

Nonsuicidal self-injury: Increased prevalence in engagement

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Abstract:

While some suggest nonsuicidal self-injury (NSSI) is increasing, very little has been done systematically to explore this possibility. The current study employed three cohorts of freshman (total $N = 949$) from the same university across a period of 7 years to explore engagement in NSSI. Related intrapersonal factors were also examined. NSSI lifetime and current engagement use drastically increased across the three cohorts. Anxiety followed a similar trajectory as NSSI behaviors as increasing in reported levels, while depression and coping behaviors did not. Implications of these trends are discussed.

Keywords: nonsuicidal self-injury (NSSI) | depression | anxiety | coping

Article:

Nonsuicidal self-injury (NSSI) has been discussed among medical and clinical professionals for the past few decades (e.g., Favazza, 1998; Glenn & Klonsky, 2009; Graff & Mallin, 1967; Lewis & Plener, 2015; Walsh, 2012). *NSSI* is defined as the infliction of immediate damage to body tissue without the intention to die (APA, 2014) and thus does not include suicidal behaviors. However, NSSI is related to suicidal behaviors, specifically with current NSSI engagement and the number of methods used to self-injure being stronger predictors of suicide ideation (Glenn & Klonsky, 2009; Wester, Ivers, Villalba, Trepal, & Henson, 2016). More recently, NSSI has been discussed as a socially normed behavior that has become popular in most cultures due to the increased focus among social media and pop culture (Adler & Adler, 2007).

NSSI has been theorized to be a result of emotion dysregulation, internalizing behaviors, and the inability to cope effectively (Chapman, Gratz, & Brown, 2006; Nock, 2009). Researchers have empirically supported these theories across multiple populations, finding that individuals who self-injure have higher levels of anxiety and depression (e.g., Brown, Williams, & Collins, 2007;

Glenn & Klonsky, 2009; Selby, Bender, Gordon, Nock, & Joiner, 2012; Wester & Trepal, 2015) and more difficulty coping (Trepal, Wester, & Merchant, 2015; Wester, Downs, & Trepal, 2016; Wester & Trepal, 2010).

Regarding prevalence, NSSI is highest among clinical populations (both inpatient and outpatient settings) followed by adolescents and college students. Rates of adolescents who self-injure have ranged between 13% and 23% (Evans, Owens, & Marsh, 2005; Jacobson & Gould, 2007), while rates among college students have ranged between 9% and 38% (Brown et al., 2007; Favazza, DeRosear, & Conterio, 1989; Gratz, Conrad, & Roemer, 2002; Trepal et al., 2015; Wester, Ivers, et al., 2016; Wester & Trepal, 2015; Whitlock, Eckenrode, & Silverman, 2006). Given various rates of NSSI across numerous publications, it appears, and has even been suggested, that NSSI is increasing. However as stated by Jacobson and Gould (2007), this potential increase is difficult to assess given the rates span across various populations and differences in NSSI assessment. Specifically, NSSI is assessed with different measures (one item to scaled measures) that alter the construct. Additionally, time spans of NSSI engagement inquire about lifetime (i.e., have they ever engaged), 12 months (typically referred to as current), 6 months, or 3 months behaviors. Combining so many different time frames, along with measuring NSSI across populations (e.g., adolescents, clients in inpatient settings, college students), makes comparison of changes in NSSI prevalence difficult.

While not formally assessing whether NSSI prevalence is increasing, longitudinal studies can begin to reveal the possibility that NSSI may in fact be increasing within the same population. As an example, Hankin and Abela (2011) discovered a 10% increase in adolescents reporting NSSI behaviors across a 2.5-year time span (8%–18%). This supports the possibility that NSSI is increasing, but also spans across the age of onset for most NSSI behaviors. Another longitudinal study was conducted in a college setting, where Hamza and Willoughby (2014) indicated 38% of individuals in their first year of college engaged in NSSI at some point in their life, while an additional 2% (total 40%) reported lifetime NSSI in their second year of college, while approximately 30% of all students who reported NSSI behaviors desisted engaging in NSSI behaviors.

Another approach to determine if NSSI is increasing in prevalence is to explore the same population in the same setting, but across different cohorts. Muehlenkamp and Gutierrez (2004, 2007) conducted research in two separate studies, in the same high school, utilizing this method. They found that among high school students, rates of reported lifetime NSSI behaviors increased from 15.9% (Muehlenkamp & Gutierrez, 2004) to 23.2% (Muehlenkamp & Gutierrez, 2007). While exploring NSSI across cohorts has some limitations, doing so within the same setting helps make sense of the increases in usage of NSSI among new cohorts or generations of individuals. Muehlenkamp and Gutierrez's studies added to the understanding of increasing NSSI rates; however, they assessed only lifetime prevalence, which does not advance understanding of current rates of NSSI. We need to understand current NSSI behaviors given that these are behaviors that are more strongly related to suicidal behaviors than lifetime NSSI (Wester, Downs, et al., 2016; Wester, Ivers, et al., 2016) and are behaviors that would currently be present among individuals who would seek mental health or medical services.

Along with needing to better understand changes in current NSSI behaviors, what is still missing is an exploration of the changes in NSSI behaviors along with changes in other factors explaining NSSI behaviors, such as internalizing behaviors (i.e., depression, anxiety) and coping behaviors. While these factors are related to NSSI, as well as explain differences among individuals who desist versus continue NSSI behaviors (e.g., Hamza & Willoughby, 2014; Wester, Downs, et al., 2016; Wester, Ivers, et al., 2016), it has not been thoroughly explored across cohorts. It would be expected that as the prevalence of NSSI increased, so would anxiety and depression and shifts in coping behaviors (i.e., increase in maladaptive coping, decrease in adaptive coping), thus helping to explain the increases in prevalence of NSSI.

The specific purpose of this study was to explore rates of NSSI across three cohorts of college freshman at one university setting by asking: (1) How have NSSI behaviors changed across the past 7 years for college freshman? More specifically, has the lifetime and current engagement in NSSI increased among college freshman (across three time points)? (2) How has the number of NSSI methods and frequency of NSSI episodes changed across three time points among college freshman? And (3) Have other factors, such as anxiety, depression, and coping behaviors changed across the three time points?

Methods

Sample

The sample for this study consisted of three separate freshman cohorts: 2008, 2011, and 2015. Each cohort is represented demographically in Table 1, as they were examined across cohort and not grouped into one sample. The first cohort included 410 incoming freshman in Fall 2008, the second cohort included 277 incoming freshman in Fall 2011, and the third cohort of freshman included 262 students in Fall 2015. This equates a total sample size of 949 freshman students split across three separate cohorts.

Table 1. Demographics of Each Freshman Cohort

	2008 (N = 410)		2011 (N = 277)		2015 ^a (N = 262)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Sex						
Male	93	22.7	75	27.1	47	17.9
Female	317	77.3	202	72.9	209	79.8
Ethnicity/Race						
Black/African American	75	18.3	58	20.9	61	23.3
Asian/Asian American	13	3.2	21	7.6	20	7.6
Hispanic/Latino	15	3.7	12	4.3	20	7.6
White/Caucasian	274	66.8	160	57.8	139	53.1
American Indian/Native American	3	0.7	5	1.8	1	0.4
Multiracial/Other	28	6.8	21	7.4	20	7.7

Note. Numbers in each category may not reach 100% due to missing data or nonreporting.

^a An added category under sex included transsexual that was not assessed for in the first two cohorts, five individuals in 2015 (1.9%) identified as transsexual.

Procedures

A cross-sectional causal comparative study was implemented to compare NSSI behaviors and related factors across three cohorts of incoming freshman at one midsized institution (over 16,000 students) in the southeast. The procedures and instruments from each time point were the same. In each year, the entire incoming freshman cohort was targeted in their first fall semester on the campus and sent an e-mail requesting voluntary participation in an online survey. In 2008, e-mails were sent to 2,400 incoming freshman students, resulting in 465 respondents (19.3% response rate); in 2011, 2,525 incoming freshman students were contacted, resulting in 300 respondents (11.9% response rate); and in 2015, e-mails were sent to 2,775 freshman, with 408 students responding (14.7% response rate). Respondents in each year were similar to the larger university freshman student body on race, age, and sex. Data were cleaned to remove respondents who were not freshman, did not respond to at least 50% of the questions, or did not respond to the NSSI questionnaire specifically, which resulted in the sample sizes noted earlier.

Measures

Participants were asked to complete demographic questions that included sex, age, race, and year in school in addition to the following measures.

Nonsuicidal Self-Injury

NSSI was measured using the use of an adapted version of the Deliberate Self-Harm Inventory (A-DSHI, original DSHI, developed by Gratz, 2001). The A-DSHI contains 12 questions that inquire whether individuals have used specific NSSI methods to intentionally harm themselves without the intention to die ever (lifetime) or within the past 90 days (current). Responses are recorded as *yes* or *no* to each behavior and calculated into four potential variables: (1) NSSI lifetime engagement (*yes/no*) defined as a participant indicating they have utilized at least one NSSI method at some point in their life, (2) Number of NSSI lifetime methods (numerical count 0–12), which is a sum score of each NSSI method used at some point in one's lifetime; (3) NSSI current engagement (*yes/no*) defined as a participant indicating they have utilized at least one NSSI method within the past 90 days; and (4) Number of NSSI current methods (numerical count 0 to 12), which is a sum score of each method the participant indicates they have used within the past 90 days. A final variable was created on the A-DSHI that asks participants to indicate the number of episodes they engaged in with each specific method during the past 90 days. This results in a sum score of NSSI current frequency. The A-DSHI has been used in many other studies and has been found to have adequate estimates of reliability (Cronbach $\alpha = .70$ on both lifetime and current engagement) and construct validity (Murray, Wester, & Paladino, 2008; Wester, Downs, et al., 2016; Wester, Ivers, et al., 2016).

Depression

The Center for Epidemiological Studies for Depression Scale (CES-D) short version (Andresen, Malmgren, Carter, & Patrick, 1994) consists of 10 items measuring self-reported depressive symptoms. Researchers have shown that CES-D has predictive accuracy for depression and adequate reliability. Higher scores indicate higher levels of depression.

Anxiety

The PGI General Well-Being Scale (Verma, Dubey, & Gupta, 1983) asks participants to rate on a four-point Likert-type scale the frequency of occurrence of each item. High scores on this subscale indicate higher levels of wellness and lower anxiety. This scale has adequate reliability and validity (Trepal et al., 2015; Verma et al., 1983).

Coping

The Brief COPE (Carver, 1997) was used to measure adaptive and maladaptive coping behaviors. The Brief COPE consists of 28 items, on a Likert-type scale, to assess 14 different coping styles, which are collapsed into two larger scales of adaptive and maladaptive coping behaviors. The Brief COPE, and the subscales, has been found to have adequate reliability (Carver, 1997; Trepal et al., 2015). The maladaptive, or avoidant, coping scale consists of the following specific subscales: denial, self-distraction, venting, substance abuse, behavioral disengagement, and self-blame. The adaptive coping scale consists of the following coping subscales: active coping, planning, instrument support, positive reframe, humor, acceptance, religion, and emotional support.

Data Analysis

Descriptive statistics, along with ANOVA with post hoc Scheffe's test, were used to answer the questions across the three cohorts.

Table 2. ANOVA Examining NSSI Behaviors, Depression, Anxiety, and Coping Across Freshman Cohorts

	2008		2011		2015		<i>F</i>	η^2
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>		
Lifetime NSSI # methods	1.67 ^a	1.44	2.21 ^a	1.64	3.21 ^b	2.16	16.46**	.11
Current NSSI # methods	1.90	1.92	1.49	.85	1.84	1.45	.87	.02
Current NSSI frequency	19.00	27.52	9.60	14.92	10.95	17.43	1.17	.03
Depression								
Entire cohorts	9.23 ^a	5.08	21.89 ^b	4.29	10.19 ^a	6.04	533.69**	.54
NSSI current group	15.27 ^a	5.88	23.53 ^b	4.81	15.81 ^a	5.37	23.10**	.34
Anxiety								
Entire cohorts	14.72 ^a	2.75	14.42 ^a	2.92	13.55 ^b	3.16	12.62**	.03
NSSI current group	12.00 ^{a,b}	2.28	12.83 ^{a,b}	3.15	10.89 ^a	3.19	3.96*	.08
Adaptive coping								
Entire cohorts	31.84 ^a	8.10	46.58 ^b	7.94	45.21 ^b	7.42	357.72**	.44
NSSI current group	28.00 ^a	8.96	44.46 ^b	8.73	42.21 ^b	7.46	17.64**	.28
Maladaptive coping								
Entire cohorts	11.77 ^a	5.71	24.19 ^b	5.89	24.70 ^b	5.55	549.06**	.55
NSSI current group	18.37 ^a	7.20	26.34 ^a	5.83	28.18 ^a	5.45	12.86**	.21

* $p < .05$, ** $p < .01$, different letters indicate significant differences per row.

Results

Across the three cohorts, both NSSI lifetime and current engagement increased (Figure 1a): the number of students who reported engaging in NSSI at some point in their life almost doubled from 2008 to 2011 and about tripled from 2008 to 2015. Almost half of the freshman participants

in 2015 reporting they had at some point in their life engaged in NSSI behaviors. A similar increasing pattern was also found among freshman participants reporting current NSSI behaviors (2.6% of freshmen reported engaging in NSSI behaviors in 2008, which increased to 12.6% in 2011 and 19.4% in 2015).

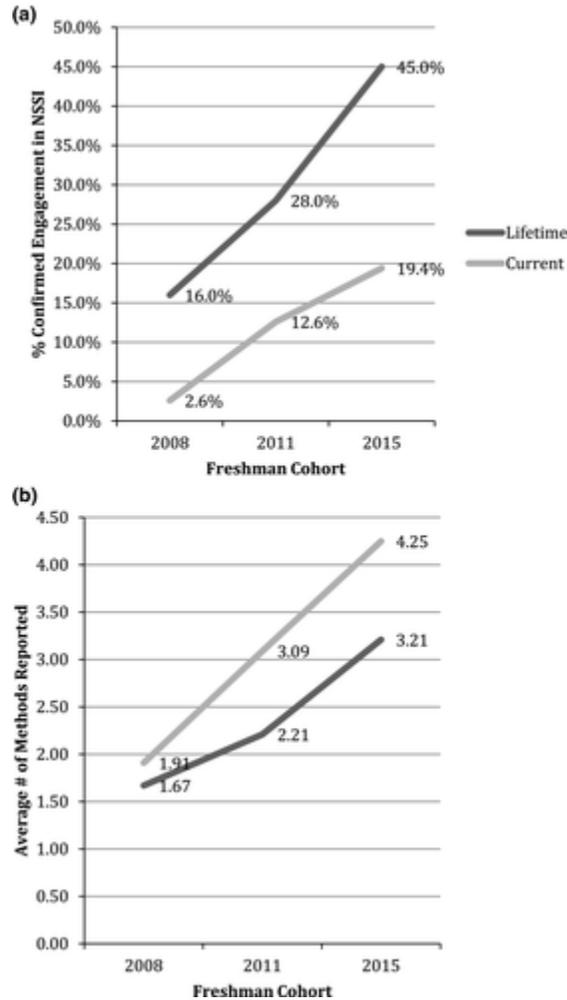


Figure 1. (a) Lifetime and current NSSI engagement across three freshman cohorts; (b) Average lifetime and current NSSI numbers of methods used across three freshman cohorts (only individuals who reported self-injuring are included in each depiction).

The number of methods used and the frequency of episodes were also explored across the three cohorts. Only students who indicated engaging in NSSI were included in the analyses for number of methods and frequency. The number of lifetime methods significantly increased across all three cohorts, $F(2, 261) = 16.46, p < .001, \eta^2 = .11$ (see Table 2). Both current NSSI methods and frequency did not statistically differ across cohort, $F(2, 96) = .87, p > .05, \eta^2 = .02$; $F(2, 84) = 1.17, p > .05, \eta^2 = .03$, respectively.

Related to the increases in NSSI behaviors across the three cohorts, ANOVAs were utilized to explore any changes in coping, depression, and anxiety. These changes were both explored among the entire freshman population in each cohort (including those who self-injured versus

those who did not) as well as among just those who reported currently engaging in NSSI behaviors (as their NSSI behavior, mental health, and coping behaviors were all currently occurring). Both depression and anxiety were found to be significantly different across the three cohorts (see Table 2). Post hoc Schéffe tests revealed that depression in the 2011 cohort was significantly higher than both the 2008 and 2015 freshmen cohorts, while anxiety was similar among the 2008 and 2011 cohorts, but was significantly higher in 2015 (note, lower PGI scores equate lower wellness, thus greater anxiety). This trend existed for both the entire freshman cohorts as well as the young adults who indicated they currently engaged in NSSI. Similarly, adaptive and maladaptive coping behaviors significantly differed across the freshman cohorts. Freshman in 2011 and 2015 reported using higher levels of both adaptive and maladaptive coping methods than freshman in 2008, with no statistically significant difference between 2011 and 2015 specifically.

Given the similar trend of both current and lifetime NSSI engagement and total number of methods used, along with anxiety increasing, four post hoc ANCOVAs were conducted to explore the degree to which anxiety accounted for the differences that existed across freshman cohorts. While the actual analyses are not provided in this article, all four analyses revealed that group differences remained even when controlling for anxiety or NSSI behaviors. Anxiety and NSSI had a significant but small effect in each of the ANCOVAs (partial η^2 ranged between .051 and .105).

Discussion

Rates of self-injury among emerging adults are increasing, with almost half of participants in the most recent freshman cohort reporting engaging in NSSI behaviors at some point in their lifetime. Moreover, the 20% of 2015 freshman reporting current engagement in NSSI marks an increase of seven times the rate of the first cohort surveyed. The rates across cohorts allows us to clearly distinguish this increase in NSSI from increases we might expect from emerging adults moving through this developmental stage (e.g., Hamza & Willoughby, 2014). It is clear from these findings that schools, mental health professionals, and other service providers engaging with emerging adults should be equipped to assess for and intervene on such behaviors.

The number of methods used to self-injure across one's lifetime also showed a steady increase from 2008 to 2015, but did not differ across cohorts for freshman who were currently engaged in NSSI. While the lifetime increase in methods is concerning, it is reassuring that the current number of methods used to self-injure is not on the rise given that current methods used is a strong positive predictor of suicide ideation and behavior (Wester, Downs, et al., 2016; Wester, Ivers, et al., 2016).

Generally, the increases in NSSI behaviors are concrete and draw our attention; there remain open questions about what might be behind these changing rates. The focus on internal precipitates to NSSI is both useful for practitioners and consistent with leading models of NSSI as a form of emotion regulation. Given the existing link between NSSI and attempts to regulate unpleasant emotions (Nock, 2010), we expected that depression and anxiety would increase alongside increases in self-injury. While depression, anxiety, and coping have significantly shifted across the three cohorts, only reported anxiety seems to fully follow the same trend as

NSSI behaviors. The finding in the present sample that depression and coping behaviors generally do not follow the same continual increase as NSSI behaviors is contradictory to expectations that internalizing behaviors should follow trends of NSSI prevalence due to their relationship. For anxiety, there is a continual, although minimal, increase across the three cohorts for those who self-injure. In fact, individuals who currently self-injure reported higher levels of anxiety compared with the entire freshman cohort. Even though more significant changes in prevalence rates were occurring from 2008 to 2011, we see a significant jump in anxiety from 2011 to 2015, following the steadier upward trend for number of methods used. However, based on the post hoc analyses, anxiety only partially explains NSSI engagement and methods used, and does so with a small effect. This suggests that anxiety may only be partially driving the changes in NSSI behaviors (or vice versa, given the cross-sectional nature of the data in each year).

A similar pattern was not found for depression, which while related to NSSI (e.g., Glenn & Klonsky, 2009; Selby et al., 2012; Wester & Trepal, 2015) suggests that depression is not driving this increasing prevalence; rather, anxiety is more characteristic in terms of NSSI trends of new cohorts of young adults. A longer-term longitudinal design could help us better understand this fluctuation and address questions about the broader emotional trends we are seeing at the university and their connection to behaviors such as NSSI.

While coping does not follow the continual increase in NSSI behaviors across all three cohorts, it does show an upward trend. Freshmen are reporting a continual increase in both adaptive and maladaptive coping skills, although the statistically significant difference is only found between 2008 and 2011 cohorts. This suggests that young adults may be trying to continually find effective ways of coping, but may be doing so insufficiently (Trepal et al., 2015; Wester, Downs, et al., 2016; Wester, Ivers, et al., 2016).

It needs to be noted that while the findings in this study are important, they are specifically reports of behavior provided by emerging adults in a college setting. Therefore, these results may not generalize to individuals not enrolled in college. College students have historically had higher rates of self-injury, along with adolescents and clients residing in inpatient facilities (e.g., Favazza et al., 1989; Gratz et al., 2002; Trepal et al., 2015; Whitlock et al., 2006). However, while limitations exist, it should also be noted that studies of adolescent cohorts in a school setting found similar increases in NSSI behaviors (Muehlenkamp & Gutierrez, 2004, 2007).

The trends found in this study point to a need to focus on anxiety and effective use of coping methods. It seems that while more and varied attempts at managing emotions are being made, it is with relatively low success and the reliance on more harmful methods is becoming more commonplace as a result. In working with emerging adults struggling with NSSI, it is useful to assess for current attempts to manage emotion states. Alternatively, we might conclude that we are not measuring what is truly important in precipitating and sustaining self-injury given the lack of similar trends found across cohorts. We might need to begin to look to broader sociocultural shifts that could be impacting incoming cohorts of young adults. Importantly, social norming could account for this increasing prevalence such that younger generations are potentially more exposed to NSSI and view it as a somewhat normalized behavior. Such portrayals of NSSI can both reach a larger audience and encourage social comparison and

support for engaging in this behavior (Adler & Adler, 2007; Hodgson, 2004; Jarvi, Jackson, Swenson, & Crawford, 2013). Increasing methods might also connect to social norming as youth are exposed to the availability and variety of means of self-injury. Turning our attention to sociocultural influences on this behavior may provide insights into the manner in which NSSI is spread as well as potential messages to counter and curb NSSI.

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