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Differences in Suicide Risk Severity Among Suicidal Youth With Anxiety Disorders

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Abstract. *Background:* Adolescent suicidality is a growing public health concern. Although evidence supports a link between anxiety and suicidality, little is known about risk associated with specific anxiety disorders. *Aims:* This study examined the prevalence of anxiety disorders in a sample of adolescents with depression and suicidal ideation and the associations between specific anxiety disorders and suicide ideation severity and attempt history. *Method:* The sample consisted of 115 adolescents ($M_{\text{age}} = 14.96$ years; 55.8% African American) entering a clinical trial for suicidal ideation and depressive symptoms. Prior to treatment, adolescents completed self-report and interview measures. *Results:* In all, 48% of the sample met criteria for an anxiety disorder, 22% met criteria for social anxiety disorder (SAD), and 40% met criteria for major depressive disorder (MDD). SAD was uniquely associated with more severe suicidal ideation. *Limitations:* Findings may not generalize to all suicidal adolescents, and non-measured variables may account for the observed relationships. *Conclusion:* Future research should examine whether targeting social anxiety would improve treatment response for suicidal adolescents.

Keywords: child/adolescent, suicide, depression, anxiety, social anxiety disorder

Suicide is the second leading cause of death among adolescents and young adults (Centers for Disease Control and Prevention, 2015). Approximately one in five high school students seriously considers suicide (Kann et al., 2014). Given the high rates of suicidality among adolescents, more research is needed to better understand risk factors of teen suicide. Suicidal ideation severity and prior suicide attempt are among the strongest predictors of future attempts (Brown, Beck, Steer, & Grisham, 2000; Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Youth who meet criteria for a psychiatric disorder are also at higher risk of suicide, with major depressive disorder (MDD) being the most common disorder among those who attempt (Gould et al., 1998) and die by suicide (Brent et al., 1993). Still, the presence of MDD does not differentiate ideators from attempters (Herres, Kodish, Fein, & Diamond, 2018; McManama O'Brien, Becker, Spirito, Simon, & Prinstein, 2014). Thus, other disorders may provide more specificity in the differentiation of suicide risk severity among suicidal adolescents.

Although the majority of suicidal adolescents meet criteria for a psychiatric disorder, not all have MDD (Nock

et al., 2013), which highlights the importance of examining risk associated with other disorders, including anxiety (e.g., O'Neil, Puleo, Benjamin, Podell, & Kendall, 2012). Anxiety disorders, which affect approximately one third of all adolescents (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012), are associated with suicidality (Antar & Hollander, 2012; Nepon, Belik, Bolton, & Sareen, 2010). Overwhelming evidence shows that individuals with anxiety disorders are more likely to contemplate and attempt suicide than controls with non-anxiety disorders (see Bentley et al., 2016, and Kanwar et al., 2013, for reviews). The association between anxiety disorders and suicidality holds even when accounting for comorbid depression (e.g., Raposo, El-Gabalawy, Erickson, Mackenzie, & Sareen, 2014) and life stressors (Boden, Fergusson, & Horwood, 2007). Finally, anxiety diagnoses predict future ideation and attempts (Sareen et al., 2005). Interestingly, cognitive behavioral therapy for youth anxiety has been shown to reduce the risk of suicidality in adulthood (Wolk, Kendall, & Beidas, 2015).

Despite evidence of an association between anxiety and suicidality, few studies have examined this relationship

in clinical samples of suicidal youth (Strauss et al., 2000). Focusing on suicide risk severity among a suicidal sample could help identify individuals at highest risk of suicide (Witte, Holm-Denoma, Zuromski, Gauthier, & Ruscio, 2017). In addition, while current treatment of suicidality largely focuses on the management of depression (Devenish, Berk, & Lewis, 2016), delineating the unique contributions of anxiety disorders may improve intervention efforts by informing strategies that target a broader range of symptoms. While evidence shows a clear link between anxiety and suicidality, it is unclear whether unique diagnostic presentations of anxiety can differentiate suicide risk severity among a sample of suicidal adolescents.

Some research has begun to focus on suicide risk associated with specific anxiety disorders. For instance, social anxiety disorder (SAD), generalized anxiety disorder (GAD), and panic disorder (PD) are associated with higher suicidal ideation in adults and SAD and GAD are associated with prior suicide attempt (Cougler, Keough, Riccardi, & Sachs-Ericsson, 2009). However, studies of the association between suicidality and particular subtypes of anxiety in youth have yielded mixed results. In one study of psychiatrically hospitalized youth, symptoms of SAD predicted suicidal ideation 18 months later (Gallagher, Prinstein, Simon, & Spirito, 2014). Conversely, Strauss et al. (2000) did not find any difference in the rates of SAD between adolescent ideators and nonideators. However, they did find that a diagnosis of GAD was more prevalent among ideators. These conflicting findings and the general paucity of research on the association between specific anxiety diagnoses and adolescent suicidality underscore the need for additional research in high-risk samples. Thus, this study attempted to address these gaps by differentiating suicide risk severity based on the presence of specific anxiety disorders.

The first aim of this study was to describe the prevalence and range of anxiety disorders in a sample of adolescents with suicidal ideation and depressive symptoms. Second, we examined whether specific anxiety diagnoses predicted suicidal ideation severity and/or history of suicide attempt, while controlling for the presence of MDD. We hypothesized that all anxiety disorders would be associated with higher suicidality, while exploring differential risk associated with specific subtypes of anxiety. Since the mental health profession often relies on a categorical, diagnostic model of psychiatric illness, a more thorough investigation of the relationship between specific disorders and suicidality may yield useful information for suicide prevention and intervention. Further, understanding the differential impact of different anxiety disorders might help treatment providers better identify and prepare to treat patients at the highest risk of suicide.

Method

Participants

The sample included 115 adolescents ($M_{\text{age}} = 14.91$ years, $SD_{\text{age}} = 1.65$, 82% female) in a randomized control trial of youth with depression and suicidal ideation (Diamond et al., 2018). Only baseline data collected prior to treatment were included in this study. Participants identified as 55.9% African American, 30.6% White, 6.3% American Indian/Alaskan Native, 2.7% Asian, and 12.4% other; 16.2% identified as Hispanic/Latino. In total, 42% of the participants reported at least one prior suicide attempt. Participants were recruited from primary care centers, emergency departments, outpatient facilities, inpatient hospitals, schools, churches, and the general community. Institutional Review Boards approved the study protocol. Participants 18 years or older provided written informed consent, and participants younger than 18 provided assent in addition to parental consent.

Procedures

Eligibility for the study included suicidal ideation (Suicidal Ideation Questionnaire-Junior; SIQ-JR > 31) and depressive symptoms (Beck Depression Inventory; BDI-II > 20) at two consecutive pretreatment assessments. At least one primary caregiver was also required to participate. Exclusion criteria included: (a) evidence of imminent risk of harm to self or others that could not be safely treated on an outpatient basis; (b) evidence of psychotic features; (c) severe cognitive impairment; and (d) having a non-English-speaking parent participant. Additionally, participants could not have begun medication within 3 weeks of intake.

The current study used self-report and interview data collected at the intake assessment, which typically occurred within 1 week of prescreening, and a diagnostic phone interview, which typically occurred a few days after intake to reduce the length and burden of the baseline assessment. Of the 129 participants who completed the intake assessment, four could not be reached within 2 weeks to complete the phone interview. Additionally, nine were either withdrawn from the study or lost to follow-up immediately after their baseline assessment; one participant experienced software malfunctioning during the interview. There were no significant differences in demographic variables, suicidal ideation, and depressive symptoms between those who did and did not complete the phone interview.

Measures

Demographics

Demographic questionnaires were used to assess adolescents' date of birth, gender, race/ethnicity, and per capita family income. An income-to-needs ratio was calculated by dividing the per capita family income by the per capita federal poverty standard for the assessment year (1.0 represents the poverty line).

Computerized-Diagnostic Interview Schedule for Children (C-DISC)

The C-DISC (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) is a fully structured diagnostic instrument that assesses 36 childhood diagnoses. For this study, the C-DISC, which took an average of 90–120 min to complete, was administered via a phone interview by a trained interviewer. This study focused on past-year diagnoses of GAD, PD and/or agoraphobia, separation anxiety disorder, and SAD. The C-DISC has high reliability in clinical and community samples (α values ≥ 0.6).

Suicidal Ideation Questionnaire (SIQ-JR)

The Suicidal Ideation Questionnaire-Junior (SIQ-JR; Reynolds & Mazza, 1999) is a 15-item measure that assesses suicidal thoughts during the past month. Items ranged from questions about nonsuicidal morbid ideation (e.g., "I thought about people dying") to active suicidal ideation (e.g., "I thought about how I would kill myself"). Participants rated items on a scale from 0 (*never had this thought*) to 6 (*almost every day*). Ratings were summed to create a total score, ranging from 0 to 90 (with scores of 0–19, 20–29, and >30 indicating normative, elevated, and high levels of

suicidal ideation, respectively). This measure had good internal consistency in the current sample ($\alpha = .86$).

Columbia-Suicide Severity Rating Scale (C-SSRS)

The C-SSRS (Posner et al., 2011) is a clinical interview that assesses suicidal ideation and behavior. A single item measured whether participants had attempted suicide at any time during their life (defined as steps taken to harm oneself with intent to die). The sample reported a range of 0 to 10 attempts ($M = 1.01, SD = 2.01$), with 44% ($n = 51$) of participants reporting at least one attempt.

Data Analysis

Analyses were conducted using SPSS version 23. First, we examined the prevalence of each disorder and tested correlations among suicidal ideation, attempt history, diagnoses, and demographic variables (age, gender, racial/ethnic minority status, and income-to-needs ratio). Dichotomous variables were dummy coded 0/1. Analysis of covariance (ANCOVA) was used to examine whether participants diagnosed with specific anxiety disorders reported higher levels of suicidal ideation, controlling for demographic variables. Next, we applied logistic regression to examine whether specific anxiety diagnoses predicted a history of suicide attempt(s), with demographic controls.

Results

Approximately half of the sample met criteria for an anxiety disorder (47.8%; $n = 55$), 40% ($n = 46$) met criteria for

Table 1. Descriptive statistics and bivariate correlations among study variables ($N = 115$)

| | <i>M (SD)/%</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--------------------------------------|-----------------|-------|------|-------|-------|-------|------|------|------|------|--------|
| 1 Suicidal ideation severity | 49.97 (15.28) | – | | | | | | | | | |
| 2 Suicide attempt (0 = no) | 40.0% | .27** | – | | | | | | | | |
| 3 Social anxiety disorder | 24.0% | .21* | .03 | – | | | | | | | |
| 4 Separation anxiety disorder | 13.0% | .08 | .11 | .20* | – | | | | | | |
| 5 Panic disorder and/or agoraphobia | 31.3% | .05 | .1 | .27** | .46** | – | | | | | |
| 6 Generalized anxiety disorder | 8.7% | .20* | .13 | .18* | .25** | .06 | – | | | | |
| 7 Major depressive disorder | 40.0% | .12 | .02 | .28** | .26** | .37** | .19* | – | | | |
| 8 Age | 14.91 (1.65) | .09 | .03 | –.01 | .12 | .14 | .11 | .21* | – | | |
| 9 Gender (0 = female) | 16.5% | –.00 | –.03 | –.03 | .11 | .00 | –.05 | –.12 | –.05 | – | |
| 10 Minority (0 = non-Hispanic White) | 70.4% | .04 | –.05 | –.17 | .08 | –.06 | .00 | –.13 | –.13 | .03 | – |
| 11 Income-to-needs ratio | 2.13 (1.46) | –.07 | –.03 | .15 | –.16 | –.11 | .03 | .22* | –.03 | –.02 | –.46** |

Note. Disorders were coded 1 for past-year diagnosis. The phi coefficient tested the correlation between two dichotomous variables; point-biserial correlation tested the relationship between a dichotomous variable and a continuous variable.

* $p < .05$. ** $p < .01$.

Table 2. Results comparing suicidal ideation (ANCOVA) and history of suicide attempt (logistic regression) for participants with and without anxiety diagnoses ($N = 115$)

| | Ideation | | Attempt | | | | |
|-----------------------------------|----------|----------|----------|-----------|------|----------|-----------------|
| | <i>F</i> | <i>p</i> | <i>B</i> | <i>SE</i> | Wald | <i>p</i> | Exp(<i>B</i>) |
| Generalized anxiety disorder | 2.66 | .11 | 0.79 | 0.72 | 1.20 | 0.27 | 2.20 |
| Social anxiety disorder | 4.39 | .038 | -0.05 | 0.50 | 0.01 | 0.93 | 0.96 |
| Separation anxiety disorder | .04 | .83 | 0.32 | 0.67 | 0.22 | 0.64 | 1.37 |
| Panic disorder and/or agoraphobia | .04 | .84 | 0.26 | 0.49 | 0.29 | 0.59 | 1.30 |

MDD, and 29.57% ($n = 34$) met criteria for both anxiety and MDD. Table 1 lists descriptive statistics for all study variables, including the prevalence of each disorder, as well as correlations among the study variables. SAD and GAD were associated with more severe ideation. Correlations among the disorders indicated a moderate degree of comorbidity in the sample. Of the diagnoses, only MDD was correlated with demographics; participants with MDD were likely to be older and from higher-income families.

Mean differences in suicidal ideation for those who did and did not meet criteria for each disorder were tested with an ANCOVA, controlling for demographics ($\eta^2 = .09$). As shown in Table 2, participants who met criteria for SAD ($n = 28$) reported more severe ideation ($M = 55.68$, $SD = 15.08$) than those without SAD did ($M = 48.13$, $SD = 14.97$); this difference remained significant even when MDD was included in the model ($F = 3.99$, $p = .048$). There were no differences in ideation severity for the other anxiety disorders or for MDD. Logistic regression showed that none of the anxiety diagnoses were associated with a prior suicide attempt (see Table 2).

Discussion

There is clear evidence that psychiatric disorders, including anxiety disorders, are associated with higher risk of adolescent suicide (Nock et al., 2013). The current study adds to this literature by demonstrating differences in suicide risk severity across specific diagnostic categories. Although our inclusion criteria required participants to endorse both suicidal ideation and at least moderate levels of depressive symptoms, only 40% ($n = 34$) of our sample met criteria for MDD, while almost half met criteria for an anxiety disorder (47.8%; $n = 55$). Moreover, findings showed that participants with SAD reported more severe suicidal ideation, even when controlling for comorbid MDD, suggesting that social anxiety denotes a unique risk of suicide (Brown et al., 2000).

Several theories can explain the association between SAD and suicidality. The increased risk of suicide among adolescents with social anxiety is consistent with the in-

terpersonal theory of suicide (Joiner, 2005). According to this model, thwarted belongingness and perceived burdensomeness are two key factors associated with risk of suicide. Youth with SAD are likely to experience particular problems forming and maintaining interpersonal relationships, which may lead to feelings of loneliness and a poor sense of belonging (Gallagher et al., 2014). Indeed, some studies suggest that socially anxious youth experience higher rates of thwarted belongingness, which, in turn, predicts elevated suicidal ideation (Davidson, Wingate, Grant, Judah, & Mills, 2011; Gallagher et al., 2014). Similarly, socially anxious youth may experience social isolation and peer victimization, which may be an alternative pathway to elevated suicidal thoughts (Kodish et al., 2016; Torgrud et al., 2004; Winfree & Jiang, 2010).

Emotion dysregulation and experiential avoidance offer more general explanations for the overlap between anxiety and suicidality. Emotion dysregulation, characterized by difficulties labeling, understanding, and coping with one's emotions, has been associated with a wide range of psychiatric problems in adolescents (Weinberg & Klonsky, 2009). For instance, dysregulation of emotion is considered a key process in the development and maintenance of anxiety disorders (Amstadter, 2008) and may be an important precursor to suicidal ideation and behavior (Rajappa, Gallagher, & Miranda, 2012). In particular, SAD is marked by specific deficits in emotion regulation (Rusch, Westermann, & Lincoln, 2012). Future research examining whether emotion dysregulation explains risk of suicidality among youth with SAD could provide important information to guide the development of targeted programs for reducing suicide risk among adolescents.

Experiential avoidance of aversive or anxiety-provoking situations may also explain the association between anxiety and suicidality (Hayes, Pankey, Gifford, Batten, & Quinones, 2002). Indeed, adolescents who attempt suicide commonly endorse "relief from a terrible state of mind" and "to escape from an impossible situation" as reasons for attempting suicide (Boergers, Spirito, & Donaldson, 1998, p. 1289). These findings underscore that a desire to escape or obtain relief from distress underlies many adolescent suicide attempts. Distress avoidance is also a key feature of anxiety. Paradoxically, efforts to avoid

or suppress unwanted negative emotions increase distress in the long run (Hayes et al., 2002), and emotional suppression has been linked to suicidal ideation and attempts, even when controlling for depressive symptoms (Kaplow, Gipson, Horwitz, Burch, & King, 2014). Future research should examine whether anxious youth turn to suicide as the ultimate form of avoiding or escaping distress after other (often maladaptive) efforts to relieve distress have failed (Sareen et al., 2005).

Limitations

This study has several limitations. First, we were unable to determine whether a diagnosis of anxiety or depression causes suicidality owing to the cross-sectional nature of the study. Additionally, the number of participants with GAD may have been too small to detect significant differences in suicide risk severity for this specific disorder. Further, our study focused on anxiety disorders and did not consider other disorders or associated symptoms that might also increase one's susceptibility to suicide, such as substance use (Serafini et al., 2012), body dysmorphic disorder (Phillips et al., 2005), or disorders previously classified under the anxiety umbrella (Kanwar et al., 2013).

Strengths of this study include the racial/ethnic diversity of the sample, as well as the use of a wide array of recruitment sources. However, this may limit the generalizability of the findings to other populations, such as adolescents receiving inpatient care owing to a more imminent risk of suicide. Thus, we cannot draw conclusions about how anxiety disorders are associated with suicidality among individuals falling outside of our eligibility criteria. Further, given that moderate-to-severe depressive symptoms were part of the inclusionary criteria, rates of MDD and anxiety disorders may have been inflated in the sample. Additionally, the strength of some associations may have been reduced because of a restriction in the range of suicidal ideation and depressive symptoms.

Conclusion

Despite limitations, this study contributes important information about the relationships between anxiety disorders and suicidality. Our results support SAD as a specific correlate of suicidal ideation severity among suicidal adolescents. The independent association between SAD and suicidal ideation suggests that targeting SAD symptoms may be particularly beneficial when treating suicidal adolescents. Treatment for SAD could confer long-term pro-

tection against suicidality by increasing feelings of belongingness and removing obstacles to seeking social support. Clinicians working with suicidal youth should screen for SAD and incorporate evidence-based techniques for addressing this form of anxiety, such as exposure to feared social experiences and acceptance strategies. In addition, suicidality should be regularly monitored in socially anxious youth. Finally, future research might consider whether suicidal adolescents with SAD show poorer treatment response.

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