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## Suicide Ideation Among College Students Evidencing Subclinical Depression

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### Abstract

Identifying elevated suicide ideation in college students is a critical step in preventing suicide attempts and deaths by suicide on college campuses. Although suicide ideation may be most prominent in students with severe depression, this should not suggest that only students with severe depression experience significant risk factors for suicide.

**Objective**—The purpose of these 3 studies was to explore the relation between suicide ideation and severity of depressive symptoms in college students.

**Participants**—In each study a sample of college students were recruited for participation.

**Methods**—Participants completed self-report assessments of depressive symptoms and suicide ideation.

**Results**—The results of these studies suggest that although the greatest elevation in suicide ideation occurs at the highest depressive symptoms, significant suicide ideation is also experienced by college students with mild and moderate depressive symptoms.

**Conclusions**—The implications of these findings for the assessment of suicide ideation are discussed.

### Keywords

college students; depression; subclinical depression; suicidal ideation

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Between 1990 and 2004 suicide occurred at a rate of 6.5 per 100,000 on college campuses in the United States, which translates to an average of more than 100 deaths by suicide each year.<sup>1</sup> Although this rate is lower than 18- to 22-year-olds in the general population (11.5 per 100,000), suicide is believed to be the second leading cause of death on college campuses.<sup>2</sup> Furthermore, of the 1,404 college students who died by suicide between 1990 and 2004, only 23% had been seen at a student counseling center.<sup>1</sup> Additionally, in a sample of 81 college students experiencing current suicide ideation (ie, thoughts of suicide; 28% of whom also reported a past self-injurious act or suicide attempt), only 16% were receiving any form of treatment (ie, either psychotherapy or pharmacotherapy).<sup>3</sup> As such, identification of college students at risk for suicide is an issue that requires additional investigation.

As in the general population, identifying suicide risk in college students remains difficult. This is due, in part, to the relatively low rate of completed suicide among college students. This may lead to a decrease in the perceived importance of addressing suicide risk or reduced attention to risk factors (eg, depression, substance abuse) for suicide in this population. Consequently, screening for suicide risk in college students appears to suffer from poor sensitivity, as most risk factors that have been identified have only modest correlations with suicidal behavior and many students at risk for suicidal behavior are not seen by mental health professionals. Sensitivity is defined as our ability to detect some variable of interest, in this case risk of suicide, when it is present. Poor sensitivity is indicated by statistics suggesting that only 23% of college students who died by suicide were seen by their college counseling center.<sup>1</sup> Current screening procedures, therefore, do not appear sensitive enough to identify those requiring some form of intervention or contact with mental health services. Specificity, on the other hand, is our ability to avoid falsely identifying risk for suicide when an individual is not at risk. Although no assessment instrument is likely to provide perfect sensitivity and specificity, the statistic referenced above suggests that more attention should be given to increasing sensitivity. Mental health providers must utilize identified risk factors for suicide to appropriately balance sensitivity and specificity when conceptualizing risk for suicide.

Within college student samples, numerous risk factors for suicide ideation have been identified (eg, depression, academic difficulties, relationships problems, helplessness and hopelessness, financial difficulties, and, for females, insecure parental attachments).<sup>4,5</sup> Among these risk factors for suicide ideation, evidence exists that depression may be especially important. Konick and Gutierrez<sup>6</sup> found that the relation between negative life events and suicide ideation was mediated by depressive symptoms and that depression was more strongly associated with suicide ideation than hopelessness. Heisel and colleagues<sup>7</sup> found that while stress, depression, general hopelessness, and social hopelessness were associated with increased suicide ideation, only depression and social hopelessness

discriminated between suicide ideators and nonideators. These results are reflective of the importance of depressive symptoms in relation to suicide ideation among college students and suggest that depressive symptoms must be a key focus of the conceptualization and assessment of risk.

A “common sense” approach might suggest that suicide ideation is often experienced by individuals who experience severe depressive symptoms; however, such an approach neglects individuals experiencing less significant depressive symptoms. Consistent with this approach to risk evaluation, an examination of 120 college students (81 of whom endorsed current suicide ideation) suggested that “students with the most severe symptoms of depression [as measured by the Patient Health Questionnaire-9; PHQ-9] were more likely to experience current suicidal ideation and conversely those students with suicidal ideation had worse symptoms of depression.”<sup>3(p486)</sup> These conclusions were based on the finding that individuals experiencing moderately severe and severe depressive symptoms had the greatest proportion of suicide ideation (approximately 23% and 40%, respectively). Furthermore, the authors indicated that the difference in means between suicide ideators and nonideators on the PHQ-9 was 6 points. The authors indicated that “students with suicidal ideation are substantially more depressed in all symptom domains.”<sup>3(p485)</sup> However, although these statistical comparisons do indicate that the most severely depressed individuals experienced greater suicide ideation, they fail to recognize that even mild or subclinical depression (ie, depressive symptoms that do not reach criteria for diagnosis or fall below a threshold suggestive of clinically significant symptoms) can involve suicide ideation.

Although not directly testing college student samples, research with adolescents supports the notion that subclinical depression may contribute to increased suicide ideation. In a sample of adolescents demonstrating subthreshold depressive symptoms, approximately one-third reported experiencing suicide ideation.<sup>8</sup> Within that sample 8.6% had developed a suicide plan and 2.6% had attempted suicide at some point in their lives.<sup>8</sup> As suicide outcomes are a consequence of elevated depression, these data indicated that adolescents meeting a lower threshold for depressive symptoms experience factors associated with increased suicide risk. Another study<sup>9</sup> examined specific depressive symptoms to determine which symptoms were associated with suicidal acts in adolescents. This study indicated that recurrent thoughts about death, hopelessness, disturbed concentration, and middle insomnia were associated with suicidal acts in older adolescents, suggesting that specific symptoms may uniquely contribute to the prediction of suicide risk. Further supporting the earlier contention that current screening procedures fail to adequately identify students at risk, Sihvola and colleagues<sup>8</sup> found that only 1.7% of those with subthreshold depression had received any form of treatment and 40% of those who reported a previous suicide attempt reported never having received any psychiatric treatment. These data support the potential role of mild or subclinical symptoms of depression in the experience of suicide ideation. Nevertheless, the point at which depressive symptoms begin to substantially influence the development of suicide ideation in college students remains unexplored.

Taken together, these data suggest that suicide risk assessment (eg, exploring for the presence of suicide ideation) may also be important for those experiencing subclinical depressive symptoms. The current study sought to further explore the relation between

suicide ideation and the severity of depressive symptoms in college students. Specifically, we tested whether those students who reported mild and moderate symptoms of depression also exhibited elevated suicide ideation compared to those who reported minimal and severe depressive symptoms. This relation with suicide ideation was explored using several widely available self-report symptom inventories for suicide ideation that can be implemented on college campuses. This allowed us to ensure that mild to moderate depressive symptoms were associated with elevated suicide ideation when the severity of suicide ideation was determined using different scales.

Additionally, we tested the relation between subclinical depressive symptoms and suicide ideation in multiple samples of students from different universities that varied in terms of geographic location and ethnic diversity. In terms of specific hypotheses, we anticipated that those students who reported the most severe depressive symptoms would also report the greatest suicide ideation. However, we also expected those students who reported mild and moderate depressive symptoms to report higher suicide ideation compared to minimally depressed students. We expected that this relation would hold when examining data from different locations and using different instruments. We used receiver operating characteristic (ROC) curves to determine the Beck Depression Inventory (BDI) score associated with the greatest sensitivity and specificity for identifying participants with elevated suicide ideation on each scale. We hypothesized that the BDI score associated with the identification of cases of elevated suicide ideation would fall in the mild or moderate range of depression. Further, we expected that the BDI score associated with elevated suicide ideation would be consistent when suicide risk was assessed using 3 different assessment measures for suicide ideation. A pattern of results that demonstrates increased suicide ideation among mildly, moderately, and severely depressed college students would suggest that suicide ideation is an issue requiring attention in college students experiencing even subclinical depression.

## METHODS: STUDY 1

Study 1 tested the above predictions in a sample of predominantly Caucasian college students at a southeastern university. This study used a self-report instrument, the Depression Severity Index–Suicide Subscale (DSI-SS)<sup>10,11</sup> to assess suicide ideation. This instrument includes 4 items designed to assess current suicide ideation and urges for suicide.

### Participants

A convenience sample of 222 participants ( $M = 19.2$  years old,  $SD = 1.8$ ) was recruited from an undergraduate student subject pool. Students participated as part of introductory psychology course research requirement and received 1 credit point for each hour of participation. This study was approved by the university institutional review board. As part of the informed consent process, participants were informed about the content of questions included in the study and were made aware that referral information might be provided to some students based on responses to questions contained in the study. The sample was composed of 158 women and 64 men. Seventy-one percent of the sample was Caucasian, 12% African American, 11% Hispanic, 2% Native American, and 4% other. The ethnicity of this sample was representative of the larger university community. This sample did include a

disproportionately greater percentage of female participants, as reflected in the higher percentage of females enrolled in introductory psychology course at this university.

## Measures

**Depression Severity Index–Suicide Subscale**—The DSI-SS<sup>10,11</sup> is a 4-item self-report questionnaire designed to identify the frequency and intensity of suicide ideation and impulses in the past 2 weeks. Participants select 1 of 4 statements that best describes them (eg, I do not have thoughts of killing myself [0], Sometimes I have thoughts of killing myself [1], Most of the time I have thoughts of killing myself [2], I always have thoughts of killing myself [3]). Studies using the DSI-SS have reported acceptable results regarding internal consistency and construct validity.<sup>10,11</sup> The scale internal reliability for this sample was .88. For ROC curve analyses, scores of 0 were classified as not elevated and scores greater than or equal to 1 were classified as elevated. This is consistent with conservative guidelines suggested by Joiner and colleagues.<sup>10,11</sup>

**Beck Depression Inventory**—The BDI,<sup>12</sup> a 21-item self-report inventory, was used to assess the presence of depressive symptoms within the previous 2 weeks. One item of the BDI, item 9, assesses current suicidal thoughts and was not included in the total score for this scale to ensure subsequent analyses of the impact of depressive symptoms on suicide ideation were not confounded by endorsement of this item on the BDI. The classification of total scores (eg, mild, moderate) was based on established cutoffs and was not adjusted for the absence of item 9. Total scores of 0–13 are in the minimal range, 14–19 mild, 20–28 moderate, and 29–60 severe. Although the BDI is not indicative of the full clinical syndrome of depression, it has yielded adequate reliability estimates and has been well validated as a measure of depressive symptomatology.<sup>12</sup> The scale internal reliability for this sample was .88.

## Procedures

Participants were administered the DSI-SS and BDI on individual computers in groups of between 2 and 26 participants in a classroom environment as part of a larger study.<sup>13</sup> Upon completion of these instruments during the study session, the research assistant reviewed responses to determine if any participants showed signs of suicide ideation. In the event that a participant had elevated suicide risk,<sup>14</sup> the research assistant contacted K.C.C. or T.E.J. for assistance. Participants with elevated suicide risk were further queried outside of the main room in which the study was being conducted to ensure privacy and confidentiality. Although many participants were evaluated for elevated suicide risk, only 1 participant was at severe risk and had to be referred for emergency evaluation.

## Statistical Analyses

Two primary statistical analyses were used to answer the research questions posed in this study. To determine whether students reporting the most severe depressive symptoms evidenced the greatest level of suicide ideation, analysis of covariance (ANCOVA) was used. In this analysis, BDI group (minimal, mild, moderate, severe) was entered into an ANCOVA analysis as the independent variable (IV), age, gender, and race were entered as covariates, and DSI-SS continuous score was entered as the dependent variable (DV). ROC curves were

used to examine the total score on the BDI that was associated with elevated DSI-SS. ROC curves allowed us to calculate the sensitivity (proportion of true positives classified as positive) and specificity (proportion of true negatives classified as negative) when using each total score value of the BDI to predict DSI-SS group (elevated, not elevated). The optimal cutoff score for the BDI was the score that simultaneously maximized sensitivity and specificity. Subsequently, we computed the positive predictive value (PPV; proportion of participants with a positive test result diagnosed with the condition) and negative predictive value (NPV; proportion of participants with a negative test result who are not diagnosed with the condition) for this optimal cutoff score on the BDI.

## RESULTS: STUDY 1

One-way ANCOVAs were performed on the measure of suicide ideation, DSI-SS.\* The IV was BDI group (minimal  $n = 170$ , mild  $n = 30$ , moderate  $n = 14$ , severe  $n = 8$ ), and covariates were age, gender, and ethnicity. ANCOVA indicated significant group differences on the DSI-SS,  $F(3, 221) = 28.69, p < .001$ . Tukey honestly significant difference post hoc analyses indicated significant differences on DSI-SS scores between the minimal ( $M = .25, SD = .83$ ) and all other BDI score groups ( $ps < .001$ ), between the mild ( $M = 1.30, SD = 1.73$ ) and severe ( $M = 3.25, SD = 2.05$ ) BDI score groups ( $p < .001$ ), and between the moderate ( $M = 1.71, SD = 1.73$ ) and severe BDI score groups ( $p < .05$ ).

The ROC curve analysis indicated that the BDI discriminated between DSI-SS elevated and not elevated participants (area under the curve = .82,  $p < .001$ ). The selection of a value on the BDI that maximized specificity and sensitivity indicated a value of 10.5. This value had a sensitivity of .79 and specificity of .74. This value yielded a PPV of 47%, correctly identifying 39 of 48 (true positives), but also identifying 44 of the 173 without elevated suicide ideation (false positives). The NPV for the selected BDI score of 10.5 was 93%, correctly identifying 129 of 138 participants with negative scores as not elevated.

These results indicate that suicide ideation was significantly higher for all BDI score groups compared to the minimal BDI score group, suggesting that suicide ideation should be considered for participants with any elevation on depressive symptoms. Although the DSI-SS score was significantly higher for those in the severe depression group, elevation was also clearly observed for those with mild and moderate depression scores. This is consistent with the results of the ROC analysis, indicating that a score of 10.5 (mild depressive symptom severity) maximized the sensitivity and specificity of the BDI to detect participants with elevated compared to not elevated suicide ideation. Values for PPV and NPV were also quite high given the low prevalence of suicide ideation in this sample.

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\*An evaluation of assumptions for general linear model indicated a violation of the assumption of normally distributed data. Due to the low frequency of endorsement of suicide ideation, DSI-SS data was positively skewed. To address this concern, results of the original analysis (ANCOVA) were compared to those utilizing the Poisson distribution. The pattern of results was identical for all analyses in Study 1, as well as Studies 2 and 3 later. Therefore, all results are presented from the original ANCOVA analyses.

## METHODS: STUDY 2

On the basis of the results of Study 1, we concluded that suicide ideation may be elevated even among participants with lower depressive symptoms. We questioned whether this outcome was due to the number of items (4) and wording of items on the DSI-SS (ie, items allow endorsement of suicide ideation with a qualifying statement indicating lower severity, “I am having thoughts about suicide but have these thoughts are completely under my control”), such that lower suicide ideation may be endorsed by more students. As such, we tested the same hypothesis using a more extensive assessment tool for suicide ideation, the Beck Suicide Scale (BSS),<sup>15</sup> utilizing participants drawn from the introductory psychology participant pool at the same university as in Study 1.

### Participants and Procedure

Participants were a convenience sample of 309 undergraduates from a southeastern university who received 1 course credit for each hour of participation. Participants in Study 2 were recruited from the same university as Study 1; however, participants did not overlap with participants in Study 1. Participants in Study 2 were recruited in a subsequent semester. This study was approved by the university institutional review board. The majority of the sample was female ( $n = 227$ , 73.5%). The mean age for the sample was 19.11 years ( $SD = 2.38$ , range: 17–51 years). The age range of participants in this study is representative of the larger university community; however, this sample does contain an overrepresentation of female participants due to the greater percentage of females enrolled in introductory psychology classes. Ethnicity information was not gathered due to experimenter error; however, the distribution of ethnicity in this sample is likely similar to that of Study 1. Participants completed a self-report questionnaire packet with measures tapping current suicidal ideation and depressive symptoms (BSS, BDI). Questionnaires were completed individually by participants to ensure confidentiality. Questionnaires were completed in groups of more than 1 student in a classroom environment; however, students were permitted to spread out in the testing room to ensure confidentiality. Responses to the questions about suicide were screened by the experimenters for elevated suicide risk while participants were present. The informed consent process alerted all participants to the nature of questions that would be asked during the study and indicated that referral information would be provided if needed. All participants were debriefed and given phone numbers for local mental health services. No participants reported significant suicide ideation requiring referral for further evaluation.

### Measures

**Beck Suicide Scale**—The BSS<sup>15</sup> is a 21-item scale assessing severity of suicide ideation and behavior with higher scores reflecting greater suicide ideation. Previous studies have established the psychometric properties of this instrument.<sup>15,16</sup> The scale internal reliability for this sample .90. A cutoff score of 6 was used to classify elevated suicide ideation on the BSS for the ROC analyses.<sup>17</sup>

**Beck Depression Inventory**—See Study 1. Item 9 was excluded as in Study 1. The scale internal reliability for this sample was .90.

## RESULTS: STUDY 2

The distribution of participants in each BDI group was similar to Study 1 (minimal  $n = 237$ , mild  $n = 34$ , moderate  $n = 15$ , severe  $n = 14$ ). ANCOVA indicated significant group differences on BDI group,  $F(3, 300) = 22.89, p < .001$ . Post hoc analyses indicated significant differences on BDI scores between the minimal BDI group ( $M = .41, SD = 1.75$ ) and the moderate ( $M = 4.47, SD = 7.86$ ) and severe ( $M = 4.79, SD = 4.26; p < .001$ ) BDI groups, but not the mild group ( $M = 1.38, SD = 2.27$ ). Significant differences were also observed between the mild BDI group and both the moderate and severe groups ( $p < .001$ ). There were not significant differences between the moderate and severe BDI groups ( $p > .05$ ).

As in Study 1, the ROC curve analysis indicated that the BDI discriminated between BSS elevated and not elevated participants (area under the curve = .82,  $p < .001$ ). The selection of a value on the BDI that maximized specificity and sensitivity indicated a value of 8.9. This value had a sensitivity of .95 and specificity of .65. This value yielded a PPV of 16%, correctly identifying 19 of 19 (true positives), but also identifying 102 of the 293 without elevated suicide ideation (false positives). The NPV for the selected BDI score of 8.9 was 100%, correctly identifying 191 of 191 participants with negative scores as nonelevated.

Results indicate that BSS scores were consistently lower for those with minimal and mild depressive symptoms, then rose considerably for those with moderate and severe depressive symptoms. The similarity in BSS scores for those in moderate and severe groups suggest that moderate symptoms of depression may warrant a similar level of clinical attention as severe BDI scores. As in Study 1, the BDI score that maximized sensitivity and specificity was considerably lower than might be expected, with a selected score of 8.9.

These results indicate that the elevation in suicide ideation for participants with less than severe depressive symptoms was not the result of a measurement artifact (ie, a result specific to the use of the DSI-SS). As in Study 1, the score on the BDI that maximized sensitivity and specificity fell within the minimal depressive symptom range and was much lower than would be expected. The BSS includes a greater number of items assessing a greater range of suicide ideation; therefore, the similarity in elevated suicide ideation scores for those with moderate symptoms of depression offers further evidence supporting the assertion that depressive symptoms of a more modest level may be associated with thoughts of suicide.

## METHODS: STUDY 3

We were further interested in determining if the findings from Studies 1 and 2 would extend to another measure of suicide ideation, a more ethnically diverse sample, a larger sample, and a different location of the country. The Adult Suicidal Ideation Questionnaire (ASIQ)<sup>18</sup> was selected for this study, as it is a widely used and well-validated measure of suicide ideation. An extension study such as this would offer important information regarding the external validity of these findings. Further, in this study we utilized the updated Beck Depression Inventory–II (BDI-II).<sup>19,20</sup> The BDI-II was used instead of the BDI due to improvements to the scale, including greater assessment of Diagnostic and Statistical



Manual of Mental Disorders, Fourth Edition (*DSM-IV*) Current Depressive Episode criteria, clinical sensitivity, and removal of items that are not tied to Current Depressive Episode (eg, changes in body image).<sup>20</sup>

## Participants and Procedures

A convenience sample of 914 participants (700 women; mean age = 22.18 years [ $SD = 5.39$  years]) were recruited from psychology classes at a university in the southern United States. Students received course credit for participating in research. This study was approved by the university institutional review board. The racial and ethnic breakdown was as follows: Caucasian ( $n = 233$ ), African American ( $n = 196$ ), Hispanic ( $n = 204$ ), Asian/Pacific Island ( $n = 195$ ), multiracial ( $n = 40$ ), Middle Eastern ( $n = 25$ ), and Native American ( $n = 1$ ). The remainder ( $n = 20$ ) identified themselves as “other.” The age and ethnicity of participants in this study was representative of the larger university community; as in Studies 1 and 2 above, female participants were overrepresented due to the greater percentage of females enrolled in introductory psychology classes at this university. Upon arrival at the experimental session, participants were told that they would fill out questionnaires about their personal views and feelings and were made aware that their responses would be reviewed by research personnel. Study sessions were conducted in a classroom environment where students could spread out to ensure confidentiality of responses. All participant responses were evaluated while participants were present to determine the presence of elevated suicide ideation. No participants reported significantly elevated suicide ideation; therefore, none were referred for further evaluation.

## Measures

**Adult Suicidal Ideation Questionnaire**—The ASIQ<sup>18</sup> is a 25-item measure used to assess the degree and frequency with which a person may be thinking about and/or planning a suicide attempt. Participants respond to items using a Likert-type scale ranging from 0 to 6, with higher scores representing greater suicide ideation and suicide risk. The ASIQ has demonstrated high internal reliability with a Cronbach alpha coefficient of .96 in previous research.<sup>18</sup> Test–retest reliability for the ASIQ yielded a reliability coefficient of .95 in a sample of college students.<sup>18</sup> A cutoff score of 14 was selected for the ASIQ for ROC analyses based on previous research.<sup>21</sup> The scale internal reliability was .95 in this sample.

**Beck Depression Inventory–II**—The BDI-II<sup>20</sup> is a 21-item self-report inventory that assesses the severity of symptoms of depression. This revision of the BDI is consistent with *DSM-IV* Major Depressive Episode diagnostic criteria. Each of the 21 items consists of a group of statements among which the participant chooses the statement that best describes him or her (scored 0 to 3). Item 9 was excluded from the total score on this scale as in Studies 1 and 2. Total scores of 0–13 are in the minimal category, 14–19 mild, 20–28 moderate, and 29–60 severe. Previous studies have established the psychometric properties of this instrument.<sup>19,20</sup> The scale internal reliability was .91 in this sample.

## RESULTS: STUDY 3

One-way ANCOVA was performed on ASIQ scores. The IV in the analysis was BDI-II group (minimal  $n = 694$ , mild  $n = 123$ , moderate  $n = 71$ , severe  $n = 25$ ). Age, gender, and race were entered as covariates. ANCOVA indicated significant group differences on BDI group,  $F(3, 913) = 71.56, p < .001$ . Post hoc analyses indicated significant differences on ASIQ scores between the minimal BDI group ( $M = 6.39, SD = .58$ ) and all other BDI groups ( $p < .001$ ), between the mild BDI group ( $M = 14.16, SD = 1.37$ ) and severe groups ( $M = 46.33, SD = 3.06; p < .001$ ), and between the moderate ( $M = 19.2, SD = 46.33$ ) and severe ( $p < .001$ ) groups. This pattern of results is identical to that described in Study 1 analyses described above.

As in the studies above, the ROC curve analysis indicated that the BDI discriminated between ASIQ elevated and not elevated participants (area under the curve = .79,  $p < .001$ ). The selection of a value on the BDI that maximized specificity and sensitivity indicated a value of 10.5. This value had a sensitivity of .82 and specificity of .66. This value yielded a PPV of 12%, correctly identifying 47 of 57 with elevated suicide ideation (true positives), but also identifying 343 of the 860 without elevated suicide ideation (false positives). The NPV for the selected BDI score of 10.5 was 98%, correctly identifying 514 of 524 participants with negative scores as nonelevated.

These results provide further support for the link between less severe symptoms of depression and elevated suicide ideation. As in Study 1, ROC analyses indicated that the optimal cut score for the BDI was 10.5, again, falling within the minimal depressive symptom range. Importantly, attempts were made to increase the generalizability of the findings by using another widely available assessment tool for suicide ideation, as well as a sample from a different geographic region with greater ethnic diversity. The inclusion of a more ethnically diverse sample in the third study allows us to conclude that the association between subclinical depressive symptoms and suicide ideation is not unique to samples with a high representation of Caucasian students. Importantly, these results indicate that clinically important suicide ideation may emerge for students with milder depressive symptoms on college campuses with student populations representing a greater number of ethnic minorities.

## COMMENT

In the present study, we sought to investigate factors associated with the relation between suicide ideation and the severity of depressive symptoms in college students. The results of these studies support the notion that elevated suicide ideation is not limited to college students with severe depressive symptoms. In other words, individuals with minimal and moderate symptoms of depression may also be apt to experience thoughts of suicide. Collectively, the results obtained are consistent with the idea that elevated suicide ideation is not confined to college students whose scores indicates they are experiencing severe depressive symptoms; instead, college students with lower depressive symptoms experience heightened suicide ideation. This pattern of results was replicated across diverse samples,

several self-rated measures of depression, and different instruments designed to measure current suicide ideation.

The findings of these studies have clear implications for the screening and identification of suicide ideation on college campuses. First, as mentioned previously, many gate-keepers to mental health services on college campuses are not likely to have training in the identification of depression and other risk factors for suicide. Staff and student orientations, campus programs and campaigns (eg, National Mental Health Awareness Week), and other training programs aimed at educating large numbers of students, faculty, and staff about the signs of suicide risk should explicitly indicate that any level of depression is cause for concern. Attempts to widen education should involve suggesting that students utilize the services offered by counseling centers and other mental health services available on most college campuses even in cases of mild and moderate symptom severity. Questions pertaining to suicide ideation, intentional self-injury, risk-taking behaviors, suicide attempts, and plans for suicide should be consistently integrated within the screening and therapy process to ensure change is detected. Based on the results of this study, these questions should be asked of *all* students with depressive symptoms. Clinicians should then aim to select treatments designed to reduce suicide ideation in those with any elevation in suicide risk. The Collaborative Assessment and Management of Suicide<sup>22</sup> treatment is one that has been used successfully in college settings with college students. Thus, this treatment and assessment approach should be used with students with elevated suicide ideation and risk. Further, service providers are encouraged to assess changes in suicide ideation frequently for students prescribed antidepressant medication, even after initial resolution of depressive symptom severity. Although this study did not assess medication usage, these data suggest that thoughts of suicide may be present for those with milder symptoms of depression.

Despite the previously mentioned strengths of this study, a number of limitations should be noted. First, the inclusion of a subclinical sample of college students resulted in low suicide ideation. Another limitation to the broader utility of these findings is the exclusive participation of college students. These limitations point to several areas for future studies that would add to the literature on suicide ideation in college students. First, additional studies should examine clinical samples of college students seeking treatment for depression. These studies should examine the level of suicide ideation among students presenting with varying clinically significant depression. This research will allow us to draw more firm conclusions regarding the level of distress created by depressive symptoms that leads students to seek mental health services, and to begin thinking about suicide. Additional research should also examine differences in the depressive symptoms that are associated with the onset of suicide ideation compared to suicide ideation that occurs during times of suicidal behavior. Future studies should also investigate specific symptoms of depression that are associated with suicide ideation to determine symptoms that may have greater predictive value in identifying students at risk for suicidal behavior. The studies described above would benefit from longitudinal designs that would allow us to determine the level of depressive symptoms associated with change or onset of suicide ideation.

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