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Suicidal Behaviors in College Students: Frequency, Sex Differences, and Mental Health Correlates Including Sluggish Cognitive Tempo

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Abstract

Purpose—To (1) describe rates of suicidal behaviors in a sample of college students, (2) evaluate sex differences, and (3) provide a preliminary examination of the unique association of sluggish cognitive tempo (SCT) symptoms and other mental health dimensions in relation to suicidal behaviors in college students.

Methods—Participants were 1,704 college students from two universities who completed measures assessing mental health symptoms and suicidal behaviors (i.e., past ideation/attempts, past year ideation, disclosure of intent to commit suicide to another person, and likelihood of a future suicide attempt).

Results—4% of participants reported a previous suicide attempt and 2.2% indicated that it was likely they would attempt suicide someday. 7.5% reported thinking about killing themselves often in the past year; 41.4% of these participants reported they had never told someone they might attempt suicide. Approximately one-quarter (24%) of participants were classified with suicide risk based on an empirically established cutoff score, though rates differed between women (26.1%) and men (20.4%). Women were also more likely than men to report a previous suicide attempt and to tell someone else about their suicidal ideation. In regression models, depression was the strongest correlate of suicidal behaviors. ADHD symptoms were unassociated with suicidal behaviors when accounting for internalizing symptoms. SCT remained significantly associated with increased suicidal behaviors beyond other mental health dimensions including depression.

Conclusions—A substantial minority of college students report suicidal behaviors, with sex differences dependent on the specific behavior examined. This study provides the first evidence linking SCT to suicidal behaviors in college students.

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Keywords

ADHD; anxiety; depression; inattention; psychopathology; SBQ-R; sex differences; sluggish cognitive tempo; suicide; university students

Introduction

Suicide is the second leading cause of death among young adults, including college students [1]. In an effort to advance prevention and intervention efforts, substantial research attention has focused on suicidal behaviors (e.g., ideation and attempts) which are common in college students [2, 3]. For example, in the 2016 National College Health Assessment II, 9.8% of college students indicated that they seriously considered suicide in the past year, and 1.5% reported a suicide attempt in the past year [4]. In a survey of over 15,000 undergraduate college students, 18% reported having ever seriously considered attempting suicide and 8% reported attempting suicide at least once [3]. Rates of suicidal ideation, plans, and attempts are far higher among this age group than older adults [5]. Fewer studies have examined whether students thinking about suicide tell others about these thoughts, though one study found that almost half (46%) of undergraduate students who seriously considered attempting suicide in the past year did not tell anyone else about their thoughts [3]. Despite the increased research attention devoted to suicide in college students, a number of studies examining rates of suicidal behaviors in this population relied on a composite score or single item of suicidal behaviors [6–10]. The present study builds on these previous studies by examining a composite measure in addition to specific suicidal behaviors – including ideation, previous attempts, and disclosure to others of desired or undesired intent to kill oneself – in a sample of 1,704 college students.

Although male young adults and undergraduate students specifically are more likely than female young adults/undergraduates to die by suicide [11, 12], it remains unclear if female and male college students differ in other suicidal behaviors. Multiple studies have reported no sex differences in rates of suicidal behaviors including suicidal ideation and attempts [9, 13–16]. Yet once again, many studies examining possible sex differences in suicidal behaviors among college students relied on either a single-item [9] or a composite suicidal behaviors score [7, 13, 15]. Although global measures are themselves important, they may obscure potential sex differences in more specific behaviors among college students. Some studies examining specific suicide-related behaviors in college students have found sex differences. For example, Brownson and colleagues [17] found undergraduate women to be slightly more likely than undergraduate men to report morbid thoughts in the past year, serious suicidal ideation in the past year, having made a suicide attempt in the past year, and disclosing the ideation to someone else. Wilcox and colleagues [2] found significantly higher rates of one-time ideation and a plan or attempt at any time in college, though not persistent ideation, among women as compared to men. Thus, while there is some indication that college women report more suicidal behaviors than college men, additional studies are needed.

In addition to potential sex differences, psychopathology is one of the most consistent correlates of college students' suicidal behaviors. Depression, anxiety, and attention-deficit/hyperactivity disorder (ADHD) are the most common mental health problems experienced by college students [18, 19], and these mental health problems are themselves strongly intercorrelated [20, 21]. Nonetheless, research efforts to examine psychopathology correlates of suicidal behaviors in college students have almost universally examined internalizing symptoms or ADHD in isolation. For instance, depression is a consistent and strong predictor of suicidal behaviors in college students, and so some studies have focused solely on depression and not simultaneously considered other psychopathologies [9, 22, 23]. Other studies have considered depression in tandem with anxiety [14, 18] or ADHD [8, 24]. However, without considering multiple psychopathology dimensions simultaneously, it remains unclear which, if any, psychopathologies relate to suicidal behaviors above and beyond depressive symptoms, or if symptoms differentially relate to specific suicidal behaviors. Studies are needed that simultaneously evaluate multiple psychopathologies in a sample large enough to uncover effects beyond depression.

One psychopathology dimension that has garnered recent research attention is sluggish cognitive tempo (SCT), a set of symptoms characterized by excessive daydreaming, mental fogging, mind-blanking, and slowed behavior [25–28]. SCT symptoms are strongly related to, but distinct from, both ADHD and depression, and also associated with greater emotion dysregulation and loneliness as well as lower self-esteem [25–28]. No study to date has examined the association between SCT and suicidal behaviors in adults, though one recent study in school-aged children found SCT to be significantly associated with both parent- and child-rated suicidal behaviors above and beyond depression, anxiety, and loneliness [29]. It is important to examine whether SCT is uniquely associated with suicidal behaviors in college students, particularly as SCT symptoms are not currently assessed as part of any prevention, screening, or intervention efforts targeting suicide risk in college students. If, indeed, SCT symptoms are associated with college students' suicidal behaviors, these symptoms may be important for advancing such efforts.

The present study had three objectives. First, we described rates of global and specific suicidal behaviors in a sample of college students from two universities, including rates of college students meeting established cutoff criteria for suicide risk. Second, we examined sex differences in suicidal behaviors, and we tentatively hypothesized that women would generally demonstrate more suicidal behaviors than men, particularly in the domains of suicidal ideation and disclosure of ideation to others [2, 17]. Third, we examined the unique association of SCT symptoms in relation to global and specific suicidal behaviors after controlling for symptoms of depression, anxiety, and ADHD. We included separate inattentive (ADHD-IN) and hyperactive-impulsive (ADHD-HI) dimensions, though previous research has found both ADHD dimensions to similarly relate to college students' suicidal behaviors [24]. We hypothesized that neither ADHD dimension would remain significantly associated with suicidal behaviors above and beyond internalizing symptoms [30], that depression would be the strongest psychopathology correlate of suicidal behaviors [9, 14, 23], and that SCT symptoms would demonstrate a unique association with suicidal behaviors above and beyond other psychopathologies including depression [29].

Methods

Participants

Participants were 1,704 college students enrolled in two public universities in the Midwest United States. Participants ranged in age from 18 to 29 years. There were 1,099 women, 597 men, and 6 participants who indicated their sex as Other. The majority (81.7%, $n=1,388$) of participants self-identified as White; the remaining participants self-identified as Asian/Asian American (7.7%, $n=131$), Black/African American (6.1%, $n=103$), Biracial/Multiracial (4.0%, $n=68$), American Indian/Alaska Native (0.4%, $n=6$), or Native Hawaiian/Other Pacific Islander (0.1%, $n=2$). Seventy-three participants (4.3%) self-identified as Hispanic/Latino. The sex, race, and ethnicity items were not completed by 2, 6, and 2 participants, respectively. Most participants (63.4%) were in their first year of college; the remaining participants were in their second (23.6%), third (8.7%), fourth (4.0%), or other (0.2%) year of college. Descriptive information regarding sex and race/ethnicity for the two universities (general enrollment as well as study enrollment) is provided in Appendix A (Table A1).

Procedures

This study was approved by the IRB at each institution. Students enrolled in introductory psychology (general education) courses were able to participate in a research study (or studies) to fulfill a course requirement (or, alternatively, to complete an alternative assignment such as a brief paper). Students were able to choose from a number of studies and could choose to participate in this study if they were 18 years old. Participants at each institution completed the survey in Qualtrics anonymously and received course credit for participation. All participants received the contact information of the local investigator, IRB, and student counseling center.

Measures

Suicidal behaviors—The *Suicidal Behaviors Questionnaire-Revised* (SBQ-R) [13] is a four-item self-report measure assessing aspects of suicidal behavior. The SBQ-R is a validated and reliable measure that can be used to identify suicide risk and behaviors [13]. The four items assess lifetime ideation/attempt, frequency of ideation over the past 12 months, telling someone else about ideation, and likelihood of attempting suicide in the future. Table 1 provides the specific wording of the items, as well as response anchors and scoring weights which are then used to create a total suicidal behaviors score. Osman et al. [13] found a cutoff score of 7 to maximize sensitivity and specificity in identifying suicidal college students. In the present study, Cronbach's $\alpha=.82$.

Internalizing symptoms—The depression and anxiety subscales of the *Depression Anxiety Stress Scales-21* (DASS-21) [31] were used to assess internalizing symptoms. Both the anxiety and depression subscales consist of seven items, none of which focus on suicide. Items are rated using a four-point scale (0=*did not apply to me at all*, 3=*applied to me very much or most of the time*). In the present study, Cronbach's α s=.79 and .90 for anxiety and depression, respectively.

ADHD symptoms—The *Barkley Adult ADHD Rating Scale-IV* (BAARS-IV) [32] was used to assess current ADHD symptoms. The BAARS-IV includes 18 items that are consistent with the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.) symptoms of ADHD that have been updated in their wording to reflect modifications made in *DSM-5*. Items are rated on a four-point scale (1=*not at all*, 4=*very often*). In the present study, Cronbach's α s = .88 and .80 for ADHD-IN and ADHD-HI, respectively.

SCT symptoms—The *Adult Concentration Inventory* (ACI) [33] was used to assess SCT. An initial validation study with college students found support for 10 ACI items (e.g., “I daydream”, “I get lost in my thoughts”) that demonstrated convergent validity and divergent validity from both ADHD and internalizing symptoms [33]. Items are rated on a four-point scale (0=*not at all*, 3=*very often*). In the present study, Cronbach's α =.86.

Analytic Approach

Survey validity checks—To improve the quality of participant responses, we utilized an instructional manipulation check (IMC) [34], “trap questions” (e.g., “If you are paying attention, please click on the response „sometimes””), and a question at the end of the full survey that asked participants the following: “How much effort did you put into this study from 0 to 10 (0=*not much effort at all*, 5=*moderate effort*, 10=*my best effort*)?”. The IMC consists of a set of instructions and a question similar to other survey questions, but the instructions indicate that the respondent should ignore the question and click on a specific answer. Respondents were required to answer the question correctly to proceed with the survey. Such questions improve the validity of subsequent responses (see [34]) and are effective even when participants respond incorrectly to the initial IMC (i.e., they did not read the instructions carefully). To ensure the validity of responding, we set a threshold of 50% accuracy or higher for the “trap questions” and a self-reported effort rating of 5 or higher to ensure that participants were putting forth sufficient effort while also not excluding participants who might have responded inaccurately due to attention lapses or impulsive responding (e.g., those with elevated ADHD or SCT symptoms). This threshold was met by 1,708 of the 1,812 participants (94%) who completed the survey, and 1,704 of these 1,708 participants (99.8%) completed the items necessary for scoring the SBQ-R; these 1,704 participants were used in analyses.

Statistical analyses—First, descriptive statistics for the SBQ-R variables were calculated. Second, independent *t*-tests were conducted to examine whether men and women differed in their mean scores in suicidal behaviors. Cohen's *d* was computed as a measure of effect size, with 0.2 considered a small effect, 0.5 a medium effect, and 0.8 a large effect [35]. We also calculated the percentage of men and women endorsing the severe anchors on each SBQ-R item, as well as the percentage meeting the cutoff for suicide risk (total score 7); chi-square tests were used to examine whether women and men differed in their likelihood of being classified with these categorical suicidal behavior variables. Odds ratio was used as a measure of effect size, with 1.5 considered a small effect, 3.5 a medium effect, and 9.0 a large effect [35]. Third, zero-order correlation analyses were conducted to examine the correlations among the study variables. A correlation of 0.10 is considered a small effect, 0.30 is considered a medium effect, and 0.50 is considered a large effect [35]. Fourth,

hierarchical regression analyses were conducted to examine the unique effects of the mental health dimensions in relation to suicide behaviors. A hierarchical multiple regression was used to examine participant demographics and mental health dimensions in relation to SBQ-R Total Score, and a hierarchical logistic regression analysis was used to examine participant demographics and mental health dimensions in relation to the dichotomous suicide risk classification variable. Participant demographics and ADHD dimensions were entered at Step 1, anxiety and depression were entered at Step 2, and SCT was entered at Step 3. This hierarchical procedure allowed us to test (1) whether ADHD symptoms remained associated with suicidal behaviors when internalizing symptoms were also included in the model, and (2) whether SCT symptoms remained associated with suicidal behaviors above and beyond internalizing symptoms, particularly depression. We also conducted supplemental hierarchical multiple regression analyses examining each of the four individual SBQ-R items.

Results

Rates of Suicidal Behaviors in College Students

As summarized in Table 1, approximately half of participants indicated that they have never thought about suicide or attempted to kill themselves. Among the other half of participants, 4.7% reported that they had a plan at least once and really wanted to die, and 4.0% reported that they had previously attempted suicide. When asked about the past year specifically, 17.4% reported that they thought about killing themselves at least “sometimes,” with about half of these participants (7.5%) reporting that they often thought about killing themselves. Approximately 20% of participants reported ever telling someone else that they might, or were going to, commit suicide. Finally, 2.2% of participants responded that it was at least likely that they would attempt suicide someday. As shown in Table 2, approximately one-quarter (24.2%) of participants were classified with suicide risk.

A sizeable number of participants who reported a previous suicide attempt, thinking about suicide often in the past year, or a likely attempt in the future indicated that they had never told someone else that they might, or were going to, commit suicide. Specifically, 30.4% of the 69 participants who reported a previous suicide attempt reported that they had never told someone that they might or were going to commit suicide. Likewise, 41.4% of the 128 participants who reported thinking about suicide often or more frequently in the past year reported that they had never told someone that they might or were going to commit suicide. Approximately one-quarter (27.0%) of the 37 participants who reported that they would likely attempt suicide someday indicated that they had never told someone that they might or were going to commit suicide.

Sex Differences in Suicidal Behaviors and Suicidal Risk

Sex differences in suicidal behaviors and risk are summarized in Table 2, including effect sizes. Results were consistent across continuous and categorical measures of suicidal behaviors. Specifically, women had significantly higher mean scores than men on the past ideation/attempts variable and were also almost twice as likely to report a previous suicide attempt than men (4.6% and 2.7%, respectively). Women also had significantly higher mean

scores than men on the “told someone” variable, and women were approximately twice as likely as men to have told someone more than once that they were going to or might commit suicide (5.2% and 2.7% respectively). Women had significantly higher total SBQ-R scores than men and were also more likely to be classified with suicide risk (26.1% and 20.4%, respectively). These sex differences, although significant, were generally of a small effect size. In addition, women and men did not differ in their suicidal ideation in the past year or in the likelihood that they would attempt suicide in the future.

Correlation Analyses

Table 3 provides the intercorrelations and descriptive statistics of the study variables. All five mental health dimensions were significantly correlated with the suicidal behavior variables (all $p < .001$). Most effect sizes were in the moderate range, with the exceptions of both ADHD-IN and ADHD-HI symptoms having a small effect size relation with the suicide risk variable and depression symptoms being strongly correlated with the continuous suicidal behaviors variables (large effect size).

Mental Health Dimensions Uniquely Associated with Suicidal Behaviors and Suicide Risk

Results of the hierarchical multiple regression analysis of mental health dimensions in relation to the SBQ-R Total Score are summarized in Table 4. Above and beyond participant demographics (i.e., sex, race, age), ADHD-IN symptoms were significantly positively associated with the SBQ-R Total Score whereas ADHD-HI symptoms were not (Step 1). However, when internalizing symptoms were added to the model, the association between ADHD-IN and the SBQ-R Total Score was no longer significant and depression was the only mental health dimension significantly associated with increased SBQ-R Total Score (Step 2). When SCT was also added to the model, SCT emerged as a significant correlate of the SBQ-R Total Score above and beyond demographics and other mental health dimensions, including depressive symptoms, though the unique effect of SCT was small in magnitude (Step 3). Thus, while depressive symptoms were strongly associated with the SBQ-R Total Score as expected, SCT nevertheless remained significantly associated with increased SBQ-R Total Score.

Results of the hierarchical logistic regression analysis examining mental health dimensions in relation to suicide risk status are summarized in Table 5. Results are almost identical to the multiple regression analyses examining continuously-measured suicidal behaviors. ADHD-IN symptoms were only significant in Block 1 before internalizing symptoms were included in the model. When internalizing symptoms were added in Block 2, both depression and anxiety symptoms were significantly positively associated with suicide risk status. However, when SCT symptoms were added in Block 3, anxiety symptoms were no longer significantly associated with suicide risk status. In the final model, depression and SCT symptoms were both significantly, positively associated with suicide risk status, with depression having a large effect and SCT again having a small effect.

Supplemental Analyses with Individual SBQ-R Items

Results of the multiple regression analyses examining mental health dimensions in relation to the individual SBQ-R items are summarized in Appendix A (Tables A2–A5). In the final

models, depressive symptoms were the mental health dimension most strongly associated with each SBQ item (all p s<.001). SCT remained significantly associated with increased lifetime suicidal ideation/attempts (p <.001), past year suicidal ideation (p <.001), and lifetime disclosure of suicidal ideation/plan (p =.004), and marginally associated with likelihood of a future suicide attempt (p =.067). Anxiety symptoms were significantly associated only with increased lifetime disclosure of suicidal ideation/plan (p <.001). Controlling for SCT and other variables, ADHD-IN symptoms were significantly *negatively* associated with lifetime suicidal ideation/attempts (p =.008) and past year suicidal ideation (p =.047). ADHD-HI symptoms were not uniquely associated with any of the SBQ-R items.

Discussion

This study examined suicidal behaviors in a sample of college students, including sex differences and mental health correlates. This study adds to a growing body of literature documenting suicidal behaviors among a substantial minority of college students, points to sex differences in specific suicidal behaviors, and demonstrates the importance of simultaneously considering multiple psychopathologies when examining mental health correlates of suicidal behaviors. Furthermore, this is the first study to examine SCT symptoms in relation to suicidal behaviors in adults and, as hypothesized, SCT was a significant correlate of suicidal behaviors above and beyond demographic characteristics and other psychopathology symptoms, including depression.

Four percent of the current sample reported a previous suicide attempt and 7.5% reported frequent ideation in the past year. These rates are generally similar, though slightly lower, to rates reported in large-scale studies of college students [3, 4]. Although effects were generally of small magnitude, women were more likely than men to be classified with suicide risk and to report a previous suicide attempt, and women were also more likely than men to report telling someone else that they were thinking about suicide. However, women and men did not differ in past year ideation frequency or future likelihood of attempting suicide. These findings underscore the importance of specificity when examining suicidal behaviors. Another important finding is that almost half of participants who reported thinking about suicide in the past year indicated that they had never told someone they were thinking about suicide. This troubling statistic parallels other findings in the literature that most college students with suicidal ideation are not concurrently receiving treatment [14]. These findings suggest that prevention and intervention efforts cannot rely solely on the individual disclosing their thoughts about suicide to others; rather, the entire campus community must play an active role in reducing suicidal behaviors [3, 17]. For instance, in line with public health models of suicide prevention (e.g., [36]) the campus community may reduce suicidal behaviors through access to mental health and crisis services, providing social support for students at risk, and increasing individuals' ability to identify suicidal behaviors and risk in others.

A primary finding of this study is that SCT symptoms were significantly associated with increased suicidal behaviors in college students. All psychopathology dimensions considered in this study – including ADHD and anxiety – were significantly bivariately correlated with suicidal behaviors, but only depression and SCT remained significantly associated with

composite suicidal behaviors measures when the psychopathologies were considered simultaneously. These results were largely the same when examining the specific SBQ items in supplemental analyses. This finding is important for at least two reasons. First, ADHD symptoms were no longer associated with suicidal behaviors when internalizing symptoms were also considered (and in two instances negatively associated in the supplemental item-level analyses), further pointing to co-occurring symptoms as perhaps key to the relation between ADHD and suicidal behaviors [8]. Second, and particularly novel to the present study, SCT symptoms remained uniquely associated with increased suicidal risk ($OR=1.67$), even above and beyond the very strong association between depression and suicidal behaviors. Although the incremental contribution of SCT beyond that of depression was small, even small effects are important when examining complex, life-threatening behaviors such as suicide. This is particularly the case when accounting for the strong association between depressive symptoms and suicidal behaviors, since “elevated suicide ideation is not limited to college students with severe depression” [6, p. 580]. Our findings are in line with the only other study that has examined the possible link between SCT and suicidal behaviors, which found SCT symptoms to be associated with increased suicide risk in school-aged children [29]. Although it would be premature to include SCT in online campus suicide screening efforts [37] before our findings are replicated and expanded in other samples, our findings certainly point to the need for more studies examining SCT as a potentially critical mental health correlate of suicidal behaviors in college students. The Interpersonal Theory of Suicide [38] describes perceived thwarted social belongingness, perceived burdensomeness, and acquired capability for suicide as major contributors to suicide risk status. One important direction for future SCT research is to examine whether symptoms (e.g., daydreaming) or impairment (e.g., social impairment) often associated with SCT contribute to suicide risk [29]. As speculated by Becker and colleagues [29], daydreaming about suicide may contribute to desensitization to the idea of suicide (i.e., acquired capability) and social impairment may contribute to thwarted social belongingness and perceived burdensomeness. Indeed, even after controlling for symptoms of depression and other psychopathology, SCT is associated with increased social withdrawal, loneliness, and emotion dysregulation [25–27, 33]. It will be important for longitudinal research to consider these and other factors as potential mediators of the association between SCT and suicidal behaviors.

Strengths of our study include consideration of specific suicidal behaviors and psychopathologies, including examining SCT in relation to adult suicidal behaviors for the first time. Still, our study was limited by a mono-informant, cross-sectional design that cannot speak to causality. We also did not have data on other relevant variables, such as bipolar disorder symptoms, military status, mental health treatment, alcohol/substance use, or number of suicide attempts or other self-harm behaviors. We also do not know what percentage of potentially eligible participants chose to participate or whether certain students were more or less likely to participate in this study. Participants were recruited through undergraduate psychology courses and were disproportionately female and White compared to the undergraduate population in the United States as a whole [39] as well as the two universities that participated in this study (see Table A1), and, therefore, generalizing findings should be approached with caution. It will be important for future studies, with

more diverse and representative samples, to build on our findings in seeking to better understand suicidal behaviors in college students. Further, rates of suicide generally increase with age [40], and SCT may also increase with age [27], making the examination of SCT and suicidal behaviors in older age groups an important direction in future research.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Implications and Contribution

Sluggish cognitive tempo (SCT) symptoms may be an important area for consideration in future suicide prevention and intervention programming. However, replication and further study examining mechanisms of this association is warranted.

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Table 1

Frequency of Item Responses on the Suicidal Behaviors Questionnaire (SBQ-R) in College Students

Variable	% (N)
Item 1: "Have you ever thought about or attempted to kill yourself?"	
1. Never	49.5 (843)
2. It was just a brief passing thought	32.2 (548)
3a. I have had a plan at least once to kill myself but did not try to do it	9.6 (164)
3b. I have had a plan at least once to kill myself and really wanted to die	4.7 (80)
4a. I have attempted to kill myself, but did not want to die	1.8 (31)
4b. I have attempted to kill myself, and really hoped to die.	2.2 (38)
Item 2: "How often have you thought about killing yourself in the past year?"	
1. Never	66.7 (1,137)
2. Rarely (1 time)	15.9 (271)
3. Sometimes (2 or more)	9.9 (168)
4. Often (3-4 times)	4.2 (72)
5. Very often (5 or more times)	3.3 (56)
Item 3: "Have you ever told someone that you were going to commit suicide, or that you might do it?"	
1. No	79.5 (1,355)
2a. Yes, at one time, but did not really want to die	11.8 (201)
2b. Yes, at one time, and really wanted to do it	4.3 (73)
3a. Yes, more than once, and did not want to do it	2.6 (45)
3b. Yes, more than once, and really wanted to do it	1.8 (30)
Item 4: "How likely is it that you will attempt suicide someday?"	
0. Never	65.8 (1,122)
1. No chance at all	19.2 (328)
2. Rather unlikely	9.1 (155)
3. Unlikely	3.6 (62)
4. Likely	1.6 (28)
5. Rather likely	0.2 (4)
6. Very likely	0.3 (5)

Note. N = 1,704.

Table 2
Descriptive Statistics of College Students' Suicidal Behavior and Examination of Sex Differences

Continuous variables	Sex Differences			
	Full Sample (N = 1,704)	Women (N = 1,099)	Men (N = 597)	
	M ± SD	M ± SD	M ± SD	t
1. Past ideation/attempts	1.73 ± 0.83	1.77 ± 0.88	1.65 ± 0.80	2.65** 0.14
2. Ideation frequency	1.61 ± 1.04	1.65 ± 1.05	1.55 ± 1.02	1.82 0.10
3. Told someone	1.25 ± 0.53	1.27 ± 0.55	1.20 ± 0.46	3.00** 0.14
4. Future likelihood	0.58 ± 0.99	0.58 ± 1.00	0.57 ± 0.97	0.14 0.01
Total SBQ-R	5.17 ± 2.81	5.26 ± 2.87	4.97 ± 2.67	2.08* 0.10
Categorical variables	% (N)	% (N)	% (N)	χ^2 OR (95% CI)
Previous attempt ^a	4.0 (69)	4.6 (51)	2.7 (16)	3.92* 1.77 (1.00, 3.13)
Ideation often ^b	7.5 (128)	8.1 (89)	6.4 (38)	1.68 1.30 (0.87, 1.92)
Told someone more than once ^c	4.4 (75)	5.2 (57)	2.7 (16)	5.90* 1.99 (1.13, 3.49)
Future attempt likely ^d	2.2 (37)	2.5 (27)	1.7 (10)	1.11 1.48 (0.71, 3.08)
Total SBQ-R score	24.2 (413)	26.1 (287)	20.4 (122)	6.82** 1.38 (1.08, 1.75)

Note. SBQ-R = Suicidal Behaviors Questionnaires – Revised.

^aPrevious attempt was scored 1 if on SBQ-R Item 1 the participant endorsed either option 4a or 4b (see Table 1).

^bIdeation often was scored 1 if on SBQ-R Item 2 the participant endorsed either option 4 or 5 (see Table 1).

^cTold someone more than once was scored 1 if on SBQ-R Item 3 the participant endorsed either option 3a or 3b (see Table 1).

^dFuture attempt likely was scored 1 if on SBQ-R Item 4 the participant endorsed option 4, 5, or 6 (see Table 1).

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3

Intercorrelations and Descriptive Statistics of Study Variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Sex	–									
2. Race	.01	–								
3. Age	–.17***	–.06**	–							
4. ADHD–IN	–.02	–.06**	.04	–						
5. ADHD–HI	.02	.04	.03	.49***	–					
6. Anxiety	.07**	–.04	–.04	.53***	.45***	–				
7. Depression	–.01	–.06*	.01	.53***	.30***	.63***	–			
8. SCT	.10***	–.02	–.02	.72***	.42***	.52***	.53***	–		
9. SBQ Total	.05*	–.04	–.01	.31***	.20***	.38***	.55***	.37***	–	
10. SBQ	.06**	–.05	–.01	.24***	.16***	.33***	.44***	.30***	.84***	–
<i>Mean</i>	–	–	18.98	1.70	1.71	0.51	0.57	1.20	5.17	–
<i>SD</i>	–	–	1.26	0.53	0.49	0.51	0.62	0.56	2.81	–
<i>Min/Max</i>	–	–	18–29	1–4	1–3.9	0–3	0–3	0–3	3–18	–
<i>Skewness</i>	–	–	2.46	1.05	0.92	1.38	1.43	0.65	1.61	–
<i>Kurtosis</i>	–	–	10.24	1.28	0.85	1.81	1.74	0.42	2.46	–

Note. *N* = 1,704. For sex, 0 = male, 1 = female. For race, 0 = non-White, 1 = White. For suicide status, 0 = not at risk, 1 = at risk. ADHD = attention-deficit/hyperactivity disorder. HI = hyperactivity-impulsivity. IN = inattention. SBQ = Suicidal Behavior Questionnaire-Revised. SCT = sluggish cognitive tempo.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4

Hierarchical Regression Analysis Examining ADHD, Internalizing, and SCT Symptoms in Relation to Suicidal Behaviors in College Students

	Step 1				Step 2				Step 3			
	B	SE	β	T	B	SE	β	T	B	SE	β	T
	$F(6,1691) = 32.73^{***}, R^2 = .10$				$F(2,1689) = 242.20^{***}, R^2 = .30, R^2 = .20$				$F(1,1688) = 17.47^{***}, R^2 = .31, R^2 = .01$			
Age	-.03	.05	-.01	-.53	-.01	.05	-.01	-.25	-.01	.05	.00	-.14
Sex (Female)	.31	.14	.05	2.27*	.29	.12	.05	2.43*	.22	.12	.04	1.81
Sex (Other)	1.26	1.09	.03	1.16	1.43	.97	.03	1.48	1.15	.96	.02	1.19
Race	-.19	.17	-.03	-1.12	-.06	.15	-.01	-.40	-.08	.15	-.01	-.56
ADHD-IN	1.51	.14	.29	10.84***	.09	.14	.02	.67	-.29	.17	-.05	-1.72
ADHD-HI	-.03	.15	.05	1.74	.02	.14	.00	.14	-.01	.14	.00	-.10
Anxiety	-	-	-	-	.28	.16	.05	1.78	.22	.16	.04	1.38
Depression	-	-	-	-	2.28	.13	.50	18.20***	2.19	.13	.48	17.27***
SCT	-	-	-	-	-	-	-	-	.64	.15	.13	4.18***

Note. For sex (female), 0 = male/other, 1 = female. For sex (other), 0 = male/female, 1 = other. For race, 0 = non-White, 1 = White. ADHD = attention-deficit/hyperactivity disorder. HI = hyperactivity-impulsivity. IN = inattention. SBQ = Suicidal Behavior Questionnaire-Revised. SCT = sluggish cognitive tempo.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5

Hierarchical Logistic Regression Analysis Examining ADHD, Internalizing, and SCT Symptoms in Relation to Suicide Risk Status in College Students

	Block 1				Block 2				Block 3			
	B	SE	Wald	OR (Exp β) (95% CI)	B	SE	Wald	OR (Exp β) (95% CI)	B	SE	Wald	OR (Exp β) (95% CI)
	$\chi^2(6) = 109.04, p < .001, \text{Nagel. } R^2 = .09$				$\chi^2(2) = 213.65, p < .001, \text{Nagel. } R^2 = .26$				$\chi^2(1) = 9.37, p = .002, \text{Nagel. } R^2 = .27$			
Sex (Female)	-.35	.13	7.39**	.70 (0.55, 0.91)	-.39	.14	7.81**	.68 (0.51, 0.89)	-.34	.14	5.54*	.72 (0.54, 0.95)
Sex (Other)	.25	.83	0.09	1.29 (0.25, 6.59)	.41	.88	.21	1.50 (0.27, 8.42)	.25	.88	.08	1.29 (0.23, 7.21)
Race	-.23	.15	2.39	0.80 (0.60, 1.06)	-.15	.16	.92	.86 (0.62, 1.17)	-.17	.16	1.10	.84 (0.61, 1.16)
Age	-.03	.05	0.29	0.97 (0.89, 1.07)	-.02	.05	.09	.98 (0.89, 1.09)	-.01	.05	.05	.99 (0.89, 1.10)
ADHD-IN	.90	.12	55.31***	2.46 (1.94, 3.13)	.00	.15	.00	1.00 (0.75, 1.35)	-.30	.18	2.80	.74 (0.52, 1.05)
ADHD-HI	.24	.13	3.04	1.28 (0.99, 1.65)	.04	.15	.09	1.05 (0.78, 1.40)	.02	.15	.02	1.02 (0.76, 1.38)
Anxiety	-	-	-	-	.35	.16	4.71*	1.42 (1.03, 1.94)	.30	.16	3.46	1.35 (0.98, 1.86)
Depression	-	-	-	-	1.45	.13	122.06***	4.27 (3.30, 5.52)	1.39	.13	109.23***	4.00 (3.09, 5.29)
SCT	-	-	-	-	-	-	-	-	.51	.17	9.36**	1.67 (1.20, 2.32)

Note. For sex (female), 0 = male/other, 1 = female. For sex (other), 0 = male/female, 1 = other. For race, 0 = non-White, 1 = White. For suicide status, 0 = not at risk, 1 = at risk. ADHD = attention-deficit/hyperactivity disorder. HI = hyperactivity-impulsivity. IN = inattention. Nagel. = Nagelkerke. OR = odds ratio. SBQ = Suicidal Behavior Questionnaire-Revised. SCT = sluggish cognitive tempo.

* $p < .05$.

** $p < .01$.

*** $p < .001$.