reactivity and SI in the current sample supports prior research showing that mindfulness is protective factor against SI in college students (Anastasiades et al., 2017; Chesin & Jeglic, 2016;

Lamis & Dvorak, 2013; Per et al., 2022). This finding is also consistent with past research demonstrating that MBIs, which target mindfulness to improve distress, reduce SI and emotional reactivity in college students and other adult samples (Britton et al., 2012; Forkmann et al., 2014; Hajaliani et al., 2021; Interian et al., 2021; Liu et al., 2023; Wu et al., 2021). Importantly, the current study's focus on emotional reactivity adds to the literature by identifying whether and at what level mindfulness may buffer the relationship between emotional reactivity and SI.

The nonsignificant effect of resilience on the emotional reactivity–SI relationship was not expected, as resilience had previously demonstrated a moderating effect on the relationship between emotional reactivity and SI in college students (Shapero et al., 2019). In other studies, resilience was found to be a protective factor against SIBs (Jeong & Noh, 2023; Kim et al., 2020; Yu et al., 2021). We did not replicate these past findings. We found resilience neither protected against SI nor moderated the effect of emotional reactivity on SI in the multivariate model.

One potential explanation is that certain resilience factors may be more protective than others. Previous research conducted by Siegmann et al. (2017) examined the moderating effects of several resilience factors, including social support, life satisfaction, self-efficacy, psychosocial stress resistance, and positive mental health on the association between depressive symptoms and SI in college students. The results of that study concluded that social support, positive mental health, and life satisfaction significantly moderated this relationship, acting as buffers. No significant moderating effects, however, were found for other resilience factors, such as self-efficacy and psychosocial stress resistance. These findings suggest that certain resilience factors, such as social support, may exhibit more protective effects against SI in college students.

The CD-RISC-10, which was used to measure resilience in this study, measures specific, internal factors of resilience, such as self-efficacy and adaptability (Campbell-Sills & Stein,

2007). In contrast, Shapero et al. (2019) utilized the 25-item CD-RISC (Connor & Davidson, 2003) to measure resilience in their study, which consists of additional items related to some external resilience factors, including social support, an ability to rely on others, spirituality, and acceptance of change. In addition to the above work showing external resilience factors may better buffer the relationship between internalizing symptoms and SI in college students (Siegmann et al., 2017), social support, spirituality, and acceptance of change have all independently been established as protective factors against SIBs in the literature (Darvishi et al., 2024; Jalali Azar et al., 2024; Taliaferro et al., 2009). Social support, in particular, is often suggested to be one of the most robust protective factors against SIBs in college students and other adult populations (Darvishi et al., 2024; Hefner & Eisenberg, 2009; Kleiman et al., 2014; Whatley & Clopton, 1992). Similarly, spirituality and acceptance of change are other resilience factors that have been negatively associated with SIBs (Jalali Azar et al., 2024; Tae & Chae et al., 2021; Taliaferro et al., 2009). The inclusion of these additional factors in Shapero and colleagues' (2019) measurement of resilience may account for the discrepancy between our findings and others. Put briefly, the lack of significant findings in the present study may be partially explained by the narrower conceptualization of resilience as measured by the brief instrument we used.

Furthermore, resilience and mindfulness may interact with emotional reactivity in different ways. Unlike mindfulness, resilience does not inherently involve the capacity for nonreactivity, which is the ability to allow thoughts and emotions to arise without impulsively reacting to them (Bishop et al., 2004; Desrosiers et al., 2014). Neural evidence has shown that even highly resilient individuals may still exhibit heightened emotional reactivity in response to aversive stimuli, suggesting that resilience may not offer the same kind of emotional buffering as

nonreactivity does through mindfulness (Waugh et al., 2008). In contrast, research has shown that nonreactivity, which is a distinct facet of mindfulness, moderates the effects of present-focused awareness on depressive symptoms, such that individuals who are high in present-focused awareness, but low in nonreactivity, report greater depressive symptoms overall (Desrosiers et al., 2014). These findings suggest that observing distress, without nonreactivity, may exacerbate depressive symptoms, such as SI. Therefore, the quality of nonreactivity, which is distinct to mindfulness, may be in a unique position to attenuate the impact of high emotional reactivity on SI and may explain why mindfulness but not resilience moderated the emotion reactivity-SI relationship in this study.

Clinical Implications

Findings from our study, taken together with those in the extant literature, underscore the potential utility of incorporating MBIs in suicide prevention programs for emerging adult college students, especially those with a tendency toward greater emotional reactivity. Individuals with greater emotional reactivity are particularly vulnerable to engagement in SIBs (Hamza et al., 2021; Liu et al., 2020; Polanco-Roman et al., 2018; Rajappa et al., 2012). MBIs have been shown to increase mindfulness in college students (Dawson et al., 2020; Parcover et al., 2018), and mindfulness, per our findings, can buffer the relationship between emotional reactivity and SI. Given the high prevalence of SIBs among emerging adult college students (Mortier et al., 2018), it is imperative to develop and examine interventions that can reduce suicidality in this population. Previous research has shown the efficacy of using MBIs to reduce SIBs in both college students and the general adult population (Galante et al., 2018; Hajialiani et al., 2021; Liu et al., 2023; Ma et al., 2019; McIndoo et al., 2016; Schmelefske et al., 2022; Wu et al., 2021). Importantly, MBIs have also been shown to improve emotional reactivity in college

students and adults (Britton et al., 2012; Himes et al., 2021). Thus, increasing mindfulness through MBIs may mitigate SI and other depressive symptoms, not only by buffering the impact of high emotional reactivity on SI, but also by directly reducing emotional reactivity itself, which may then indirectly decrease SI.

Future Directions

Considering the findings of the present study and its clinical implications, future research should primarily focus on examining the efficacy of using MBIs to enhance mindfulness and reduce or prevent SI in emotionally reactive college students. Studies are still needed to determine whether MBIs, such as MBCT, can modulate SI in this population over time. Future research would also benefit from examining specific facets of mindfulness, such as nonreactivity, acting with awareness, and nonjudgmental acceptance, to better understand how they individually impact the relationship between emotional reactivity and SI. This could help refine MBIs, like MBCT, by identifying which facets are most effective for reducing SI among individuals with heightened emotional reactivity. For example, enhancing the emphasis on nonreactivity during mindfulness practices may provide more targeted support for individuals at risk of SI due to their greater difficulties in managing emotional distress. Other research might focus on examining additional moderators of the relationship between emotional reactivity and SI as well, as the literature is limited (Chesin & Cascardi, 2018; Liu et al., 2020; Nezu et al., 2023; Shapero et al., 2019).

Limitations

The present study had several limitations. The study used self-report survey data, which could have resulted in bias in the data given subjective reporting from students. Undergraduate

college students in the sample may not have accurately disclosed SI due to stigma associated with suicide and mental health. Hom et al. (2017) identified that stigma and fear of negative reactions from others were both significant barriers to disclosing SI among college students. Therefore, it is possible that SI rates may be greater than reported in the present sample and this could have impacted the findings of the study. The study was also cross-sectional in nature, and consequently, claims about the temporal nature of the relationships cannot be made. Furthermore, while the sample size was large, the sample was comprised of emerging adult college students from a diverse public university. Therefore, these findings may not generalize to other populations, including clinical populations, the general adult population, or older adults.

Lastly, resilience scores demonstrated a mild negative skew in our sample. Resilience scores clustered toward the upper end of the scale range. This pattern suggests a possible ceiling effect in the measurement instrument used that may have limited our ability to detect a significant moderating effect of resilience. A Rasch model analysis conducted by Heritage et al. (2021) also supports that the CD-RISC-10 may be less sensitive to detecting variations among individuals with high resilience. The CD-RISC-25, as used in Shapero et al. (2019)'s study, allows for a higher range of scores (0–100), and may display greater sensitivity to differentiate among individuals with varying levels of resilience.

Conclusion

The findings of the present study indicate that mindfulness significantly moderates the relationship between emotional reactivity and SI in emerging adult college students. Specifically, average to high levels of mindfulness weaken the relationship between these two constructs. The present study provides valuable insight into the role of mindfulness in this relationship and highlights the potential for utilizing MBIs to aid in the reduction and prevention of SI in students

with emotional reactivity. Additional research is needed to explore whether MBIs can increase mindfulness, and ultimately reduce SI in this group, and thus can aid in suicide prevention efforts on college campuses.

Table 1

Demographic Characteristics

Characteristic	*n*	%
Gender*		
Male	293	38.7
Female	460	60.8
Other	2	.3
Sexual Orientation*		
Heterosexual	677	89.4
Homosexual	19	2.5
Bisexual	39	5.2
Asexual	8	1.1
Other	11	1.5
Race**		
White	343	45.4
Black	150	19.8
Hispanic	178	23.5
Asian or Pacific Islander	65	8.6
Other	20	2.6
Year in School*		
Freshman	480	63.4
Sophomore	148	19.6
Junior	72	9.5
Senior	56	7.4

Note. $N = 757$. Participants were, on average, 19.4 years old ($SD = 2.0$).

*Some students declined to respond to specified questions.

**Students had the option to select all races that apply.

Table 2

Means, Standard Deviations, and Bivariate Correlations for Study Variables

Variable	*M*	*SD*	Emotional Reactivity	Suicidal Ideation	Mindfulness	Resilience
Emotional Reactivity	33.0	19.3	—	.27***	-.39***	-.33***
Suicidal Ideation	1.2	3.6	.27***	—	-.34***	-.28***
Mindfulness	40.4	7.9	-.39***	-.34***	—	.59***
Resilience	29.2	7.8	-.33***	-.28***	.59***	—

Note. $^{***}p < .001$. *M* = mean; *SD* = standard deviation.

Table 3

Moderating Effect of Mindfulness and Resilience on Emotional Reactivity and Suicidal Ideation

Effect	Estimate	*SE*	95% CI		*p*
			LL	*UL*	
Emotional Reactivity	.23***	.03	.17	.28	.00
Mindfulness	.07	.04	-.01	.17	.07
ER*Mindfulness	-.005***	.00	-.01	.00	.00
Resilience	-.04	.04	-.11	.03	.29
ER*Resilience	.00	.00	-.00	.00	.94

Note. $N = 757$. ***$p < .001$. CI = confidence interval; ER = emotional reactivity; *LL* = lower limit; *UL* = upper limit; SE = standard error. The multivariate model, including emotional reactivity as the exogenous variable, suicidal ideation as the endogenous variable, and mindfulness, resilience, and their respective interactions, was significant, $R^2 = .21$, $F(5, 751) = 41.10$, $p < .001$.

Figure 1

Theoretical Model of Moderation of Emotional Reactivity and Suicidal Ideation by Mindfulness and Resilience

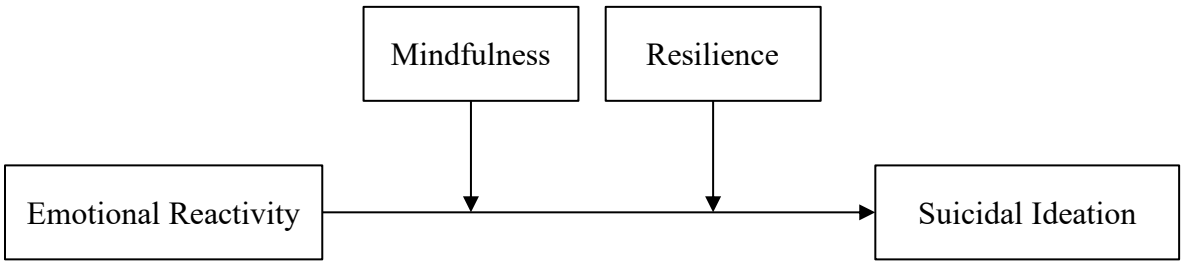
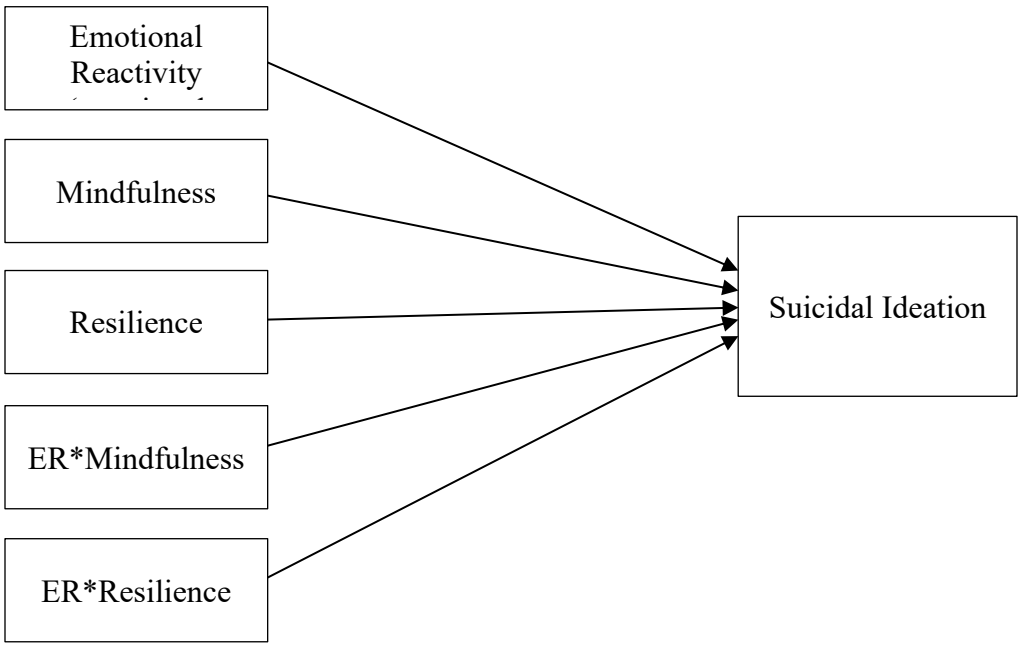


Figure 2

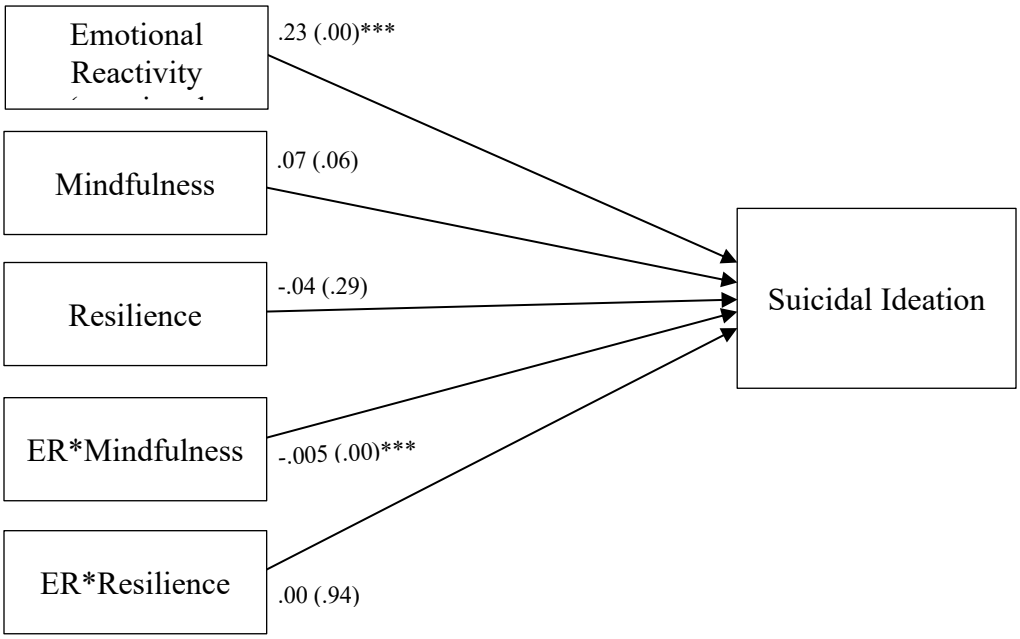
Statistical Model of Moderation of Emotional Reactivity and Suicidal Ideation by Mindfulness and Resilience



Note. ER = emotional reactivity.

Figure 3

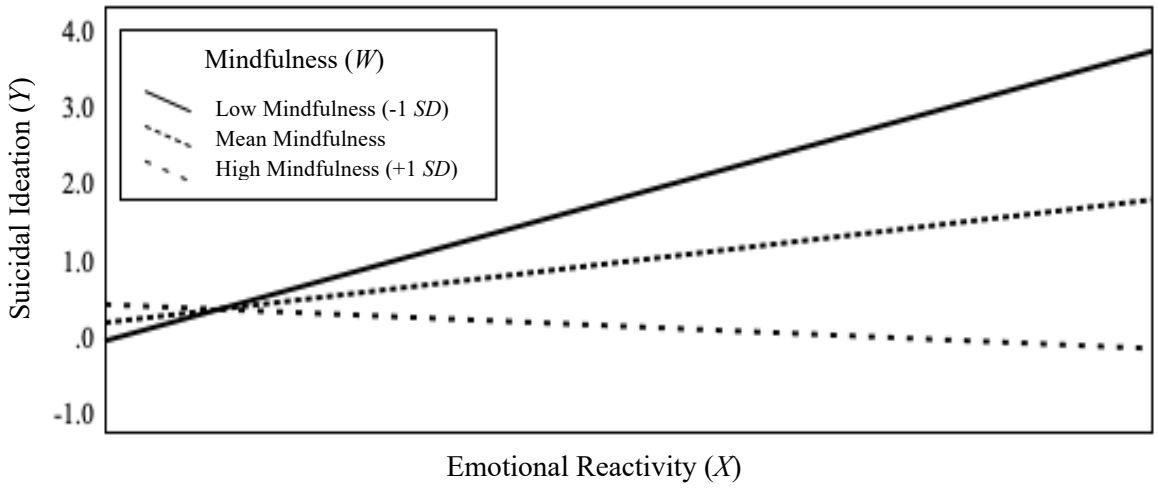
Results of the Statistical Model of Moderation of Emotional Reactivity and Suicidal Ideation by Mindfulness and Resilience



Note. ***p <.001. ER = emotional reactivity.

Figure 4

Moderating Effect of Mindfulness on Emotional Reactivity and Suicidal Ideation



Note. This figure illustrates the moderating effect of mindfulness on the relationship between emotional reactivity and suicidal ideation, with resilience and the resilience by emotional reactivity interaction term also included in the model. The graph depicts simple slopes for different levels of mindfulness, as measured by the FMI-SF, (low (-1 *SD*) = 32.5 score on the FMI-SF, mean = 40.4, high (+1 *SD*) = 48.3).

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