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Frequency and functions of non-suicidal self-injury: Associations with suicidal thoughts and behaviors



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ABSTRACT

Previous research has found associations between non-suicidal self-injury (NSSI) and suicidal thoughts and behaviors (STBs), yet the nature of this relationship remains equivocal. The goal of the present study was to examine how lifetime NSSI frequency and individual NSSI functions relate to a history of suicidal ideation, plan, and attempt. Data were collected via a large ($N=13,396$) web-based survey of university students between the ages of 18 and 29. After demographics and psychiatric conditions were controlled for, we found a positive curvilinear relationship between NSSI frequency and each of the suicide outcomes. When examined among those with STBs, bipolar disorder and problematic substance use remained positively associated with risk for suicide attempt, but not NSSI. Analyses of individual NSSI functions showed differential associations with STBs of varying severity. Specifically, nearly every NSSI function was significantly related to suicide attempt, with functions related to avoiding committing suicide, coping with self-hatred, and feeling generation (anti-dissociation) showing the strongest risks for suicide attempt. From both clinical and research perspectives, these findings suggest the importance of assessing multiple reasons for engaging in self-injury.

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1. Introduction

Suicidal thoughts and behaviors (STBs) (Kessler et al., 1999) and non-suicidal self-injury (NSSI) are serious public health problems in young adults (Swannell et al., 2014). In the National Comorbidity Survey, young age is consistently related to elevated risk for a range of suicidal thoughts and behaviors (Kessler et al., 1999; Borges et al., 2008). Though lifetime prevalence estimates for NSSI vary considerably (1.5–54.8%), results from a recent meta-analysis suggest that after accounting for methodological differences across studies, about 13.4% of young adults report ever having engaged in NSSI (Swannell et al., 2014).

Although related and frequently co-occurring (Nock et al., 2006; Muehlenkamp and Gutierrez, 2007; Whitlock and Knox, 2007), NSSI and suicidal thoughts and behaviors differ on a number of domains including frequency, lethality, and intention (Hamza et al., 2012). The two phenomena are generally distinguished based on the presence of intent to die (Andover et al., 2012). The nature of the

relationship is complex and not yet fully elucidated, several studies have found that a prior history of NSSI has been identified as one of the strongest predictors of suicidal thoughts and behaviors (Lewinsohn et al., 1994; Wilkinson et al., 2011; Whitlock et al., 2013). Shedding light on the ways in which various aspects of NSSI relate to STBs is the first step in understanding the potential mechanisms through which these phenomena are linked. It might also contribute to our understanding of the transition from suicidal thoughts to suicide attempts, a crucial line of inquiry in studies of suicide (Klonsky and May, 2013). Further, the majority of the existing literature on NSSI frequency and suicide attempt has been carried out in clinical samples, which limits generalizability of these findings to a broader population of young adults.

1.1. NSSI history, frequency, and STBs

Most studies examining NSSI and suicidal thoughts and behaviors have utilized dichotomous NSSI/no NSSI groupings. When examined categorically, history of NSSI is linked to suicide attempts (Whitlock and Knox, 2007; Glenn and Klonsky, 2009; Asarnow et al., 2011; Whitlock et al., 2013). However, findings regarding the frequency of NSSI and STBs have been somewhat mixed. When

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operationalized continuously, two studies have found positive relationships between the frequency of self-injury without lethal intent and the number of suicide attempts (Andover and Gibb, 2010; Darke et al., 2010) as well as suicidal ideation (Prinstein et al., 2008; Whitlock et al., 2013). One study found that the risk for suicidal thoughts and behaviors for NSSI frequency was curvilinear (Whitlock and Knox, 2007), with the risk of STBs decreasing after 50 NSSI episodes. The presence of a curvilinear relationship might explain the lack of a linear association between NSSI frequency and number of suicide attempts found by Nock et al. (2006). Although these studies suggest that a history of NSSI is associated with STBs, the mixed findings regarding frequency of NSSI signal the need for more studies examining the form of these relationships.

1.2. NSSI functions and STBs

The majority of the literature examining NSSI and STBs has focused on behavioral rather than psychological dimensions of NSSI such as its history and frequency. However, much of the literature examining reasons for NSSI and STBs suggests substantial overlap in terms of motivation. We examine NSSI functions by focusing on self-reported reasons and motivations for NSSI and henceforth use these terms interchangeably. The most commonly cited reasons for NSSI are associated with relief from negative emotions (Chapman and Dixon-Gordon, 2007; Klonsky, 2007). Similarly, obtaining relief from a terrible state of mind is among the most frequently stated reasons for suicide attempts (Boergers et al., 1998; Kraft et al., 2010; Jacobson, et al., 2013).

Though most research examining motivations for NSSI and STBs has been conducted separately, several studies have directly compared reasons for non-suicidal self-injurious behavior and STBs, but findings have been mixed. For example, Brown et al. (2002) found that female patients with borderline personality disorder were just as likely to report “to obtain relief from emotion” as a reason for NSSI (96%) as for suicide attempt (85%). Similarly, “to get away or escape” was equally prevalent as a reason for NSSI (52%) as for suicide attempt (59%). Among participants with histories of NSSI and suicide attempts, self-punishment was also a reason for engaging in both, although anger expression, distraction, and feeling generation were more likely to be reasons for NSSI compared to suicide attempts. Chapman and Dixon-Gordon (2007) observed that anger was the most common emotional state preceding deliberate self-harm and suicide attempts. In contrast, according to Brown et al. (2002) findings, relief from emotions was significantly more common following non-suicidal self-harm than suicide attempts. Taken together, these studies suggest substantial overlap in the motivations for engaging in each behavior. There is a dearth of research on how NSSI functions relate to STBs other than suicide attempts, and one of our goals is to examine these relationships.

A second line of inquiry that may be relevant to the ways in which NSSI and STBs are related is that of dissociation. Orbach (1994) proposed that the detachment from one's body that characterizes dissociated states may be key in facilitating suicidal tendencies. Empirical support for this hypothesis is provided by several studies that have found greater levels of dissociation among suicidal inpatients (Orbach et al., 1995, 2001). Similarly, individuals who engage in NSSI report greater tolerance to physical pain (Orbach et al., 1997; Franklin et al., 2011) and NSSI is frequently used to cope with dissociative symptoms (Gratz, 2003; Lloyd-Richardson et al., 2007). Taken together, these findings suggest that dissociation may be one mechanism linking NSSI and STBs.

1.3. Study aims

Despite a growing interest in the co-occurrence of NSSI and STBs, little is known about the ways in which these phenomena

are related. A better understanding of the frequency and psychological mechanisms through which NSSI leads to STBs might aid in more effective suicide prevention efforts. Consequently, the goal of the present study is to address this gap in the literature by examining the relative risk of NSSI frequency and individual functions for suicidal ideation, plans, and attempts in a large sample of young adults. First, we hypothesize that NSSI will be more strongly associated with each suicide outcome than other risk factors such as depression and demographics (Andover and Gibb, 2010; Asarnow et al., 2011). Second, we hypothesize that individuals with a history of suicide attempt will report engaging in NSSI for a greater number of reasons compared to those without any STBs. Third, we expect that engaging in NSSI to cope with and avoid negative emotions (Brown et al., 2002; Chapman and Dixon-Gordon, 2007) and dissociative states (Orbach, 2003) will demonstrate stronger associations with suicide attempts than with suicide plans or ideation.

2. Methods

2.1. Participants

The sample is from a secure online survey conducted at 8 universities in the Northeast and Midwest (Whitlock et al., 2011). Five of the universities were private, one was a mix of private and public, and two were public. A random sample of 36,900 students was invited to participate. The survey took approximately 15–30 min to complete and was approved by all participating universities' institutional review boards. Links to local mental health resources were provided at the bottom of each page. A total of 14,372 respondents (38.9%) completed the survey. The sample used in this study includes participants with complete data on all study variables between the ages of 18 and 29 years ($N=13,396$). The sample was representative of the student populations across all 8 universities in terms of race/ethnicity, age, and socioeconomic status (SES).

2.2. Measures

Participants were placed into suicide groups based on the most serious form of suicidality reported. All respondents were asked an initial screening question about whether they had ever seriously considered or attempted suicide (Kessler et al., 2005). Respondents who answered affirmatively were asked to select all that applied from a list of 8 follow-up items: (a) “I thought seriously about it,” (b) “I had a general plan but did not carry it out (e.g. a time, a place, etc. were identified),” (c) “I wrote a suicide note but did not leave it where it could be found,” (d) “I wrote a suicide note and did leave it where it could be found,” (e) “I had a method but did not carry it out,” (f) “I made a serious attempt but no medical intervention occurred,” (g) “I made a serious attempt that received medical attention,” and (h) “Although I considered suicide I was not that serious about it.” Individuals who endorsed “a”, either “b” or “e”, or either “f” or “g” were considered to have engaged in suicidal ideation, made a suicide plan, or a suicide attempt, respectively. Only participants who did not select “h” were classified into suicide groups. To facilitate comparability of our findings with other studies of STBs, we did not examine having written a suicide note as an outcome.

Demographic characteristics included sex, age in years, and race/ethnicity (White, African American, Hispanic, Asian, and other). Due to the low number of African American and Hispanic participants in each suicide outcome group, these two categories were combined. Sexual orientation was measured based on Kinsey's conceptualization of sexual attraction (Kinsey et al., 1948). The 7-point response scale was collapsed to create 4 categories of sexual orientation. A school variable was also used as a control to account for any potential differences between universities.

To assess mental health history, participants were presented with a project-developed list of 12 *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [DSM-IV] American Psychiatric Association, 2000) and asked to check which they believed they had ever suffered from, been diagnosed with, or been prescribed medicine for. The list of disorders included depression, anxiety, bipolar, anorexia, attention deficit hyperactivity disorder, bulimia, obsessive-compulsive disorder, seasonal affective disorder, borderline personality disorder, schizophrenia, post-traumatic stress disorder, and substance use disorder. No information about the diagnoses was provided. Schizophrenia, borderline personality disorder, post-traumatic stress disorder, and substance use disorder were removed due to there being too few participants with this disorder in each suicide outcome group. Only psychiatric disorders that were significantly related to outcomes in preliminary analyses were used in further analyses. We also assessed the number of consequences suffered from alcohol or other drug use during the past year (e.g. “had memory loss”) (American College of Health Association, 2005). Seven items

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