



Examining the Time to Transition From Nonsuicidal Self-Injury to Suicide Attempt

A Brief Report

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Abstract. *Background:* Nonsuicidal self-injury (NSSI) is a strong predictor of suicide attempts (SA). Characteristics of NSSI have been shown to influence the NSSI–SA relationship; however, the temporal nature of this association is understudied. *Aims:* This study aimed to elucidate the NSSI–SA relationship by examining the association between NSSI characteristics and time lapsed from NSSI onset to first SA. *Method:* Participants were 111 individuals with a history of NSSI that preceded their first SA who completed a series of self-report measures. *Results:* NSSI methods of cutting and burning, and the anti-dissociation function, were associated with a shorter transition time from NSSI to SA. Earlier age of NSSI onset and the interpersonal boundaries function were related to a longer time to transition. *Limitations:* This sample size was limited, and data were collected cross-sectionally. *Conclusion:* Findings provide foundational knowledge regarding NSSI characteristics to inform theoretical models of the NSSI–SA association. This information can inform suicide risk assessments among those with a history of NSSI.

Keywords: self-harm, suicidality, suicide risk, onset, transition

The relationship between nonsuicidal self-injury (NSSI) and suicide attempts (SAs) has been well documented. Among college students with a history of NSSI, up to 30.4% report having made an SA (e.g., Ammerman, Jacobucci, Kleiman, Uyeji, & McCloskey, 2018). NSSI also predicts SA beyond prior suicidal thoughts and behaviors, with both cross-sectional and longitudinal work documenting a strong relationship between NSSI and SAs (Muehlenkamp & Brausch, 2019; Ribeiro et al., 2017). Prominent theories of suicide hold that, for an individual to die by suicide, they must acquire the capability to overcome the natural fear of death. NSSI may facilitate the acquisition of suicide capability through desensitization to self-harm, reducing fear of death, and increasing the likelihood of a SA (Joiner, 2005). Despite this link, researchers have had limited success in identifying factors that may facilitate the NSSI–SA relationship, potentially due to the focus on static factors (e.g., Muehlenkamp & Brausch, 2019). It is also possible that NSSI characteristics impact acquired capability. Among self-injurers, earlier age of NSSI onset (Ammerman et al., 2018), greater NSSI frequency, using multiple NSSI methods (Brausch & Muehlenkamp, 2018), and engaging in NSSI for intrapersonal reasons (e.g., affect regulation; Paul, Tsypes, Eidlitz, Ernhout, & Whitlock, 2015)

have been shown to confer greater risk for SAs. However, prior research has rarely considered the temporal nature of the association between NSSI and SA engagement. Thus, there is a need to examine the transition from NSSI to SA, and particularly, whether NSSI characteristics influence the time lapse between NSSI onset and later SA.

Current Study

The current study aimed to provide an initial examination of the association between NSSI characteristics and the time lapse between NSSI onset and first SA. We hypothesized that greater NSSI frequency, endorsing a greater number of NSSI methods, and greater intrapersonal functions endorsement would be associated with a shorter duration between NSSI onset and later SA. Findings from this study have the potential to provide valuable information for the prediction of suicide risk among those with a history of NSSI.

Method

Participants and Procedures

Participants were 167 undergraduate students from a large, urban university who reported at least one act of NSSI and at least one SA during their lifetime; NSSI onset was required to have preceded one's first SA ($n = 11$

excluded for SA prior to NSSI onset; $n = 43$ excluded for same-year NSSI onset and SA; $n = 2$ had missing data; $n = 111$ final sample). See Table 1 for final sample characteristics. Participants completed questionnaires for class credit. Procedures were approved by the university's institutional review board.

Measures

Nonsuicidal Self-Injury

The Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009) was used to assess the onset, frequency, functions, and characteristics of NSSI behavior. The first ISAS section assesses lifetime frequency of 12 specific NSSI behaviors and lifetime NSSI characteristics (i.e., subjective pain; time elapsed from NSSI urge to behavior). The second section of the ISAS assesses 13 NSSI functions (scores were averaged across items for each subscale). The measure demonstrated good internal consistency ($\alpha = .63-.88$).

Suicidal Thoughts and Behaviors

The Suicide Behavior Questionnaire – Revised (SBQ-R; Osman et al., 2001) was used to assess for lifetime SA presence and an added question assessed age of first SA. Strong psychometric properties of the full scale have been established (Osman et al., 2001).

Table 1. Means and standard deviations of study variables

Demographic variable	<i>M (SD)</i>
Age	19.28 (1.56)
Gender*	
Male	14.4%
Female	82.0%
Transgender	3.6%
Race*	
Caucasian	67.89%
African American	7.34%
Asian	9.17%
Other/Multi	15.60%
Age at first NSSI act	12.16 (2.41)
Age at first SA	15.25 (2.32)

Note. NSSI = nonsuicidal self-injury. SA = suicide attempt. * = percent reported.

Table 2. Descriptive statistics and associations between NSSI characteristics and methods and time between NSSI onset and SA

NSSI Characteristic	<i>M (SD)</i>	<i>r</i>	<i>p</i>
NSSI frequency	583.01 (1099.36)	-.04	.68
NSSI methods	1.97 (2.87)	.003	.98
Subjective pain	1.32 (0.61)	.69	.50
Age of NSSI Onset	12.16 (2.41)	-.56	<.001
NSSI Methods	% Endorsement	<i>F</i>	<i>p</i>
Cutting	88.3%	7.62	.01
Scratching	27%	0.14	.71
Biting	13.5%	3.77	.06
Banging/hitting head	27%	0.84	.36
Burning	20.7%	6.05	.02
Interfering with wound healing	23.4%	1.97	.16
Carving	9.9%	0.35	.56
Rubbing skin	10.8%	0.06	.82
Pinching	20.7%	0.26	.61
Sticking self with needles	4.5%	1.95	.17
Pulling hair	20.7	0.17	.90
Swallowing dangerous substances	17.1%	0.40	.53

Note. NSSI = nonsuicidal self-injury. SA = suicide attempt. Bold denotes statistically significant associations at $p < .05$.

Table 3. Means of NSSI functions and correlations with time between NSSI and SA onset

Function	<i>M (SD)</i>	<i>r</i>	<i>p</i>
Interpersonal			
Interpersonal boundaries	1.09 (1.46)	.18	.06
Self-care	1.44 (1.60)	-.02	.87
Sensation seeking	0.86 (1.33)	.02	.81
Peer bonding	0.20 (0.87)	.11	.25
Interpersonal influence	0.78 (1.17)	.19	.05
Toughness	1.20 (1.46)	-.08	.43
Revenge	0.51 (1.25)	.02	.87
Autonomy	0.63 (1.28)	.08	.43
Intrapersonal			
Self-punishment	4.10 (1.91)	.01	.93
Affect regulation	4.57 (1.67)	-.13	.18
Anti-suicide	4.57 (1.96)	-.17	.08
Anti-dissociation	3.35 (2.14)	-.26	.004
Marking distress	2.13 (1.88)	.03	.74

Note. NSSI = nonsuicidal self-injury. SA = suicide attempt. Bold denotes statistically significant associations at $p < .05$.

Results

Table 1 provides descriptive statistics of study variables. The NSSI-SA transition time was calculated as a difference score (age of first SA – NSSI onset age) for each participant. The average number of years between NSSI onset and SA was 3.09 ($SD = 2.55$). The results of t tests showed there were no significant differences in NSSI-SA transition time based on gender, $F(3, 93) = 5.14, p = .26$, or race, $\chi^2(3, N = 109) = 1.75, p = 0.16$. Age was not significantly correlated with NSSI-SA transition time ($r = 0.17, p = 0.08$).

NSSI frequency, number of NSSI methods, and subjective pain were not significantly associated with NSSI-SA transition time. Age of NSSI onset was significantly, negatively correlated with NSSI-SA transition time. The result of t tests showed having ever engaged in cutting and burning (dichotomized behaviors) were significantly associated with a shorter NSSI-SA transition time (Table 2). The interpersonal influence and anti-dissociation functions were significantly associated with a longer and shorter NSSI-SA transition time, respectively (Table 3).

Discussion

This study aimed to examine the influence of NSSI characteristics on the NSSI-SA relationship. We hypothesized that greater NSSI frequency, utilizing more NSSI methods, and higher levels of intrapersonal NSSI functions would be

associated with a shorter duration between NSSI onset and later SA. Hypotheses were partially supported.

Earlier age of NSSI onset was associated with a longer time NSSI-SA transition time. This finding seems to be in contrast to prior research showing earlier NSSI engagement is associated with greater SA risk (Ammerman et al., 2018). However, given the average age of participants' first SA was over 3 years after their first NSSI act, individuals with an earlier NSSI onset may have lacked the knowledge or access to methods (i.e., practical capability; Klonsky & May, 2015) to carry out a SA. Therefore, individuals with an earlier NSSI onset may have a longer course of NSSI prior to transitioning to suicidal self-injury but are at an increased risk for eventually engaging in SA.

Individuals who reported using NSSI methods of self-cutting and self-burning had a shorter time to transition. It is possible that, since these methods involve more direct tissue damage, they are associated with an increased habituation to inflicting pain and elevated capability for enacting a SA (Hamza et al., 2012). While number of NSSI methods was not associated with time to transition from NSSI to SA, it may be that a specific pattern of NSSI method engagement is associated with SA (e.g., Ammerman et al., 2019). Further, as self-cutting is a common SA method (Runeson, Tidemalm, Dahlin, Lichtenstein, & Långström, 2010), individuals who engage in nonsuicidal self-cutting may both habituate to the pain and gain practice in utilizing this method, facilitating an easier transition to employing this method with suicidal intent.

The anti-dissociation function of NSSI was related to a shorter NSSI-SA transition time, supporting prior research

showing that, among those with a history of NSSI, endorsing this function was associated with a risk for SA that was greater than that of many other NSSI functions (Paul et al., 2015). However, the interpersonal boundaries function was associated with a longer NSSI-SA transition time. This finding corroborates research supporting a stronger relationship between intrapersonal (vs. interpersonal) NSSI functions and SA (Klonsky & Glenn, 2009). This result may also reflect that, for individuals endorsing the interpersonal boundaries function, the perceived effectiveness of NSSI meeting this function is high, reducing the need to escalate to SA (Brausch & Muehlenkamp, 2018).

The current study was preliminary in nature and consequently has several limitations. Notably, the sample size was small and consisted of undergraduate students. As data were collected cross-sectionally and the onsets of NSSI and first SA were both reported by age rather than date, individuals who reported NSSI onset and first SA in the same year were excluded from analyses – we did not assess transition time in units of time smaller than 1 year. Thus, nuances of the temporal NSSI-SA relationship should be explored longitudinally. Future research should also include clinical interviews to confirm SA history given the possible inconsistency between interviews and self-report. Finally, the current study included participants who endorsed a suicide attempt with a wide range of suicide intent levels. Thus, future work should consider whether the associations persist when limiting analyses to only those who engaged in a suicide attempt with significant intent to die. However, as this was the first study to examine the association between NSSI characteristics and the time between NSSI onset and SA engagement, findings offer promising future directions and preliminary considerations for suicide risk assessments among those who engage in NSSI.

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