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Mental Health Symptomatology and Exposure to Non-Fatal Suicidal Behavior: Factors That Predict Vulnerability and Resilience Among College Students

Jamison S. Bottomley, Seth Abrutyn, Melissa A. Smigelsky, and Robert A. Neimeyer

Despite efforts to identify risk factors following exposure to completed suicide, research has paid less attention to the associations between exposure to non-fatal suicide behavior (NFSB) and mental health symptomatology—factors that may underlie one’s susceptibility to future suicidal thoughts and behaviors. This study examined differences in mental health symptomatology among 192 college students exposed to NFSB and 202 exposed to general stressors. Results indicated that students exposed to NFSB had significantly higher levels of depression and anxiety compared to those exposed to a variety of other stressors but not NFSB. Furthermore, among those exposed, a number of risk and protective factors emerged in relation to psychological sequelae, such as emotional stability, social support, and the quality of the relationship between the exposed and suicidal individual. These findings highlight the importance of enhancing provisions of support for those exposed to NFSB.

Keywords college student, non-fatal suicidal behavior, risk factor, stressor

For five decades, research has consistently demonstrated a positive association between being exposed to someone’s suicidality and the exposed individual being at risk of suicidal thoughts and/or behaviors (Gould, 2001; Pirkis & Blood, 2001; Stack, 2005,

2009). At first, this research was limited to the effect of suicide deaths of celebrities and, to a lesser extent, political figures when publicized by the media: both real and fictive suicides tend to increase the suicide rate of the audience exposed by about 2.5% on average and much more so for deaths of famous people (for a review, see Stack 2005, 2009). So compelling is the evidence that the Center for Disease

Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/usui.

Control and Prevention (CDC; O'Carroll & Potter, 1994) adopted guidelines for how newspapers and other media should report suicides, which appear to be effective at reducing the resulting suicide rate among those exposed. Eventually, a compelling body of research has emerged demonstrating that, in particular, youth who are exposed to a family member or friend's suicidal thoughts or behavior are more likely to have suicidal thoughts themselves (Abrutyn and Mueller, 2014a; Bearman & Moody, 2004; Farberow, Gallagher, Gilewski, & Thompson, 1987; Niederkrotenthaler et al., 2012; Thorlindsson & Bjarnason, 1998; Tishler & McKenry, 1981), though this research has not explained *how* and *why* suicide may be "contagious." This gap in the literature likely stems in part from a dearth of data, given the fact that suicide is a relatively rare event. However, suicide attempts, ideation, self-harm behaviors more generally, and even mental health symptomatology are far more common, and could easily serve as proxies for suicide completions (Beautrais, 2000; Harris, 1997).

In part, the gap in understanding how and why suicides might spread is a function of both theory and skepticism. In his classic sociological treatise, Durkheim (1897 [1951]) famously rejected the idea that contagion was sociologically relevant, unknowingly delimiting the parameters for several generations of suicide scholarship (Wray, Colen, & Pescosolido 2011). The question of whether suicide spreads remains challenged among some suicide scholars even today (Joiner, 2005). Consequently, when tasked with explaining suicide contagion, scholars have fallen back on untested theoretical arguments that begin with Gabriel Tarde's (1903) work on imitation, suggestion, and contagion (Abrutyn & Mueller, 2014b). To add further depth to the vague mechanisms proposed by Tarde, many scholars have called on theories of behavioral transmission, such

as differential association/identification (Akers & Jensen, 2006) and social learning theory (Bandura, 1977). In short, the basic mechanism theoretically derives from a sociocultural version of rational-choice theory: individuals exposed to suicidality learn the rewards and costs of suicidal behavior based on whether they identify with the model and adopt or reject the behavior depending on the "balance sheet" (Baller & Richardson, 2009; Stack, 1990). More recently, Mueller and Abrutyn (2015) found that modeling was more than just observation: in a longitudinal study, disclosure about one's suicidality was most important for the adoption of *new* suicidal attitudes and behaviors. While this stream of research has made an important contribution to the larger scholarship on suicide contagion, several gaps remain. Specifically, what other consequences arise from being exposed to suicidal behavior that may further pave the way for the spread of suicidality?

In this study, we contribute to this broader literature by analyzing original data concerning young adults exposed to non-fatal suicide behavior (NFSB¹) and a comparison group of individuals exposed to a variety of moderate stressors to examine how exposure to NFSB could independently predict symptoms of depression, anxiety, and post-traumatic stress disorder (PTSD). Research consistently has shown that all three of these mental health concerns are strongly associated with increased suicide risk (Beautrais, 2000; Bentley et al., 2016; Brown, Beck, Steer, & Grisham, 2000), and as such, it is important to understand whether exposure to NFSB heightens vulnerability to these symptoms and thereby increases susceptibility to adopting suicidal behaviors. Furthermore, the period of young adulthood serves as a rich time developmentally, and due to a

¹NFSB includes suicidal ideation, suicidal plans, and suicide attempts (Nock et al., 2008).

confluence of a number of features of this epoch, such as sexual maturity, educational and vocational aspirations, autonomy, and substance abuse, to name a few, young adults have been identified as having a greater vulnerability for the development of mental health concerns and suicidality (Patel, Flisher, Hetrick, & McGorry, 2007). Therefore, it is imperative that the relationship between exposure to NFSB and mental health symptoms be examined in such a population. To our knowledge, Hazell and Lewin's (1993) investigation of differing levels of exposure and coexisting psychopathology was the first study to examine the initial link in this theorized causal chain. Given that psychopathology, namely depression, anxiety, and PTSD, is a known risk factor for suicide, the differences in psychiatric symptomatology between those exposed and not exposed to NFSB are well worth exploring.

THE IDEA OF BEHAVIORAL CONTAGION

The notion that behaviors, attitudes, and emotions spread is an old one that has gained empirical (Christakis & Fowler, 2013) and pop cultural (Gladwell, 2000) currency in recent years. Health risk factors and behavior, like obesity and smoking, respectively (Christakis & Fowler 2007, 2008), mass attitudes like hysteria (Bartholemew & Goode, 2000), and various types of emotions (Cooper & Hogg, 2007; Hatfield, Rapson, & Le, 2009) have all been found to be contagious across social relationships or within networks. Not surprisingly, suicide, as a social act replete with meanings that must be learned, also has been found to spread.

The earliest research on suicide suggestion or contagion found a strong positive association between the publicizing of celebrity suicides and a subsequent—albeit temporary—increase in suicide rates among

the audience exposed to the particular media source (Phillips, 1974; Stack, 1987). Ultimately, the higher status the celebrity, the greater and longer lasting the exposure, and, therefore, the greater the spike in rates—e.g., Marilyn Monroe's suicide was followed by a 13% and 10% spike in U.S. and British suicides, respectively (Phillips, 1974). Over the next four decades, using increasingly conservative statistical tests, this link has been consistently confirmed (e.g., Romer, Jamieson, & Jamieson, 2006). Likewise, a less conclusive though no less important association has been found between exposure to *fictive* suicides and significant increases in audience suicide rates (Schmidtke & Häfner, 1988; Stack, 2009). The main criticism of media contagion research is that it is nearly impossible to establish a causal relationship between the celebrity's suicide and the individual audience suicides that occur afterward. In part, this is a limitation of the data: population- or aggregate-level data cannot tell us why or how suicides occur.²

Thus, researchers increasingly have turned their attention to the effect that personal role models, like friends or family, have on those exposed to their attitudes or behavior. Since the 1980s, an association has been found between the suicidal attitudes or behaviors of a role model and suicidal thoughts in those exposed to the person (Bearman & Moody, 2004; Thorlindsson & Bjarnason, 1998; Tishler, 1981). Though this research has generally been confined to children (Niederkrötenhaler et al., 2012) and adolescents (Baller & Richardson, 2009), some evidence for contagion among older age

²To our knowledge, there has only been one study that showed a true "copycat" effect: when a how-to book was published on suicide, a significant spike in suicides by the prescribed method occurred; among 25% of the suicides, the book was found in the apartment or home of the decedent (Marzuk et al., 1993).

cohorts, like young adults, does exist (Mueller, Abrutyn, & Stockton, 2015). Moreover, recent research using longitudinal data found that adolescents with no previous suicidal history can develop new suicidal thoughts and, for girls in particular, new suicidal behaviors (Abrutyn & Mueller, 2014a).

Building on this line of research, Mueller and Abrutyn (2015) used similar data to begin teasing out *why* and *how* suicides spread. Though they found no evidence for selection or emotional contagion, they did show that contagion was not mere imitation, but rather required the interaction between the exposed and the friend who had attempted suicide; that is, the spread of suicide depends on disclosure in order for new behaviors or attitudes to develop. Yet these new discoveries in suicide contagion research have raised more questions than they have answered. For instance, though Mueller and Abrutyn found that emotional distress 5 years after exposure mattered for an individual's suicidality, they did not examine the spread of specific mental health symptoms, or how these might shape future suicidal behaviors. As such, whether we can more precisely understand what sorts of intra-personal consequences of exposure matter for the spread of suicide to occur remains an open question.

EXPOSURE TO SUICIDE, ASSOCIATED MENTAL HEALTH SYMPTOMS, AND SUICIDALITY

Research in the field of suicide bereavement has shed some light on the consequences of exposure to suicide and revealed that losing a close other to suicide ushers in a very specific and often arduous bereavement experience, marked by heightened levels of psychiatric symptomatology (Pitman, Osborn, King, & Erlangsen, 2014; Svein & Walby, 2008) and punctuated with

thematic emotional elements such as guilt, shame, and rejection (Bartik, Maple, Edwards, & Kiernan, 2013; Jordan 2001). There is little doubt that among the panoply of reactions associated with exposure to suicide, vulnerability for subsequent suicide is greatly increased in the exposed individual, likely due to a combination of interpersonal and intrapersonal factors, such as social learning and heightened psychiatric symptoms, respectively (Beautrais, 2000). For example, a recent review that examined the body of evidence for suicide risk among those exposed to the suicidal behavior of others not genetically related further indicated that the risk of suicidal behaviors is significantly higher among those exposed to suicidal behavior than those not exposed (Maple, Cerel, Sanford, Pearce, & Jordan, 2016). Although this review was comprehensive and compelling, Maple et al. (2016), along with the vast majority of other studies that examine the heightened risk for suicide among the suicide-exposed, failed to demarcate effects based on levels of exposure, such as exclusively examining the psychological distress associated with exposure to NFSB—an experience that is all too common for emerging adults.

For decades, research has examined the prevalence of exposure to suicide attempts and ideation, particularly among college students. One of the earliest studies found that the vast majority of college students (90.7%) knew someone who had attempted suicide or expressed suicidal ideation at some point in their lives (Mishara, 1982). A more recent survey of college students from four universities throughout the United States indicated that over 40% of students knew someone who had attempted suicide during their college enrollment (Westefeld et al., 2005). Similarly, other studies have indicated that many adolescents and young adults are exposed to attempted suicide, with upwards of 60% having known

someone who attempted suicide at any point (Resnick et al., 1997). Given the social environment of college campuses, it is likely that exposure to NFSB during the formative years of college may have a profound effect on friends, roommates, hall-mates, fraternity/sorority members, and fellow classmates (Cerel, Bolin, & Moore, 2013). Moreover, young adults are more likely to have mental health concerns during this developmental period that, when coupled with exposure to NFSB, might exacerbate their symptoms and leave them vulnerable to the development of suicidal thoughts and behaviors (Patel et al., 2007). However, the potential psychiatric sequelae that may follow exposure to NFSB, factors that have been considered salient risk factors for suicide, have yet to be empirically explored. Given that young adults are an age cohort that has notoriously high levels of both mental health symptoms and suicidality (Patel et al., 2007), this empirical void is of great concern.

RISK AND PROTECTIVE FACTORS

Because a vacuum exists in the field of suicidology investigating the psychological impact of exposure to NFSB, it is unclear whether such exposure confers risk for psychological distress and is uniformly deleterious to all those who are exposed. It is likely that not all young adults who are exposed to NFSB will have the same reactions. Young adults may possess inherent protective factors that may buffer them from distress following exposure, such as a high degree of emotional stability or resilience. It may also be the case that young adults exposed to NFSB may be at greater risk for deleterious mental health symptoms as a result of the nature of their relationship with the suicidal individual, such as the degree of closeness or conflict, the degree to which they feel guilty or

shameful of the event, or the degree to which the NFSB event becomes central to their identity. Furthermore, young adults may be insulated by the provision of support in the wake of stressful events, such as NFSB. As it happens, research has indicated that such interpersonal and intrapersonal variables serve as potent predictors of distress following numerous stressful events (Bijl, Ravelli, & Van Zessen, 1998; Boals & Schuettler, 2011; Turner & Brown, 2010). Therefore, these documented risks and protective factors are worth exploring in a subset of individuals who are vulnerable to numerous psychological complications (Patel et al., 2007). This information is especially crucial to advance empirically derived suicide prevention efforts among young adults, given the understanding that college students are disproportionately exposed to high levels of NFSB and thus may exhibit psychological distress that, subsequently, may lead to suicidal thoughts and behaviors. Based on previous research that examined levels of mental health symptomatology among young adults exposed to suicide attempts and suicide deaths (Hazell & Lewin, 1993), it is reasonable to speculate that college students who have been exposed to NFSB, particularly the behavior of someone close, would experience many of the same thematic elements of suicide bereavement outlined in previous research, specifically, increased levels of guilt, shame, and trauma-related psychological distress (Bartik et al., 2013; Jordan, 2001; Pitman et al., 2014). For example, the close friend of an individual who attempted suicide or expressed suicidal desire may contend with themes and ruminate on questions similar to those who have lost a loved one to a completed suicide, such as “why did my friend do this and what, if any, role did I have in their desire to end their life?” or “how could I have prevented their suicidal action(s)?” These questions, in turn, may beget feelings of guilt or shame, and may

manifest into deleterious psychological reactions, such as symptoms of depression, anxiety, and PTSD.

Therefore this article contributes to the suicidology literature by (1) elucidating the relationship between non-fatal suicide exposure and mental health, (2) examining this link by way of original data, (3) offering clinicians new insights regarding possible risk and protective factors following exposure to aid prevention efforts and combat suicide “epidemics,” which have unfortunately become increasingly common on high school and college campuses (Westefeld et al., 2005), and, finally, (4) highlighting new directions for social scientists interested in understanding and explaining how and why suicides spread.

METHOD

Participants and Procedures

Following institutional review board approval, participants were recruited from undergraduate courses at a large research university located in the Mid-South region of the United States between January 2015 and May 2016. Data were collected electronically via an online subject pool system sponsored by the institution’s psychology department. It is worth noting that the demographic makeup of university students in the psychology department largely reflected that of the general student population as a whole. All procedures were completed anonymously online using the Qualtrics survey platform and participants received course-related credit upon successful study completion.

The data used for the current study were derived from a larger study of 1,000 college students who endorsed experiencing numerous events of a potentially distressing nature within the past 2 years. Research in the field of bereavement

indicates that psychologically relevant phenomena stemming from stressful events, such as the loss of a loved one, can last for 24 months or longer in some circumstances (Prigerson & Jacobs, 2001). Likewise, research in exposure to trauma and stress more broadly notes that most individuals tend to recover from moderate levels of stress within 16 months from the time of the incident, but others may have more protracted reactions as well (Baum & Fleming, 1993; La Greca, Silverman, Vernberg, & Prinstein, 1996). The events that were examined within the larger study from which these data were derived included the death of someone close, exposure to NFSB, and general stressors (e.g., moving away from home, ending a relationship). To be included in the current analysis, participants must have been exposed to either (a) a suicide attempt of another, (b) the disclosure of suicidal thoughts of another, or (c) a particularly salient, yet fairly typical, stressor within the last 2 years. Participants were excluded from analysis if they concurrently endorsed the death of a close other by any means within the last 2 years. After randomization, a total of 192 students exposed to NFSB and 202 students exposed to general stressors completed the study measures and were included in the main analyses. Stressors included in the study were selected based on their congruence with a typical college student experience and included school-related problems (endorsed as most distressing by 29.1% of students not exposed to NFSB), financial difficulties (27.1%), dissolution of an important relationship (15.8%), increased family tension (15.3%), negatively valenced change in job status (9.9%), and problems at work (3%). All participants endorsed at least one stressor from the list provided. Demographic information for both the NFSB-exposed and general stress samples are included in Table 1.

TABLE 1. Descriptive Statistics for College Students Exposed to NFSB (N = 192) and General Stressors (N = 202)

Demographic Variables	Exposed to NFSB		Exposed to General Stressors	
	M (SD)	% (n)	M (SD)	% (n)
Age	20.54 (4.12)		20.61 (3.81)	
Sex of respondent				
Female		77.6 (149)		69.3 (140)
Male		22.4 (43)		30.7 (62)
Race				
White/Caucasian		53.1 (102)		42.6 (86)
African American		17.2 (33)		21.8 (44)
Hispanic/Latino		8.3 (16)		16.8 (34)
Asian		7.3 (14)		11.4 (23)
Other		14.1 (27)		7.4 (15)
Level of exposure				
Disclosure of ideation		67.7 (130)		
Attempt		9.9 (19)		
Both		22.4 (43)		
Time since exposure				
0–6 months		35.4 (68)		
6–12 months		19.3 (37)		
13–24 months		45.3 (87)		
Relationship to suicidal person				
Friend		64.1 (123)		
Sibling		12 (23)		
Parent		5.7 (11)		
Spouse/Partner		6.3 (12)		
Child		0.5 (1)		
Other (extended family, acquaintance, significant other)		11.5 (22)		
Sex of suicidal person				
Female		66.1 (127)		
Male		33.9 (65)		
Length of relationship with suicidal person				
Less than 12 months		14.1 (27)		
More than 1 year less than 5		40.1 (77)		
More than 5 years less than 10		18.2 (35)		
More than 10 years		27.6 (53)		

Measures

All measures in this study were adapted and employed language that was tailored to the experience of NFSB or general stress

exposure. The measures included in the study are described below.

Exposure to NFSB and General Stressors. Exposure to NFSB and general

stressors was assessed through numerous self-report items. Participants were asked, "In the past two years, has someone close to you either (a) made a suicide attempt and survived, (b) shared with you that they have had thoughts of ending their life, or (c) neither of the above?" Participants who endorsed either (a) or (b) were then asked to select whether they were exposed to (a), (b), or both in the last 2 years. Participants who had endorsed (c), but not exposure to NFSB, were then asked questions pertaining to their experiences of being exposed to a number of general stressors within the past 2 years, including selecting stressors from an exhaustive list or writing in a stressor that was not presented in the survey and indicating which stressor had been the most distressing lately.

Psychological Outcome Measures. To assess levels of depression, the Patient Health Questionnaire depression scale (PHQ-8; Kroenke et al., 2009) was utilized. The PHQ-8 is a brief, 8-item measure of depression and has been established in previous research as being a highly valid measure of depression severity and symptoms in the general population. In this sample, comprised of students exposed to NFSB and non-exposed students, the PHQ-8 displayed strong internal consistency ($\alpha = .85$). The Generalized Anxiety Disorder 7-item scale (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006) was employed to examine levels of anxiety. The GAD-7 has been shown to have good reliability and strong criterion and construct validity and held strong psychometric properties with regard to this sample ($\alpha = .90$). Lastly, to examine levels of PTSD symptoms, the PTSD Checklist – Civilian Version (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1994) was utilized. In a sample of university students, Ruggiero, Del Ben, Scotti, and Rabalais (2003) found strong support for the psychometric

properties of the PCL-C, including good internal consistency, convergent validity, and discriminant validity, among others. The PCL-C had strong inter-item reliability in this sample as well ($\alpha = .94$).

Intra- and Interpersonal Measures of Risk and Resilience. In an effort to improve the identification of those who are most vulnerable to psychiatric sequelae following exposure to suicide, the National Action Alliance for Suicide Prevention (Action Alliance) Survivors of Suicide Loss (SOSL) Task Force recently disseminated guidelines encouraging investigators to look beyond the narrow and often misleading evaluation of kinship relationship to the suicidal individual by examining the quality of the relationship, namely psychological closeness, in order to bolster the methodological rigor of suicide exposure research (Neimeyer, Cerel, & Maple, 2017). Therefore, to examine the degree of closeness to, and conflict with, the suicidal individual, the Quality of Relationships Inventory (QRI; Pierce, Sarason, Sarason, Solky-Butzel, & Nagle, 1997) was used. The QRI has three scales, comprised of interpersonal Conflict, Depth, and Support. For the purpose of this study, only the Conflict and Depth (closeness) scales were utilized. In their original validation, Pierce, Sarason, and Sarason (1991) found high internal consistency for both the Depth (closeness; $\alpha = .86$) and Conflict subscales ($\alpha = .88$). In the present sample, comprised of NFSB-exposed students, the QRI demonstrated strong inter-item reliability as well (Closeness $\alpha = .95$; Conflict $\alpha = .88$). Levels of NFSB event-related guilt and shame were evaluated using an adapted version of the Grief Experiences Questionnaire (GEQ; Barrett & Scott, 1989). The GEQ was originally developed to address the limitations of research conducted in the field of suicide bereavement by capturing levels of thematic elements commonly experienced following exposure to suicide

loss. In one study (Bailey, Dunham, & Kral, 2000), the GEQ was documented as having eight salient factors (e.g., Stigmatization, Responsibility, and Feelings of Rejection) with satisfactory psychometrics properties. In the present sample, scales representing event-related Guilt and Shame were utilized and displayed high internal consistency (Guilt $\alpha = .88$; Shame $\alpha = .84$). Other measures included in the study, which have all exemplified strong psychometric properties, include the MOS Modified Social Support Survey (MSSS; Sherbourne & Stewart, 1991; $\alpha = .84$, in this sample) to investigate levels of social support, the Centrality of Event Scale short form (CES; Berntsen & Rubin, 2006; $\alpha = .91$) to examine how central the NFSB event is to the respondent's identity, the Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003) to identify instances of the Big-Five personality domains among respondents, namely emotional stability and extraversion ($\alpha = .66$ and $\alpha = .66$, respectively), and the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003; $\alpha = .77$) to assess resilience among respondents exposed to NFSB.

Analytic Plan

Data Screening. Assumptions of multivariate normality were investigated. Skewness and kurtosis values for all variables, with the exception of anxiety, were within acceptable ranges according to West, Finch, and Curran's (1995) recommendation, indicating that the majority of outcome variable distributions did not depart from normality and thus did not require a logarithmic transformation. Secondly, to enhance the utility of the data, we employed a number of validating questions such as, "If you are reading this, please select 'once every week.'" If cases failed to meet this criterion, these data were omitted in a list-wise manner. Following

this procedure, 28 cases were declared invalid and were omitted from the analyses. Subsequently, a Missing Values Analysis (MVA) was employed to investigate the occurrence and prevalence of missing data. Results of this analysis indicated no missing values for the measures under investigation in this study.

Identifying Covariates. Preliminary analyses were conducted to identify variables that may be considered confounds and would necessitate controlling in order to compare levels of psychological sequelae among exposure groups. These variables were selected based on empirical evidence that each can influence the expression of mental health symptoms (Bijl et al., 1998; Boals & Schuettler, 2011; Turner & Brown, 2010). First, we examined the relation between sex (male/female), age, and psychological symptomatology (e.g., depression, anxiety, and PTSD). With regard to levels of symptomatology, no significant differences emerged according to sex or age. However, an independent samples T-test revealed significant differences in the number of family psychiatric/brain disorders and number of endorsed stressors among the NFSB-exposed group and general stress group. That is, participants who had been exposed to non-fatal suicide behavior reported a significantly higher prevalence of family psychiatric diagnoses ($M = 2.31$, $SD = 2.02$) than did those who had been exposed to a general stressor ($M = 1.33$, $SD = 1.64$), $t(392) = 5.27$, $p < .01$, and participants who had been exposed to NFSB endorsed a significantly greater number of stressors within the past 2 years ($M = 4.04$, $SD = 2.31$) compared to those who had not been exposed to NFSB ($M = 3.49$, $SD = 2.19$), $t(392) = 2.45$, $p < .01$. Lastly, a chi-square test of independence was performed to examine the relation between the two exposure groups (i.e., NFSB-exposed and general

stress) and the instance of a previous psychiatric diagnosis, scored in a binary fashion (e.g., yes/no). A significant relation between these variables emerged, $X^2(1, N = 394) = 27.66, p < .01$. These results indicate that those who had been exposed to NFSB in the previous 2 years were more likely to have a previous psychological diagnosis than those in the general stress comparison group. Thus, family history of psychiatric disorders, number of endorsed stressors over the past 2 years, and previous psychiatric diagnoses were used as covariates in subsequent analyses. The exposed and non-exposed groups did not significantly differ in relation to household income, $X^2(8, N = 394) = 7.89, p = .44$, or parent or primary caretaker's level of education, $X^2(4, N = 394) = 6.41, p = .14$.

RESULTS

Table 1 presents the descriptive background statistics for the study sample. Of the 1,000 total respondents from the larger study, 402 students (40.2%) identified having been exposed to NFSB in the last

2 years, with nearly one-third reporting exposure in the past 6 months (35.4%)—findings that are identical to Westefeld et al.'s (2005) that identified 40% of college students as having known someone who had attempted suicide during their tenure in college. Of the students who had been exposed to NFSB within the past 2 years, those who did not endorse concurrent bereavement (losing a loved one to death in the past 2 years) were randomly selected to serve as the NFSB-exposed group ($n = 192$). Table 2 shows statistically significant associations between the major variables explored among the exposed students.

Exposure and Symptomatology

Our initial analyses examined differences between students exposed ($n = 192$) and not exposed ($n = 202$) to NFSB in terms of their depression, anxiety, and PTSD scores. In order to simultaneously control for covariates and examine differences between students exposed and not exposed to NFSB on a number of variables, a one-way between-groups multivariate

TABLE 2. Intercorrelations of Relational Variables and Psychiatric Symptomatology among Students Exposed to NFSB

	1	2	3	4	6	7	8	11	12	14	15
1 Depression	—										
2 Anxiety	.79**	—									
3 PTSD	.49**	.48**	—								
4 GEQ-G	.20**	.24**	.49**	—							
6 QRI – Closeness	.21**	.15*	.18*	.28**	—						
7 QRI – Conflict	.20**	.27*	.41**	.37**	.13	—					
8 Event centrality	.23**	.24**	.58**	.36**	.18*	.24**	—				
11 TIPI – Extraversion	-.25**	-.14**	-.09	.08	.03	.00	-.03	—			
12 TIPI – Emotional Stability	-.50**	-.59**	-.36**	-.19*	-.06	-.17*	-.20**	.13*	—		
14 CDR	-.33**	-.30**	-.20**	-.06	.04	-.03	-.12*	.24**	.40**	—	
15 Social support	-.38**	-.26**	-.26**	-.01	.02	-.12	-.11*	.28**	.27**	.27**	—

Note. $n = 192$; Pearson's r * $p < .05$. ** $p < .01$; GEQ_G = Guilt; QRI = Quality of Relationships Inventory; ECR = Experiences in Close Relationships Scale; TIPI = Ten-Item Personality Inventory; CDR = Connor-Davison Resilience Scale.

analysis of covariance (MANCOVA) was performed. Preliminary assumption testing was conducted and revealed a violation of the assumption of homogeneity of variance in anxiety scores. Thus, anxiety scores were log-transformed and this new transformed variable was included in the MANCOVA analysis. Significant group differences with small effect sizes were found. Specifically, students who had been exposed to NFSB experienced significantly higher levels of depression compared to students who had not been exposed to NFSB, even after controlling for family history of psychiatric diagnoses, number of endorsed stressors over the past 2 years, and prior psychiatric diagnoses of the respondent, $F(1, 387) = 8.93, p < .01, \eta_p^2 = .02$. Additionally, students who had been exposed to NFSB exhibited significantly more symptoms of anxiety than students who were not exposed to NFSB within the last 2 years $F(1, 387) = 5.78, p < .05, \eta_p^2 = .01$. Surprisingly, no significant differences were

found among the exposure groups with regard to PTSD symptomatology. An illustration of the discrepancy in depression and anxiety scores between groups is displayed in Figure 1.

Identifying Risk and Protective Factors for Predicting Distress

In order to determine which variables might confer risk for, or protection from, the development and maintenance of untoward psychological reactions associated with exposure to NFSB among college students, the relation between potential risk and protective factors and psychological variables was investigated using Pearson product-moment correlation coefficients. Preliminary analyses were performed to ensure violations of normality, linearity, and homoscedasticity were not present. Multiple strong and significant correlations emerged (see Table 2), with the strongest relationship evident between the personality trait of emotional

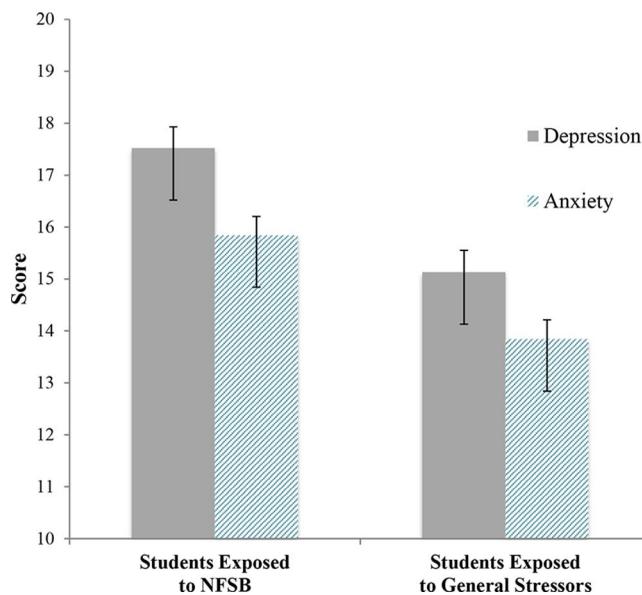


FIGURE 1. Mean symptomatology scores for students exposed to NFSB and students exposed to general stressors. Error bars denote one standard error around the mean.

stability and anxiety, $r = -.59$, $n = 192$, $p < .01$.

Following these results, three separate regression models were constructed to examine each risk and protective factor's individual contribution to the prediction of negatively valenced psychological symptoms, namely, anxiety, depression, and PTSD, which have all been indicated as significant risk factors for suicide (Beautrais, 2000). Prior to conducting these regression analyses, all continuous predictor variables were standardized, as recommended by Aiken and West (1991). Additionally, to assess whether relationship category to the indexed suicidal individual (i.e., friend, family, and other) was related to levels of symptomatology, a multivariate analysis of covariance (MANCOVA) was conducted for depression, anxiety, and PTSD, controlling for sex, age, and family psychiatric history. Results indicated that no significant differences existed among the relationship categories to the suicidal individual with respect to depression, anxiety, and PTSD, Wilks' $\lambda = .95$, $F(3, 183) = 1.36$, $p = .19$.

Risk Factors and Protective Factors for Depression. To examine the amount of variance in depression scores accounted for by the related variables, a hierarchical regression analysis was conducted. In order to control for the influence of covariates, sex, age, and a family history of psychiatric diagnoses were entered in Step 1. In Step 2, all significantly correlated variables were entered into the model as prospective risk and protective factors. After controlling for family psychiatric history, the model accounted for an additional 46% of the variance in depression scores, $F(12, 85) = 6.57$, $p < .001$. Within the model, the degree of closeness to the suicidal individual emerged as the greatest risk factor for depression ($\beta = .20$, $p < .01$), and emotional stability ($\beta = -.32$, $p < .01$) and resiliency ($\beta = -.35$, $p < .001$) posed as the

greatest protective factors among individuals exposed to NFSB (see Table 3).

Risk and Protective Factors for Anxiety. To examine the amount of variance in anxiety attributable to the group of prospective risk and protective factors, a hierarchical regression analysis was conducted in the same manner as mentioned above, with anxiety symptoms as the dependent variable. The same covariates were entered in Step 1. In Step 2, all significantly correlated variables were entered into the model as prospective risk and protective factors. After controlling for previous psychological diagnoses and family psychiatric history, the model accounted for an additional 44% of the variance in anxiety scores $F(13, 84) = 6.97$, $p < .001$. Within the model, the degree of interpersonal closeness with the suicidal individual emerged as the greatest risk factor for anxiety ($\beta = -.17$, $p < .05$), and emotional stability ($\beta = -.39$, $p < .001$) and resiliency ($\beta = -.32$, $p < .001$), once again, were the greatest protective factors (see Table 3).

Risk and Protective Factors for PTSD. Lastly, to examine the amount of variance in PTSD attributed to each of the related risk and protective factors identified in our correlational analysis, a hierarchical regression analysis was conducted in the same manner as the two previous models, with PTSD symptomatology as the dependent variable. In order to control for the influence of covariates, sex and a family history of psychiatric diagnoses were entered in Step 1. In Step 2, all significantly correlated variables were entered into the model as prospective risk and protective factors. After controlling for sex and family psychiatric history, 56% of the variation in PTSD scores could be accounted for by the model, $F(11, 86) = 8.33$, $p < .001$. With regard to risk and protective factors in the model, event-related guilt ($\beta = .26$, $p < .01$), interpersonal conflict ($\beta = .14$, $p < .05$), and event centrality ($\beta = .47$,

TABLE 3. Hierarchical Regression Analyses for Variables Predicting Psychiatric Sequelae in College Students Exposed to Non-Fatal Suicide Behavior

	Total R^2	ΔR^2	SE	β
Depression (PHQ-8)				
Step 1	.02			
Step 2	.49	.47***		
QRI – Closeness			.46	.20**
CDR – Resiliency			.54	-.35***
TIPI – Emotional Stability			.38	-.32**
Social support			.50	-.25**
Anxiety (GAD-7)				
Step 1	.08**			
Step 2	.52	.44***		
QRI - Closeness			.47	.17*
CDR – Resiliency			.55	-.32**
TIPI – Emotional Stability			.60	-.39***
PTSD (PCL-C)				
Step 1	.01			
Step 2	.52	.51***		
Guilt			1.32	.26**
QRI – Conflict			1.06	.14*
Event centrality			1.22	.49***

Note. $n = 192$; Step 1 in each model includes the covariates of sex, age and psychiatric family history; Only significant predictors are presented; * $p < .05$, ** $p < .01$, *** $p < .001$; QRI = Quality of Relationships Inventory; TIPI = Ten-Item Personality Inventory; CDR = Connor-Davidson Resiliency Scale.

$p < .001$) emerged as the greatest risk factors for PTSD following exposure to NFSB (see Table 3). Despite these clear significant predictors of heightened PTSD symptomatology, no variables were identified as salient protective factors within this sample.

DISCUSSION

When considering how and why suicide spreads, mental health symptomatology

seems to provide a logical and empirically supported clue. We found that students exposed to NFSB had significantly higher levels of depression and anxiety symptoms compared to students who had not been exposed, even after controlling for numerous covariates, such as sex, family psychiatric history, and personal psychiatric diagnoses. These findings are consistent with research showing that adolescents with research showing that adolescents exposed to suicidal behavior, both fatal and non-fatal, reported higher levels of maladaptive coping (e.g., smoking, drinking, drug use; Cerel, Roberts, & Nilsen, 2005) and poorer mental health outcomes than non-exposed peers (Hazell & Lewin, 1993; McMahon, Corcoran, Keeley, Perry, & Arensman, 2013).

Whether a person exhibits higher levels of depression or anxiety seems to depend, at least in part, on the nature of the relationship with the suicidal individual. Our findings indicate that psychological closeness to the suicidal person poses a risk factor for developing depressive symptoms and potentially suicidality, an assumption that has existed in the literature for decades (Gutierrez, King, & Ghaziuddin, 1996; Ho, Leung, Hung, Lee, & Tang, 2000). Additionally, interpersonal closeness with the suicidal person increased risk of anxiety symptoms, which is consistent with general findings about attachment orientation and loss (see Kosminsky & Jordan, 2016 for a discussion). However, individuals with high levels of emotional stability and resilience appeared to be insulated from developing depressive and anxiety symptoms following NFSB exposure, suggesting an innate ability to tolerate distress, regulate emotional responses, and respond adaptively to adverse events.

PTSD symptoms were also elevated among those who endorsed interpersonal conflict with the suicidal individual prior to the suicidal event and those who experienced guilt about the suicidal event. From an attachment theory perspective, a

relationship characterized by interpersonal conflict and instability is more likely to engender feelings of self-blame or guilt in response to the actions of the other, and this is consistent with the literature on suicide bereavement (Jordan, 2001). Moreover, individuals who viewed the NFSB event or suicidal individual as central to their identity, as opposed to distancing themselves from the event or viewing the event as orthogonal to their identity, endorsed heightened PTSD symptomatology.

While the present study did not explore longitudinally the impact of exposure to NFSB on future suicidality, depression, anxiety, and PTSD nonetheless serve as known risk factors and thus proxy indicators of potential maladaptive or self-destructive behaviors in the aftermath of exposure. Furthermore, Gutierrez et al. (1996) found that adolescents who had been exposed to the attempted suicide of a parent or close friend expressed attitudes indicating a strong attraction to death, as well as a stronger repulsion by life. The combination of these types of attitudes about life and death in conjunction with higher levels of depression and anxiety may confer a risk for future suicidal ideation and behavior. Such research would in no way invalidate the assumption that existing depression could increase vulnerability to suicidal ideation or self-injury, but rather underscore that the sequelae of NFSB could exacerbate depressive and anxiety symptoms, and thereby further increase suicide risk in an already vulnerable population. Future research could examine such attitudes among other populations to explore whether such attitudes are developmentally situated in adolescence or present across the lifespan.

Additionally, these findings raise several questions that could orient future sociological research. First, although suicide contagion studies have long included measures or indexes of depression or emotional

distress, there is a clear need for greater attention to both the social process by which mental illness spreads apart from the spread of suicide, and leveraging of longitudinal data to assess the relationship among sociocultural context, intra-personal mechanisms that are risk factors of suicidality, and the development of new suicidal thoughts and behaviors. Second, while sociological research has increasingly included measures of emotional distress, there could be benefits in isolating specific mental illnesses, linking them to different social causes, and exploring which symptoms pose the most significant risks for suicidality. This approach could hold advantages for psychology and psychiatry, in clarifying how cultural factors matter both for learning to label oneself and others as mentally healthy or ill, for understanding what it means to be mentally ill, and for how one seeks to handle one's own mental health. A recent study found that some cultural contexts *suppress* help-seeking behaviors, thus exacerbating mental illness, and increasing the risk of suicidality (Mueller & Abrutyn, 2016). As such, sociology has the tools to deepen our understanding of when exposure to suicide may lead to higher chances of suicide by way of emergent mental health symptoms and when these symptoms do not become pathways to suicidality. Third, there is a concerted need for assessing how intra-personal and inter-personal processes interact with each other in the contagion process. The majority of sociological work on contagion is purely structural, network approaches that take for granted intra-personal mechanisms, while psychological research often does the opposite. A robust explanation, capable of having real consequences for policy and prevention, would consider how variation in social relationships, social status, and organizational factors interact with mental health in ways that could protect individuals or make them more susceptible to suicide exposure.

For instance, it can be speculated that psychiatric symptoms, particularly depression, may serve as a mediator between exposure to NFSB and subsequent suicidal ideation and behavior, but without a temporal understanding of the presence of depression prior to the exposure, this relationship may be difficult to untangle. In one study, the presence of psychiatric disturbances, defined as both internalizing and externalizing problems, remarkably increased the risk for suicidal behaviors in a sample of suicide exposed adolescents (Ho et al., 2000), indicating that depression and other psychiatric sequelae, coupled with exposure to suicidal behavior, may increase the risk of future suicidality. Furthermore, similar research has indicated that depressive symptoms moderate the effect of exposure to suicide attempts on suicidal behavior (Wong, Stewart, Ho, Rao, & Lam, 2005). However, these studies, like the present one, did not assess pre- and post-exposure psychiatric symptomatology. Future research ideally should be conducted longitudinally to examine the temporal relationship among exposure, pre-existing and resulting psychiatric sequelae, and pre-existing and resulting suicidal ideation and behavior in order to test the assumption that exposure leads to psychological symptoms, which then leads to a heightened risk for suicide.

There were a number of limitations of this study. First, the exclusive focus on non-fatal suicidal behavior prevents comparison to individuals exposed to fatal suicide. Previous research has examined nuances of high and low exposure and first- and second-hand exposure, referring to a suicide completion vs. a suicide attempt and directly witnessing vs. hearing about the suicidal act, respectively (Burke et al., 2010). Future research should examine exposure across these levels in order to examine the differential impact on mental health symptomatology. Related to nuance, the present study did not examine helping

behavior in relation to the suicidal individual. Presumably, attempting to help a suicidal person may contribute to the overall stress of the experience, potentially increasing symptomatology relative to someone who was more passively aware. Additionally, the current study recruited participants from undergraduate psychology courses. Although the characteristics of this sample are adequately reflected by the student body as a whole, future research would benefit from expanding recruitment efforts to include students from numerous departments and specialty areas in order to broaden the spectrum of experiences participants bring to bear in psychological research. Finally, the present study was cross-sectional thus preventing causal inferences. Longitudinal designs should be implemented in future research to the degree possible.

Despite these limitations, the present findings carry important implications. Recently, there has been a concerted effort in both research and clinical domains to design and implement effective postvention programs for adolescents and young adults who have been exposed to a completed suicide (Cerel et al., 2013; Westefeld et al., 2005). However, to our knowledge, no similar service exists for young adults exposed to NFSB. The current study provides new empirical evidence suggesting that college-aged students exposed to NFSB have higher levels of psychiatric distress, namely, depression and anxiety. An explanation for the varied impact among all those exposed to a non-fatal suicide event can be conceptualized in terms of interpersonal factors, such as the quality of the relationship with the suicidal individual (closeness and conflict), and intrapersonal factors such as event-related guilt, emotional stability, and resilience. As such, this research highlights the importance of designing programs that are tailored to the stressful experience of being exposed to NFSB, particularly among individuals who were exceptionally

close to, or had a conflictual relationship with, the suicidal individual, rather than identifying at-risk students based on the category of relationship with the indexed suicidal individual. As our results indicated, relationship category may be a misleading marker of risk as it does not appear to be an adequate predictor of symptom severity among those students exposed to NFSB. Attention placed on the quality of the relationship, as opposed to the relationship category, is consistent with recently released guidelines from the National Action Alliance for Suicide Prevention Survivors of Suicide Loss Task Force (Neimeyer et al., 2017), which recommend examining closeness to the suicidal individual along with other relevant characteristics in suicide exposure research. Programs might especially target those who were close to, or had a conflictual relationship with, the suicidal individual, as these characteristics appear to be risk factors for depressive and anxiety symptoms, which then may pose risk for future suicidality.

AUTHOR NOTE

Jamison S. Bottomley, Department of Psychology, University of Memphis, Memphis, Tennessee, USA.

Seth Abrutyn, Department of Sociology, University of British Columbia.

Melissa A. Smigelsky, Department of Psychology, University of Memphis, Memphis, Tennessee, USA.

Robert A. Neimeyer, Department of Psychology, University of Memphis, Memphis, Tennessee, USA.

Correspondence concerning this article should be addressed to Jamison S. Bottomley, Department of Psychology, University of Memphis, 400 Innovation Dr., Rm. 202, Memphis, TN 38152. E-mail: jsbtmly@memphis.edu.

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