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Identifying a physical indicator of suicide risk: Non-suicidal self-injury scars predict suicidal ideation and suicide attempts

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Abstract

Background: Suicide risk is challenging to quantify due to reliance on self-report, which is limited by individuals' lack of insight and the desire to conceal such intentions. Non-suicidal self-injury (NSSI) is one of the most robust predictors of suicidal ideation (SI) and suicide attempts (SA). Although NSSI often leads to permanent scarring, which can be assessed by objective physical examination, no research has examined whether scarring denotes tangible risk for SI and SA. The present study examined whether NSSI scar presence and number predict current SI and SA history. Further, we examined whether brooding would exacerbate the effects of NSSI scarring on SI or SA.

Methods: Young adults (N = 231; M = 21.24 years; 78% female) completed self-report questionnaires assessing SA history, frequency of NSSI, presence/number of NSSI scars, brooding, current depressive symptoms, and SI.

Results: NSSI scar presence and number predicted current SI and SA history after controlling for current depressive symptoms. Moreover, scar presence and number predicted current SI over and above the effects of SA history and NSSI frequency, method, and medical severity. Further, NSSI scar presence and number predicted SI more strongly among individuals with greater levels of brooding than among individuals with lower levels of brooding.

Conclusions: The presence and number of NSSI scars are objective physical indicators of risk for SI and SAs. Brooding may further heighten the risk of SI for individuals bearing NSSI scars.

1. Introduction

Suicidal thoughts and behaviors (STBs) occur at relatively high rates among young adults, with suicide the third leading cause of death among individuals ages 15–24 [9]. Prevention efforts have been hampered by the field's reliance on self-report to quantify risk for suicide-relevant outcomes, which relies on an individual's inherently subjective responses provided with deliberate intention (Nosek, 2007). Relying entirely on self-report is a major problem, given that many suicidal individuals conceal their ideation. Therefore, a more objective means is needed to identify those who may be at highest risk for suicide-relevant outcomes.

Non-suicidal self-injury (NSSI), the intentional self-destruction of one's tissue *without* associated suicidal intent [26], is one of the most robust predictors of STBs (Hamza et al., 2012; Lewinsohn et al., 1994; [43,46]). The rates of NSSI are particularly alarming among young adults, with as many as 38% of college students reporting a history of the behavior [20,31,41,45]. Injuries from NSSI can leave markings, extending the effects of the behavior from the acute act to anywhere from a short duration (in which acute injuries heal) to permanency. Scarring is one characteristic of NSSI that may help to account for the relationship between NSSI and STBs. Furthermore, it is a characteristic that could be assessed by objective physical examination, allowing clinicians to rely less on often unreliable self-reports.

1.1. Relationship between NSSI characteristics and STBs

The majority of studies investigating the relationship between NSSI and STBs have found that any history of NSSI is associated with STBs, with correlational studies citing medium to large effect sizes (e.g. [1,18,42,43]). Beyond presence versus absence of NSSI, NSSI frequency, and methods, far less research has examined the relationship between alternative specific characteristics of NSSI and

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suicide-relevant outcomes, such as the impact of NSSI pain experience, functions, and context of the behavior [18,28,30]. Therefore, given that a significant proportion of those with a history of NSSI do not report STBs [43], significantly more research is needed to identify unique characteristics of NSSI that help clinicians to better determine high-risk cases.

1.2. Relationship between NSSI scarring and STBs

Although permanent scarring is a well-known consequence of NSSI, no empirical studies to our knowledge have reported the presence and number of scars resulting from the behavior among psychiatric or community samples. Furthermore, only two empirical studies have directly examined the psychological effects of scarring from NSSI [14,15]. Specifically, Dyer and colleagues [14,15] found, and then replicated their findings, that among females and males, recruited specifically for scarring, those with NSSI scarring endorsed a significantly more negative body image in general and after scarring than those with scars of alternate origins, even after controlling for scar size and appearance. These studies provide important preliminary evidence that the presence of NSSI scarring might be psychologically damaging.

In addition, it is possible that scars from NSSI may serve as physical reminders of painful memories or even shame about engaging in NSSI. Weaver et al. [40] found that among individuals with a history of intimate partner violence (IPV), the relationship between body image distress and post-traumatic stress disorder was stronger among those with scarring from IPV than those without scarring. The authors concluded that the residual injuries sustained from the IPV might function as a physical reminder of the violent event [40].

Similarly, given that individuals often report engaging in NSSI to regulate very painful emotions and for self-punishment purposes [27], viewing a particular scar might activate negative emotions related to the circumstances that prompted engagement and trigger distressing memories. Thus, it is possible that NSSI scarring may be associated with elevated levels of distress, which in turn, may augment one's vulnerability for exhibiting STBs. However, no research has investigated the relationship between the presence of NSSI scars and STBs.

1.3. Ruminative brooding as a moderator of NSSI scarring and STBs

Ruminative brooding, which is characterized by a passive and perseverative focus on the presence, causes and consequences of one's negative affect [29], is an additional factor that is relevant to suicide-related outcomes (for a review, see [25]). The cognitive catalyst model suggests that brooding may amplify the effects of negative cognitive and affective states on psychopathology [11,32], NSSI [13], and SI [33]. Thus, we conjecture that individuals who tend to passively think about the causes and consequences of negative mood may be particularly affected by visual reminders of negative affect, such that the scars may trigger powerful ruminative cycles. Moreover, individuals who tend to brood may brood not only about negative mood, but also about the origins of the scars themselves and their consequences, thus increasing their risk of STBs.

1.4. The current study

Considerable literature supports NSSI as a strong predictor of STBs. However, few studies have examined characteristics of NSSI that may confer heightened risk for STBs and no studies have examined whether NSSI scarring may be related to STBs. The current study addresses these gaps in the literature by examining a sample of individuals at an undergraduate institution. Undergraduate samples are ideal to examine NSSI and suicide-relevant outcomes, because they consistently exhibit high rates of both lifetime NSSI (17%-38%; [20,41] and suicidal ideation and behavior (11.4% and 7.1%, respectively; [36]). Given the relatively high rates of these behaviors in undergraduate samples of young adults, coupled with the fact that nearly 21 million individuals between the ages of 18 and 24 in the United States are currently enrolled in college courses [38], it is important to clarify the etiology of these self destructive behaviors in undergraduate samples.

We hypothesized that the presence and number of NSSI scars would be related to current SI as well as history of SAs, controlling for current symptoms of depression, and frequency, medical severity, and method of NSSI. Second, we hypothesized that scarring from NSSI would predict STBs more strongly among individuals with high levels of brooding than among those with low levels of brooding.

2. Method

2.1. Participants

Participants were Temple University (TU) students who were recruited by advertising enrollment (e.g. via announcements in classes, flyers) in a study developed to understand responses to stress. Interested individuals with access to the TU online research system were directed to an online questionnaire hosted by Fluid Surveys and were considered enrolled once consent was obtained. Participants were 231 undergraduates (M = 21.24 years; SD = 4.02) who completed all study questionnaires in exchange for research credit. The present sample was 78% female (N = 181) and the racial background of the participants was 56% (N = 130) Caucasian, 21% (N = 49) African American, 6% (N = 14) East Asian, 4% (N = 8) South Asian, 6% (N = 14) Biracial, and 7% (N = 15) other racial background. Participant demographics were largely representative of the TU undergraduate student population; however, there were more females in the present sample than in the full TU sample. The Temple University Institutional Review Board approved the procedures.