

Assessment of Nonsuicidal Self-Injury: Development and Initial Validation of the Non-Suicidal Self-Injury–Assessment Tool (NSSI-AT)

Janis Whitlock, Deinera Exner-Cortens, and Amanda Purington
Cornell University

Research tools for assessing nonsuicidal self-injury (NSSI) epidemiology in community populations are few and are either limited in the scope of NSSI characteristics assessed or included as part of suicide assessment. Though these surveys have been immensely useful in establishing the presence of NSSI and in documenting basic epidemiological characteristics, they have been less useful in describing secondary NSSI features such as NSSI context, habituation, or perceived life impact. The aim of the current study was to examine the reliability of the test scores and validity of test score interpretations in a university population for the Non-Suicidal Self-Injury–Assessment Tool (NSSI-AT), a web-based measure of NSSI designed to assess primary (such as form, frequency, and function) and secondary (including but not limited to NSSI habituation; contexts in which NSSI is practiced; and NSSI perceived life interference, treatment, and impacts) NSSI characteristics for research purposes. Data for these analyses were drawn from 3 samples, all of which were originally part of a 2007 study of randomly selected students from 8 northeast and midwest public and private universities that participated in a web-based study entitled the Survey of Student Wellbeing. Overall, results provide support for the reliability of NSSI-AT test scores (as assessed by test–retest) and validity of NSSI-AT test score interpretations for the behavior and frequency modules (as assessed using concurrent, convergent, and discriminant evidence) in this population. Implications for research as well as next steps are discussed.

Keywords: college, nonsuicidal self-injury, measurement, self-injurious behavior, validation

Supplemental materials: <http://dx.doi.org/10.1037/a0036611.supp>

Rates of nonsuicidal self-injury (NSSI) among youth and young adults are high and of concern within both clinical and community populations (see Jacobson & Gould, 2007, and Rodham & Hawton, 2009, for reviews). Defined as behaviors in which an individual intentionally harms the body without overt suicidal intent and for reasons that are not socially sanctioned (International Society for the Study of Self-Injury, 2007), NSSI typically entails behaviors such as cutting, burning, scratching, and self-battery (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007; Walsh, 2012; Whitlock et al., 2011). Lifetime prevalence estimates of NSSI are quite variable and range from 12% to 46% in adolescent and young adult populations (Gratz, Conrad, & Roemer, 2002; Heath, Toste, Ne-

decheva, & Charlebois, 2008; Lam, Peng, Mai, & Jing, 2009; Lloyd-Richardson et al., 2007; Polk & Liss, 2007; Whitlock et al., 2011; You, Van Orden, & Conner, 2011). Whether this wide range reflects actual variation in rates of NSSI or lack of consistency in the way it is measured is unclear but merits exploration, since such wide prevalence ranges reduce confidence in overall estimates of NSSI in the absence of meaningful theory to explain the vast differences.

Research tools for assessing NSSI epidemiology in community populations are few and are either limited in the scope of NSSI characteristics assessed or included as part of suicide assessment. In order to understand NSSI apart from suicidal thoughts and behaviors (STB), most studies of NSSI in community populations of youth and adults rely on one of two measures, for which at least some psychometric data are available: the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001) and the Functional Assessment of Self-Mutilation (FASM; Lloyd, Kelley, & Hope, 1997). Both the DSHI and the FASM include measures intended to assess primary NSSI characteristics (specific NSSI behaviors, frequency, and severity), with the FASM including information on the length of time respondents contemplated the behavior before injuring, whether NSSI was performed under the influence of drugs or alcohol, and the degree of physical pain experienced during the act. The FASM also includes a section designed to assess NSSI function that has been widely used and tested in several studies (Lloyd-Richardson et al., 2007; Nock & Prinstein, 2004; Yates, Tracy, & Luthar, 2008). The Inventory of Statements About Self-Injury (ISAS; Glenn & Klonsky, 2011; Klonsky & Glenn, 2009;

This article was published Online First April 21, 2014.

Janis Whitlock, Bronfenbrenner Center for Translational Research, Cornell University; Deinera Exner-Cortens, Department of Human Development and Bronfenbrenner Center for Translational Research, Cornell University; Amanda Purington, Bronfenbrenner Center for Translational Research, Cornell University.

Deinera Exner-Cortens is now at the Centre for Prevention Science, Social and Epidemiological Research Department, Centre for Addiction and Mental Health, London, Ontario, Canada.

Funding for one portion of data collection was provided by the American Foundation for Suicide Prevention.

Correspondence concerning this article should be addressed to Janis Whitlock, Bronfenbrenner Center for Translational Research, Beebe Hall, 110 Plantations Road, Cornell University, Ithaca, NY 14853. E-mail: jlw43@cornell.edu

Klonsky & Olino, 2008) has emerged more recently and also includes several items intended to measure primary NSSI characteristics, including a comprehensive section on function. In addition to these assessment tools, the following measures intended to assess NSSI as part of a continuum of self-injurious behavior are also used: Self-Harm Behavior Questionnaire (SHBQ; Gutierrez, Osman, Barrios, & Kopper, 2001), Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock, Holmberg, Photos, & Michel, 2007), and Suicide Attempt Self-Injury Interview (SASSI; Linehan et al., 2006). However, two of these (the SHBQ and SITBI, respectively) contain only a single or small number of items specific to NSSI, and the other, the SASSI, contains several primary characteristic items related to NSSI but is designed primarily to be administered in person and has been most often used in clinical populations.

These existing surveys have been immensely useful in establishing the presence of NSSI and in documenting basic epidemiological characteristics such as frequency, function, and whether medical treatment was needed (as a proxy for injury severity). Such measures have been less useful, however, in robustly describing forms and functions as reported by those who self-injure, including the contexts within which NSSI is practiced (e.g., social contexts), variation in NSSI habituation and perceived life interference, and impacts of NSSI. However, because these additional dimensions offer information of use in understanding the broader context within which NSSI occurs, the full range of experiences measured by the Non-Suicidal Self-Injury–Assessment Tool (NSSI-AT) are useful in identifying some of the biopsychosocial dimensions of NSSI commonly noted as important in clinical settings (Walsh, 2012). Similarly, mapping the psychosocial contours of NSSI is likely to be useful in intervention and prevention efforts, since these efforts must often take into consideration contextual and subjective experience factors broader than those captured by measures aimed at assessing diagnostic-equivalent (since NSSI is not yet a formal diagnosis) thresholds and types. And, although the development of standardized self-injury continuums has allowed for greater clarity in conceptualizing the relationship of NSSI to STB, as Nock et al. (2007) noted, such efforts have resulted in measures useful in assessing self-injury broadly conceived but have also tended to conflate NSSI (sometimes called “parasuicide”) with suicidal behavior. Thus, measures that investigate the relationship with STB, but which allow for the careful delineation of the two behaviors, are needed. Moreover, few existing measures include domains of experience and language grounded in the discourse of those who practice NSSI.

The aim of the current study was to examine the reliability of scores on a number of (NSSI-AT) questions and modules as well as the validity of NSSI-AT behavior and frequency module interpretations in a university population. The NSSI-AT is a web-based measure of NSSI, designed for use in community populations of young adults and adults for research purposes. The NSSI-AT was developed in 2005 to assess primary (such as form, frequency, and function) and secondary (including but not limited to NSSI habituation; contexts in which NSSI is practiced; and NSSI perceived life interference, treatment, and impacts) NSSI characteristics, as well as the complex relationship between NSSI and STB. For those who screen positive to the initial NSSI assessment, the NSSI-AT generally requires from 5 to 20 min, depending on modules used and the degree of detail respondents provide in qualitative fields.

The NSSI-AT was developed in stages, first by reviewing existing literature, then closely examining existing assessment tools, and finally through interviewing individuals who self-injure and service professionals who directly work with individuals who self-injure as a means of assuring that the language and constructs used by individuals with direct NSSI experience were represented. To date, the NSSI-AT has been used in several large-scale surveys (Baetens et al., 2012; Cheng, Mallinckrodt, Soet, & Sevig, 2010; Whitlock, Eckenrode, & Silverman, 2006; Whitlock et al., 2011), including a longitudinal study collecting data over a 3-year period (Whitlock et al., 2013). An initial examination of test–retest reliability evidence, as well as content, concurrent, convergent, and discriminant validity evidence, for the NSSI-AT in a university population is presented here.

Method

Participants

Data for these analyses were drawn from three samples, all of which were originally part of a 2007 study of randomly selected students from eight northeast and midwest public and private universities that participated in a web-based study entitled the Survey of Student Wellbeing (SSWB; see Whitlock et al., 2011, for more detail on the sample selection procedures). Five of the eight schools were private, one was a mix of public and private, and two were public. School size and population varied considerably, ranging from fewer than 2,000 undergraduates to over 11,000 undergraduates. The analyses in this article draw primarily on data from the main cross-sectional sample (Sample 1), as well as two subsamples of Sample 1, a test–retest subsample (Sample 2), and a longitudinal subsample (Sample 3; see Table 1).

Sample 1. The original, cross-sectional sample included 14,385 students from the eight original universities. In order to assess reliability of NSSI-AT scores and validity of NSSI-AT score interpretations in a young adult population, the sample used for this article was restricted to participants under the age of 26, yielding a final sample size of 11,529. This sample was representative of the overall student population across all eight universities in terms of ethnicity, age, and socioeconomic status, although more females than males participated (57.6% vs. 41.7%; $Z = 14.96$, $p < .001$). Of the total Sample 1 population ($N = 11,529$), 15.4% ($n = 1,773$) reported any NSSI behavior: Only individuals reporting any NSSI behavior on Module A were shown the remainder of the NSSI-AT modules (i.e., Modules B through J; see Table 2). Unless otherwise specified, data in this article come from Sample 1.

Sample 2. The test–retest subsample was used to assess reliability of NSSI-AT scores in this population. A random subgroup of 300 students in one of the universities was invited to participate in a 4-week follow-up administration of the SSWB, which included the complete NSSI-AT. Of the 300 invited participants, 196 participants completed the retest administration. Of these, 12.8% ($n = 25$) reported any NSSI at Time 1 and/or Time 2 (compared to a 15.4% NSSI prevalence in the entire study population at baseline; see Table 1). Due to the small size of the NSSI subpopulation in Sample 2 ($n = 25$), test–retest analyses were not restricted by age. Test–retest analyses are reported in Table 3 for

Table 1
Demographics and Information on Samples in the Survey of Student Wellbeing

Variable	Sample 1	Sample 2	Sample 3
Sample description	Main, cross-sectional sample	Test–retest sample	Longitudinal sample
Total sample size	14,385	196	1,466
Effective sample size	11,529		815
Location	8 northeast and midwest public and private U.S. universities	1 U.S. university (from Sample 1)	5 U.S. universities (from Sample 1)
Wave 1 mean age in years (SD); range	20.31 (1.80); range = 18–25	26.57 (3.76); range = 21–48	19.37 (1.75); range = 18–25
Wave 1 NSSI, % yes (<i>n</i>)	15.4 (1,773)	12.8 (25)	15.5 (126)
Gender, % (<i>n</i>) ^a			
Male	41.7 (4,809)	37.8 (74)	41.7 (340)
Female	57.6 (6,639)	61.2 (120)	57.2 (466)
Race/ethnicity, % (<i>n</i>)			
White	64.3 (7,418)	77.6 (152)	69.2 (564)
African American	3.7 (427)	1.0 (2)	4.8 (39)
Hispanic	4.9 (561)	3.1 (6)	2.9 (24)
Asian	15.3 (1,764)	10.2 (20)	10.9 (89)
Other	11.3 (1,299)	7.1 (14)	11.9 (97)

Note. Percentages may not equal 100% due to missing data. NSSI = nonsuicidal self-injury.

^a Thirty-six participants in Sample 1, two participants in Sample 2, and five participants in Sample 3 listed their gender as transgender/nongendered.

NSSI-AT scores that we expected to be stable over the 4-week retest period.

Sample 3. The longitudinal subsample was used to supplement assessments of the validity of NSSI-AT score interpretations for the behavior and frequency modules. This sample was collected in five of the original eight schools in three waves (2007, 2008, and 2009). Of the 2,320 participants who were invited to participate in the longitudinal study, 1,466 provided data (63.2% response rate). For the present analyses, only those who participated in both Waves 1 and 2 and who were under the age of 26 at Wave 1 were included ($n = 815$). Of these, 15.5% ($n = 126$) reported NSSI at Wave 1. Data from Sample 3 are reported in Table 4.

Study Design and Questionnaire

The SSWB was administered on a secure Internet server and required 15–30 min to complete. The study was approved by all participating universities' Committees for Human Subjects. All participants provided online consent before taking the survey and were free to discontinue at any time. Multiple response enhancement strategies (e.g., incentives, follow-up reminders, personalized invitations) were employed. Links to local mental health resources were provided throughout the survey.

Measures

NSSI-AT. The NSSI-AT was developed via a thorough review of existing academic literature, exploratory interviews with 27 young adults with NSSI experience, and nine interviews with mental health practitioners (e.g., pediatrician, secondary school counselor, psychiatrist, psychologist) who had extensive experience working with self-injurious adolescents and young adults. These interviews assessed a broad array of epidemiological and contextual characteristics associated with NSSI and, in combination with a review of extant tools and the literature, were the basis for the original NSSI-AT, which was piloted in

a two-college study (Whitlock et al., 2006; Whitlock & Knox, 2007; Whitlock, Muehlenkamp, & Eckenrode, 2008) and refined for use in an eight-college sample (Kress, Newgent, Whitlock, & Mease, in press; Muehlenkamp, Brausch, Quigley, & Whitlock, 2013; Whitlock et al., 2011) and related longitudinal study (Whitlock et al., 2013). The NSSI-AT is composed of 12 modules: (a) behavior-based screening questions (self-injury forms); (b) functions; (c) recency and frequency (and age of cessation); (d) age of onset; (e) wound locations; (f) initial motivations; (g) severity; (h) practice patterns; (i) habituation and perceived life interference; (j) NSSI disclosure; (k) NSSI treatment experiences; and (l) personal reflections and advice (see Table 2; but see online supplemental material for full instrument). When administered, the entire sample is given the first module (behavior-based screening questions), but remaining modules are visible to only those who screen positive for NSSI.¹ Although it can be administered as a paper-and-pencil assessment, the NSSI-AT was designed as a web-based data collection tool to accommodate skip patterns that permit deeper level questioning when indicated.

A. Behavior-based screening questions (self-injury forms). To screen for NSSI, all participants were asked, "Have you ever done any of the following *with the purpose of intentionally hurting yourself*?" followed by a list of 16 NSSI behaviors, plus an "other" option (see Table 2; behaviors listed in Table 2 were endorsed by $\geq 5\%$ of the sample). Behaviors that were endorsed by less than 5% of the NSSI sample include the following: engaged in fighting or other aggressive activities with the intention of getting hurt (4.1%); tried to break your own bone(s) (2.1%); ingested a caustic substance(s) or sharp object(s) (e.g.,

¹ The subsequent paragraphs (from Behavior-Based Screening Questions to Personal Reflections and Advice) report on different modules within the NSSI-AT. However, this is not a complete list; it pertains to only those modules highlighted in Table 2 (for a complete list of all modules and items, please see the online supplemental materials).

Table 2
 Modules of the Non-Suicidal Self-Injury–Assessment Tool ($N = 1,773$)

Module and behavior	% yes (n)	M_{score} (SD), range
A. Behavior-based screening questions (self-injury forms)		
Any NSSI behavior	15.4 (1,773)	
Severely scratched or pinched with fingernails or other objects to the point that bleeding occurs or marks remain on the skin ($n = 1,727$)	51.7 (916)	
Cut wrists, arms, legs, torso or other areas of the body ($n = 1,727$)	39.7 (703)	
Banged or punched <i>objects</i> to the point of bruising or bleeding ($n = 1,726$)	26.8 (475)	
Bitten yourself to the point that bleeding occurs or marks remain on the skin ($n = 1,726$)	17.5 (311)	
Punched or banged <i>oneself</i> to the point of bruising or bleeding ($n = 1,725$)	16.7 (296)	
Carved words or symbols into the skin ($n = 1,726$)	11.9 (211)	
Intentionally prevented wounds from healing ($n = 1,725$)	11.0 (195)	
Ripped or torn skin ($n = 1,725$)	10.7 (190)	
Pulled out hair, eyelashes, or eyebrows (with the intention of hurting yourself) ($n = 1,725$)	10.5 (187)	
Burned wrists, hands, arms, legs, torso or other areas of the body ($n = 1,727$)	9.5 (168)	
Rubbed glass into skin or stuck sharp objects such as needles, pins, and staples into or underneath the skin (not including tattooing, body piercing, or needles used for medication use) ($n = 1,726$)	8.3 (148)	
B. Functions (I hurt myself . . .)		
Affective imbalance, low pressure ($n = 1,770$), $\alpha = .64$		1.33 (1.26), 0–4
. . . to cope with uncomfortable feelings (e.g., depression or anxiety)	50.8 (901)	
. . . to change my emotional pain into something physical	35.6 (631)	
. . . to feel something	26.6 (472)	
. . . to get control over myself or my life	20.0 (354)	
Affective imbalance, high pressure ($n = 1,769$), $\alpha = .60$		1.05 (1.05), 0–3
. . . to relieve stress or pressure	43.2 (766)	
. . . to deal with frustration	36.8 (653)	
. . . to deal with anger	24.8 (439)	
Social communication and expression ($n = 1,770$), $\alpha = .38$		0.27 (0.56), 0–3
. . . in hopes that someone would notice that something is wrong or that so others will pay attention to me	18.3 (325)	
. . . to shock or hurt someone	5.9 (105)	
. . . because my friends hurt themselves	2.5 (44)	
Self-retribution and deterrence ($n = 1,769$), $\alpha = .47$		0.45 (0.77), 0–4
. . . as a self-punishment or to atone for sins	18.4 (326)	
. . . because of my self-hatred	14.7 (260)	
. . . so I do not hurt myself in other ways	7.5 (133)	
. . . to avoid committing suicide	4.5 (79)	
Sensation seeking ($n = 1,769$), $\alpha = .52$		0.50 (0.83), 0–4
. . . because I get the urge and cannot stop it	17.0 (302)	
. . . because it feels good	16.2 (287)	
. . . to get a rush or surge of energy	11.5 (204)	
. . . because I like the way it looks	5.0 (89)	
C. Recency and frequency (and age of cessation)		
Recency ($n = 1,732$)		
Less than 1 month ago	19.0 (336)	
Between 1 and 3 months ago	7.8 (139)	
Between 3 and 6 months ago	7.1 (126)	
Between 6 months and 1 year ago	10.0 (178)	
Between 1 and 2 years ago ^a	16.6 (294)	
More than 2 years ago ^a	37.2 (659)	
Frequency ($n = 1,730$)		
Only once	12.9 (229)	
2–10 times	55.8 (989)	
11–50 times	20.2 (358)	
More than 50 times	8.7 (154)	
Age of cessation ^b		16.92 (2.43), 6–24
Age at NSSI cessation		
D. Age of onset		
Age at first NSSI incident ($n = 1,567$)		15.27 (3.16), 3–25
E. Wound locations		
Arms ($n = 1,771$)	49.7 (882)	
Hands ($n = 1,773$)	33.4 (593)	
Wrists ($n = 1,773$)	33.4 (592)	
Thighs ($n = 1,771$)	22.6 (400)	
Stomach or chest ($n = 1,770$)	15.0 (266)	
Calves or ankles ($n = 1,771$)	13.9 (246)	

Table 2 (continued)

Module and behavior	% yes (<i>n</i>)	<i>M</i> _{score} (<i>SD</i>), range
Fingers (<i>n</i> = 1,771)	11.0 (195)	
Head (<i>n</i> = 1,770)	10.9 (194)	
Face (<i>n</i> = 1,770)	8.2 (146)	
G. Severity		
Ever hurt self more severely than expected ^c (<i>n</i> = 1,725)	19.5 (345)	
Ever hurt self so badly should have been seen by medical professional ^d	27.0 (93)	
Ever sought medical treatment for any physical NSSI injuries ^d	11.6 (40)	
H. Practice patterns		
Social dimensions of NSSI practice (<i>n</i> = 1,513), $\alpha = .41$		0.56 (0.77), 0–4
I always intentionally hurt myself in private	54.5 (967)	
I sometimes intentionally hurt myself in the presence of others	9.1 (162)	
I have intentionally physically hurt another person	4.1 (72)	
I sometimes let other people intentionally hurt me physically	3.4 (60)	
Routines (<i>n</i> = 1,513), $\alpha = .48$		0.43 (0.72), 0–3
I tend to go through periods in which I intentionally hurt myself, then periods in which I do not, and this pattern repeats	19.2 (340)	
I have a particular place/room I prefer to be when I intentionally hurt myself	10.4 (185)	
I have a regular routine I follow when I intentionally hurt myself	6.9 (122)	
I. Habituation and perceived life interference		
Habituation (<i>n</i> = 949), $\alpha = .66$		9.08 (3.71), 4–20
Four-item habituation scale		
Perceived life interference (<i>n</i> = 1276)		
The fact that I intentionally hurt myself is a problem in my life	20.6 (366)	
	% (<i>n</i>)	
K. NSSI treatment experiences		
Ever gone to a therapist ^e		
Yes		
Total sample	31.6 (3,641)	
NSSI subsample	53.6 (950)	
No		
Total sample	67.6 (7,797)	
NSSI subsample	43.4 (770)	
Ever gone to therapy because of NSSI ^f		
Yes	9.3 (88)	
No	54.4 (517)	
NSSI only part of reason for therapy	25.2 (239)	
	% yes (<i>n</i>)	
L. Personal reflections and advice^g		
Ambivalence, $\alpha = .57$		0.54 (0.89), 0–4
The lasting marks/scars are constant reminders of a bad/rough time in my life	20.0 (141)	
My scars are my battle wounds—I made it through	12.1 (85)	
I still cannot talk about it and sometimes even thinking about it is difficult	11.1 (78)	
The remaining marks/scars are a source of embarrassment for me	10.7 (75)	
Growth, $\alpha = .64$		0.54 (0.86), 0–3
In thinking/discussing my experience around intentionally hurting myself, I have learned a lot about myself and because of it have mentally/emotionally grown	29.7 (209)	
I am now able to help others who intentionally hurt themselves	15.5 (109)	
Discussion of my experience around intentionally hurting myself has helped me grow closer to the people I care about	8.8 (62)	

Note. NSSI = nonsuicidal self-injury.

^a Participants who reported that their last NSSI occurrence was between 1 and 2 years ago or more than 2 years ago were then asked how likely they were to hurt themselves again, on a 5-point scale (see online supplemental materials for more detail). ^b Asked only of people who no longer reported self-injury behavior (*n* = 670). ^c Participants endorsing this question were then asked to list how many times this had happened (see online supplemental materials for more detail). ^d Of those who said they had ever hurt themselves more severely than expected (*n* = 345). ^e Total sample data show percentages for the entire sample (*n* = 11,438), and NSSI subsample data show percentages for only that subsample (*n* = 1,720). ^f Of those in the NSSI subsample who had said they ever went to therapy (*n* = 950). Participants who responded yes or that NSSI was only part of the reason they went to therapy were then asked if someone else insisted they go to therapy or if they decided to go on their own (see online supplemental materials for more detail). ^g Asked only of people who no longer reported self-injury behavior (*n* = 704).

Table 3
Test-Retest Reliability for Select NSSI-AT Scores in a University Population

Measure	Mean (SD), range	Test-retest reliability
Any NSSI behavior ^a		.74 [.58, .90]
Frequency of NSSI behavior		.85 [.62, .95]
Age at first NSSI incident	15.27 (3.16), 3–25	.91 [.75, .97]
Number of wound locations	2.21 (1.63), 0–16	.63 [.20, .86]
NSSI habituation	9.08 (3.71), 4–20	.73 [.23, .93]
NSSI functions	3.60 (3.06), 0–17	.79 [.50, .92]

Note. All reported test-retest reliabilities are one-way random intraclass correlation coefficients [1,1], except the test-retest reliability for Any NSSI behavior, which is a kappa value. NSSI-AT = Non-Suicidal Self-Injury-Assessment Tool; NSSI = nonsuicidal self-injury.

^a Test-retest data for Any NSSI behavior were provided by the entire sample ($N = 196$). Test-retest data for all other table entries were provided by the NSSI subsample only ($n = 25$).

Drano, other cleaning substances, pins) (1.0%); dripped acid onto skin (0.6%); and broke your own bone(s) (0.4%). Participants could also respond that they had never intentionally hurt themselves in any of these ways. A positive endorsement of any NSSI behavior moved the participant into the remaining modules of the NSSI-AT, while those participants indicating that they had never engaged in any NSSI behavior, or who did not complete this question, were skipped out of the remainder of the NSSI-AT. Suicidal intent was not screened out in the preliminary NSSI assessment stage; rather, this was accomplished through assessment of function.

B. Functions. The 18 function questions were developed through iterative analyses of qualitative interviews with individu-

als with self-injury history and treatment specialists, as well as through review of extant function literature. In these items, participants were asked to select the statements that best described why they intentionally hurt themselves. Using exploratory factor analysis (EFA) under oblique rotation, five latent factors emerged from these questions: Affective Imbalance–Low Pressure (four items; management of depressive or dissociated emotion states), Affective Imbalance–High Pressure (three items; management of agitating or high energy affective states), Social Communication and Expression (three items; social communication), Self-Retribution and Deterrence (four items; self-punishment or as an alternative to other, more severe behaviors), and Sensation Seeking (four items; use as a stimulant). Scale items are listed in Table 2. Also included in the list of function items were questions that assessed suicidal intent. Individuals who indicated that they used the behaviors assessed in the NSSI screening question *only* as a means of practicing or attempting suicide ($n = 61$) were skipped out of the remainder of the NSSI-AT. Individuals who endorsed suicide functions as well as other functions were asked this follow-up clarification question: “In the above question, you indicated that you intentionally hurt yourself with the intention of practicing or committing suicide. Was practicing or attempting suicide the primary reason you intentionally hurt yourself?” A “yes” response to this question skipped participants out of the remainder of the NSSI-AT items.

C. Recency and frequency (and age of cessation). Recency was assessed by asking participants to report on the last time they intentionally hurt themselves (on a 7-point interval scale ranging from *less than 1 week ago* to *more than 2 years ago*). Because NSSI can be cyclical, cessation was also assessed by then asking participants how likely they were to self-injure again if it had been at least 1 year since their last NSSI incident (on a 5-point interval

Table 4
Convergent and Discriminant Evidence for Interpretation of NSSI-AT Behavior and Frequency Module Scores in a University Population

Variable	Descriptives ($n = 11,529$)		Any NSSI ($n = 11,529$)	Lifetime NSSI frequency ($n = 1,503$) ^a
	% yes (n)	M_{score} (SD), range		
Convergent evidence				
Any suicidal thoughts and/or behaviors	7.9 (909)		$r = .38, p < .001, n = 10,789$	$r = .24, p < .001, n = 1,250$
Suicidal thoughts only	3.8 (435)		$r = .27, p < .001, n = 10,333$	$r = .15, p < .001, n = 990$
Suicidal behaviors	4.1 (474)		$r = .32, p < .001, n = 10,359$	$r = .26, p < .001, n = 1,043$
Any eating disorder	19.5 (2,245)		$r = .24, p < .001, n = 11,481$	$r = .15, p < .001, n = 1,503$
General psychological distress ^b		12.29 (3.65), 6–24	$r = .25, p < .001, n = 11,312$	$r = .11, p < .001, n = 1,485$
No. of lifetime traumas		0.76 (0.93), 0–6	$r = .17, p < .001, n = 10,438$	$r = .13, p < .001, n = 1,332$
Discriminant evidence				
Binge drinking (past 2 weeks)	32.5 (3,745)		$r = -.010, p = .373, n = 8,673$	$r = -.001, p = .977, n = 1,161$
No. of sexual partners (past year) ^c		17.78 (36.87), 0–99	$r = -.018, p = .604, n = 813$	$r = .074, p = .436, n = 113$
Any prescription drug use (lifetime) ^c	13.4 (109)		$r = .089, p = .024, n = 641$	$r = -.027, p = .801, n = 87$

Note. In addition to correlations, we also ran χ^2 tests to assess associations between any NSSI and any suicidal thoughts and behaviors, suicidal thoughts only, suicidal behaviors, any eating disorder, binge drinking, and any prescription drug use; t tests to assess associations between any NSSI and general psychological distress, number of lifetime traumas, and number of sexual partners; and t tests to assess associations between lifetime NSSI frequency and any suicidal thoughts and behaviors, suicidal thoughts only, suicidal behaviors, any eating disorder, binge drinking, and any prescription drug use. The pattern of results did not change for any of these associations, and thus correlations are reported for all variables, in order to reflect how validity evidence is typically presented in the literature. NSSI-AT = Non-Suicidal Self-Injury-Assessment Tool; NSSI = nonsuicidal self-injury.

^a Does not include individuals who reported only a single lifetime NSSI occasion. Lifetime NSSI data were provided by the NSSI subsample only. ^b This was measured with the K6 questionnaire (Kessler et al., 2002). ^c Collected from Sample 3 ($n = 815$). All other variables in this table are from Sample 1.

scale ranging from *very unlikely* to *very likely*). Individuals indicating that their last self-injury was a year ago or more and that they were *very unlikely* or *somewhat unlikely* to self-injure again were assumed to have ceased self-injury, and they were asked how old they were when they last self-injured (see Table 2). To assess frequency, participants reported the approximate number of total occasions on which they had hurt themselves (on a 7-point interval scale ranging from *only once* to *more than 50 times*). Participants in this module were also asked to estimate the raw total number of occasions on which they had hurt themselves, in order to provide greater flexibility in analyses. However, responses to this question were widely variable and, when on the higher end of the range, were often reported as “a lot” or “over 100” or “1,000.” Thus, the responses to the forced-choice response option question were deemed more reliable and used in the present analyses.

D. Age of onset. Participants were asked to supply the age at which they first intentionally hurt themselves (see Table 2).

E. Wound locations. Using a list of 17 locations (including an “other” category), participants were asked to specify on what area(s) of their body they had intentionally hurt themselves (see Table 2; locations listed in Table 2 were endorsed by $\geq 5\%$ of the sample). Wound locations that were endorsed by less than 5% of the NSSI sample include other (4.3%; locations not specified), shoulders or neck (3.9%), feet (3.7%), breasts (3.0%), lips or tongue (2.9%), back (2.4%), genitals or rectum (1.1%), and buttocks (0.9%).

G. Severity. Severity of NSSI was assessed using eight items, including items that assessed (a) whether participants had ever hurt themselves more severely than expected (dichotomous); (b) if they had ever hurt themselves so badly they should have been seen by a medical professional, even if they were not (dichotomous); and (c) if they had ever sought medical treatment for any injuries they had caused (dichotomous; see Table 2).

H. Practice patterns. Using dichotomous response options, participants responded to seven items about the nature of their NSSI (note that in subsequent administrations, response options were changed to a 5-point interval scale, so this is presented in the online supplemental material). When the dichotomous items were analyzed using EFA under varimax rotation, two latent factors emerged: Social Dimensions of NSSI Practice (four items) and Routines (three items; see Table 2).

I. Habituation and perceived life interference. To assess NSSI habituation, participants responded to four items on a 5-point interval scale (ranging from *strongly disagree* to *strongly agree*) intended to assess characteristics common in habituation patterns, including tolerance, intensity, and lack of control over behavior (Shadel, Shiffman, Niaura, Nichter, & Abrams, 2000). Items included in the scale were (1) I have had to intentionally hurt myself more deeply and/or in more places on my body over time to get the same effect; (2) I want to stop intentionally hurting myself altogether, but have trouble stopping; (3) I will not need help from someone to stop intentionally hurting myself altogether—I can do it on my own; and (4) When I have the urge to intentionally hurt myself it is easy to control it. Using EFA under varimax rotation, one latent factor emerged from the four included questions (see Table 2). To assess perceived life interference, participants were asked if the fact that they hurt themselves was a problem in their life (on a 5-point interval scale ranging from *strongly disagree* to *strongly agree*).

K. NSSI treatment experiences. The five treatment questions focused on therapy, including if the participant had ever gone to therapy and if they had gone to therapy because of their NSSI (see Table 2). Participants who had ever seen a therapist were also asked if they had hurt themselves again after therapy stopped, and of these, 41.1% reported that they no longer self-injured after treatment. Response options for the treatment questions were a mix of nominal, ordinal, and open-ended answers (see online supplemental material).

L. Personal reflections and advice. The final two items on the NSSI-AT asked participants to reflect on their NSSI experience, including asking the participant to select all the ways that intentionally hurting themselves has impacted their life, both positively and negatively, from a list of seven response options (see Table 2). Using EFA under oblique rotation, two latent factors emerged from these seven impact items (see Table 2).

Evidence of validity. To support validity arguments, several analyses were performed to provide validity evidence based on the relationship of NSSI-AT scores with other variables. First, data were collected on the behavior module from the FASM (Lloyd-Richardson et al., 2007) from a random subset of Sample 3 participants ($n = 122$). The FASM was designed to assess NSSI behaviors and functions in adolescent samples and has evidence of reliability and validity in high-school-aged adolescents (Lloyd-Richardson et al., 2007). The 11 FASM behavioral items include both minor NSSI (e.g., hitting self, biting self) and moderate/severe NSSI (e.g., cutting/carving, burning). Following Lloyd-Richardson et al. (2007), for these analyses we excluded participants who reported that their only NSSI behavior was “picked at wound” (p. 1186). Participants who endorsed any of the remaining 10 items were considered to possess self-injury history on the FASM screen (1 = Yes, 0 = No). We hypothesized that NSSI behaviors reported on the NSSI-AT would be positively and significantly associated with NSSI behaviors reported on the FASM.

Second, existing literature suggests that NSSI should be more strongly correlated with mental health variables than with other risk-taking behavior variables (Hasking, Momeni, Swannell, & Chia, 2008; Williams & Hasking, 2010); thus, to provide convergent evidence, we included STB, disordered eating, general psychological distress, and lifetime trauma, and hypothesized that each of these would be positively and significantly associated with any NSSI and lifetime NSSI frequency. To provide discriminant evidence, we included binge drinking, number of sexual partners, and lifetime prescription drug use, and hypothesized that these would not be significantly associated with any NSSI or lifetime NSSI frequency. These data were all from Sample 1, except for data on sexual partners and prescription drug use, which were collected from Sample 3. Descriptives for these variables are listed in Table 4.

To measure STB, a scale developed by Kessler and colleagues (2005) was used. Participants were asked if they had ever seriously considered or attempted suicide. Participants who reported any STB were then asked a series of questions to assess thoughts (i.e., seriously thought about suicide, made a general plan but did not carry it out) and behaviors (e.g., left a note, had a method, made a serious attempt). Participants endorsing either of the thought questions, but none of the behavior questions, were coded as experiencing suicidal thoughts only; the comparison group was participants reporting no suicidal thoughts or attempts (1 = Yes, 0 =

No). Participants endorsing any of the five behavior items were coded as experiencing suicidal behaviors; the comparison group was participants reporting no suicidal thoughts or attempts (1 = Yes, 0 = No). To assess disordered eating, items from the American College Health Association National College Health Assessment (American College Health Association, 2005) were used. Participants were asked if they had ever repeatedly severely restricted their eating, binged and purged, overexercised to lose or manage their weight, and/or used laxatives or diet pills. A dichotomous variable reflects endorsement of any of these disordered eating behaviors (1 = Yes, 0 = No). General psychological distress was assessed using the K6 (Kessler et al., 2002), a six-item questionnaire. Participants were asked how often they had experienced certain feelings (e.g., hopelessness) in the past 30 days, and answers were provided using a 4-point interval scale (1 = none of the time to 4 = most of the time). Responses across the six items were summed to create the psychological distress score ($\alpha = .81$). Lifetime trauma was assessed using items from the Trauma History Questionnaire (Green, 1996), which asked participants if they had experienced any of six traumatic events (e.g., death of a parent). Responses across the six items were summed to index the number of traumas that participants had experienced in their lifetime.

Binge drinking was also assessed using standard items from the American College Health Association National College Health Assessment (American College Health Association, 2005), by asking participants to recall the occasion on which they drank the most in the past 2 weeks and then to record how many drinks they had on that occasion; binge drinking was defined as four or more drinks for women and five or more drinks for men (National Institute on Alcohol Abuse and Alcoholism, 2012). To assess the number of sexual partners (Hansen, Paskett, & Carter, 1999), participants were asked how many different partners they had sexual intercourse with in the past year, on a scale ranging from none to 10 or more. To assess prescription drug use (McCabe, West, & Wechsler, 2007), participants were asked on how many occasions they had used sleeping medication, sedative/anxiety medication, stimulant medicine for ADHD, and/or pain medication that had not been prescribed to them. A dichotomous variable reflects any use of these nonprescribed drugs (1 = Yes, 0 = No).

Sociodemographics. Information on age, sex, and race/ethnicity (White, African American, Hispanic, Asian, Other) for all three samples is presented in Table 1.

Analysis

The NSSI-AT is intended to present a broad, holistic picture of NSSI practice. However, since this survey is also intended to be administered to large, community samples, the number of items exploring each area is limited. Similar to arguments presented when validating the SITBI (Nock et al., 2007), factor analyses and internal reliability coefficients are generally not theoretically or empirically meaningful in this context, and therefore are not presented for the measure as a whole. However, there are modules of the NSSI-AT for which we did conduct EFA, to aid in final variable selection (specifically, NSSI habituation, NSSI functions, NSSI practice patterns, and NSSI personal reflections and advice; see Table 2). While we found that the scales derived from EFA factored cleanly and explained a reasonable percentage of cumu-

lative variance (34%–53%), in general, the alphas for these scales were low (range = 0.38–0.66), presumably because of the small number of items per scale (range = three to four items), because these items were not designed as scales, and because of the dichotomous nature of the scoring for most items. Internal consistency reliability coefficients for all factored scales are presented in Table 2. We recommend Likert-type scales rather than dichotomous scoring in future administrations, if the survey time permits.

To analyze the data from this survey, we calculated descriptive statistics for sociodemographics and the NSSI-AT questions. Reliability of NSSI-AT scores on individual questions and scales was assessed using test–retest analyses. Test–retest analyses were performed by using kappa statistics for dichotomous variables (Landis & Koch, 1977) and by using one-way random intraclass correlation coefficients (ICC) [1,1] for ordinal and continuous variables (Shrout & Fleiss, 1979). ICC[1,1] tests were performed using a test value of 0.70, with the hypothesis that coefficients should not significantly differ from 0.70, as this is a recommended minimum acceptable correlation for test–retest reliability (Kline, 2000, p. 26). Concurrent, convergent and discriminant evidence of validity, as demonstrated by associations between NSSI-AT scores and other variables, was assessed using kappa statistics (concurrent) and correlations (convergent, discriminant).

Results

Descriptive Statistics

Descriptive statistics for the three samples are presented in Table 1. For our primary analysis sample (Sample 1, $N = 11,529$), the mean age (SD) was 20.31 (1.80), and 64.3% reported their race/ethnicity as White.

Descriptives for the majority of NSSI-AT variables and scales are presented in Table 2, including information on habituation, functions, practice patterns, and personal reflections and advice (see also Whitlock et al., 2011). In the cross-sectional sample of college students (Sample 1), 15.4% reported any NSSI behavior. The majority of the NSSI subsample had hurt themselves 2–10 times in their lifetime (55.8%) and had initiated NSSI behaviors at age 15.27 ($SD = 3.16$; see Table 2). The mean (SD) number of wound locations was 2.21 (1.63). Among those who self-injured, 19.5% had hurt themselves more severely than expected, and 20.6% reported that NSSI was a problem in their life (see Table 2). The majority of this sample (54.4%) had not gone to therapy because of their NSSI behavior (see Table 2).

Reliability of NSSI-AT Test Scores

Test–retest reliability data from Sample 2 for NSSI-AT scores expected to be stable over a 4-week period are presented in Table 3. The test–retest coefficient for any NSSI, obtained by looking at agreement in the whole retest sample ($N = 196$), was in the substantial agreement range, as described by Landis and Koch (1977). Scores for all other variables, assessed in the NSSI subsample only ($n = 25$), showed a good degree of agreement between test occasions, with no test–retest coefficients significantly differing from the test value of 0.70, except the value for age at first self-injury, which was significantly higher (ICC[1,1] = .91, $p = .01$). The degree of test–retest association was lowest for

number of wound locations ($ICC[1,1] = .63$), which may be because wound locations changed over the period between the initial test and the retest 4 weeks later, though this may also be due to recall bias coupled with small sample size. Overall, the test–retest coefficients obtained by looking at agreement on a number of NSSI-AT variables and scales over a 4-week period indicated that NSSI-AT scores exhibited preliminary reliability in our university population.

Validity of NSSI-AT Test Score Interpretations

Evidence based on test content. As described above, several steps were taken to rigorously develop NSSI-AT test content at the outset, including tool construction grounded in (a) a thorough review of extant theory, (b) existing measures, and (c) in-depth interviews with individuals with varied backgrounds and experience. The tool was also piloted with representatives of the target population and reviewed by clinicians willing to provide detailed feedback on content wording, representativeness, and ordering. All information yielded from this pilot was consistent with extant clinical and research portraits of NSSI in adolescent and young adult populations (Conterio & Lader, 1998; Nock & Prinstein, 2005; Ross & Heath, 2002; Selekmán, 2009; Walsh, 2012).

Evidence based on relations to other variables. Substantial agreement existed between reports of any NSSI behaviors on the NSSI-AT and reports of any NSSI behaviors on the FASM (i.e., reports of any NSSI behavior as assessed by each measure, where 1 = Yes and 0 = No; $\kappa = 0.77, p < .001, 95\%$ confidence interval (CI) = [0.61, 0.93]). Although this agreement is substantial, where there were differences in agreement, these likely occurred because items on the NSSI-AT assess behaviors that are generally more severe in nature than those assessed on the FASM. For example, the FASM asks participants if they have ever hit themselves on purpose, while the NSSI-AT asks participants if they have ever punched or banged themselves to the point of bruising or bleeding. In this sample, we found that 3.5% of participants were screened into the NSSI pool on the FASM but not on the NSSI-AT, while 2.6% were screened into the NSSI pool on the NSSI-AT but not on the FASM.

Results of analyses assessing convergent and discriminant evidence are shown in Table 4. As hypothesized, both the dichotomous (any NSSI) and continuous (lifetime NSSI occasions) NSSI variables were positively and significantly correlated with STB, disordered eating behaviors, general psychological distress, and number of lifetime traumas (see Table 4). Also as hypothesized, NSSI was not significantly correlated with binge drinking or number of sexual partners in the past year (see Table 4). However, while number of lifetime NSSI occasions was not correlated with use of other people's prescription drugs ($r = -.027, p = .801$), any NSSI was significantly correlated with this use ($r = .089, p = .024$), though this correlation was small in magnitude. We also note that all associations used to assess convergent evidence were small to medium in size (r range, any NSSI, [0.17–0.38]; r range, lifetime NSSI occasions, [0.11–0.26], where a small effect size is $r = .10$ and a medium effect size is $r = .30$; Cohen, 1992), while those associations used to assess discriminant evidence were all less in value than $r = .10$ (i.e., a small effect size; r range, any NSSI, [0.010–0.089]; r range, lifetime NSSI occasions, [0.001–0.074]).

Discussion

The development of the NSSI-AT extends previous surveillance capacity and psychometric work in this area. First, this tool not only has modules related to basic NSSI epidemiological information, such as form, function, and frequency (which can be assessed with other NSSI measures), but also contains modules that assess NSSI characteristics lacking on other measures of NSSI, including (a) motivations for initiating NSSI, (b) the contexts within which NSSI is practiced, (c) variation in NSSI severity, (d) disclosure, and (e) help-seeking. Grounded in extant literature, as well as in research/exploratory interviews with individuals with NSSI use experience and clinicians with NSSI treatment experience, the NSSI-AT is designed to cover broad conceptual territory using language and concepts that accurately reflect the experience and behaviors of those who practice NSSI.

In this sample of college students, the test–retest reliability of NSSI-AT scores over a 4-week period did not significantly differ from Kline's (2000) recommended minimum cutoff of 0.70 (i.e., ~50% agreement), with the exception of age at first NSSI incident, which was higher (0.91). The coefficient for number of wound locations (0.63) was the lowest of all assessed scores; however, it is possible that real change occurred in this variable over the period between administrations (e.g., participants moved to a new wound location) and that this accounts for the lower reliability of scores on this module. Further, the number of participants in our test–retest sample was small ($n = 25$), such that even if only a few participants changed over the test–retest period, this may have resulted in lower reliability of scores. Thus, additional testing in larger samples is warranted, but this initial evidence suggests that NSSI-AT scores have promising reliability in a university population, as assessed by test–retest over a 4-week period.

Results for this sample also provide promising preliminary evidence for validity arguments related to the interpretation of behavior screen (Module A) and frequency assessment (Module C) scores, as demonstrated by the pattern of correlations in Table 4; except for the association between any prescription drug use and any NSSI behavior, these correlations all met our a priori hypotheses. The validity evidence provided in this article met our initial aim of supporting validity arguments for the behavior module and for introducing a tool capable of yielding a robust picture of NSSI in context. Future work with this measure will allow for exploring validity arguments for other modules of the NSSI-AT.

A strength of the NSSI-AT is that NSSI and behaviors with a suicidal intent are clearly delineated. The focus of the NSSI-AT on nonsuicidal behaviors means this tool first and foremost assesses NSSI and not STB, while still allowing researchers to screen out false positives due to conflation with STB and thus explore the relationship between NSSI and suicide. Additionally, the breadth and depth of the NSSI-AT provide researchers with a unique opportunity to gather greatly detailed information (such as one might expect to obtain via a structured interview tool) from a large sample of individuals. This is because the web-based delivery of the NSSI-AT allows for some customization of questions and response options as a result of previous participant responses; the display and skip logic embedded in the NSSI-AT mean detailed, nuanced ques-

tions are asked of those with pertinent experiences and are not seen by others, which both reduces participant burden and increases the richness of information obtained.

The NSSI-AT expands on current assessments through the breadth of its modules. It is also unique in its origins since it was grounded in empirical interviews and reviews rather than shaped largely or solely through theory. For the functions module, in particular, the constructs derived through EFA overlap with extant NSSI function assessments but also factor in ways not totally keeping with these existing measures (Klonsky & Glenn, 2009; Nock & Prinstein, 2004). Further testing will permit more rigorous assessment and comparison of NSSI-AT function constructs relative to other function assessments, but since the empirical derivation of the items that contributed to the functions construct is novel, we elected to include this as part of the presented NSSI-AT and as another functions framework for consideration. Other multifactor modules such as Practice Patterns and NSSI Personal Reflections and Advice are completely novel in the NSSI literature and offer ways to conceptualize and assess largely unmeasured domains of NSSI experience.

Perhaps both a strength and a limitation of the NSSI-AT is its mode of delivery (online administration). The skip patterns embedded in this survey, while allowing for detailed, nuanced questions and response options to be presented based on previous responses, also make it cumbersome to complete in a paper-and-pencil format. However, online surveys represent an increasingly utilized and effective mode of research data collection, one with which young people in particular are likely to feel comfortable sharing honest, personal information (DiLillo, DeGue, Kras, Di Loreto-Colgan, & Nash, 2006; Vereecken & Maes, 2006). The NSSI-AT has not been used in clinical populations or with secondary school populations, though it may have use in these areas (note, however, that we discourage using behavior-based items with secondary school students and instead recommend a more generic item assessing whether participants have ever hurt their body on purpose but without wanting to end their life; a pilot test of this type of item with 300 college freshmen in 2007 yielded the same prevalence rate as was yielded with the behavior-based questions used in this study).

Several other limitations should be noted. While the findings presented here provide initial support for the reliability of scores on a number of NSSI-AT questions and modules and for the validity of NSSI-AT behavior and frequency score interpretations in a university population, this is preliminary evidence. Based on the psychometric work accomplished thus far, we have made several recommended changes to the tool that have yet to be formally tested (e.g., the addition of other function items, interval scoring for what are now all binary response items, and additional items for three-item scales). It is worth noting that several of the constructs measured (specifically, practice patterns as well as personal reflections and advice) were not designed as scales but as items intended to measure what may well be variable dimensions of the overarching construct. Refinement of these constructs and delineation of specific scales, if useful, would be a logical next step. Further, our study population consisted entirely of college students, and so it would also be useful to test the NSSI-AT in diverse popula-

tions and settings (e.g., cross-culturally). We also note that the sample used to provide test-retest reliability evidence for the NSSI subpopulation was small ($n = 25$), which resulted in a lack of precision for certain estimates, as indicated by wide confidence intervals. Thus, more information on the test-retest reliability of NSSI-AT scores in larger samples is needed to corroborate this preliminary evidence. Finally, if administered in a paper-and-pencil format, the NSSI-AT may be a burdensome assessment tool due to the number of skip patterns, and so we encourage web-based administration where possible. However, the format of the NSSI-AT allows the survey to be administered as individual modules, if necessary, to reduce participant/administrative burden.

Application of the NSSI-AT to a wider variety of populations, as well as by demographic subgroups, will permit more rigorous testing of constructs and measurement modalities. We also anticipate that use of the more novel NSSI-AT modules related to practices and contexts, as well as to perceived impact and treatment, will generate useful discussion about how to best capture these largely unmeasured elements of the NSSI experience. In future work, we plan to continue investigating the functions module, including some newly added items, as well as to investigate the clinical utility of the full set of modules. We also plan to assess age and gender invariance of the tool, including differential item functioning by module. It is our hope that the NSSI-AT will be both a useful tool as well as a springboard for consideration of measurement domains beyond primary epidemiological NSSI characteristics such as prevalence, form, function, recency, and severity. More detailed analysis showed that the moderate correlation between the NSSI-AT and the FASM is due to the moderate overlap in behavior assessed by each too.

References

- American College Health Association. (2005). The American College Health Association National College Health Assessment (ACHA-NCHA): Spring 2003 Reference Group report. *Journal of American College Health, 53*, 199–210.
- Baetens, I., Claes, L., Hasking, P., Grietens, H., Onghena, P., & Martin, G. (2012, June–July). *Parental expressed emotions interrelated with self-criticism and depression: A model to understand NSSI*. Paper presented at the Annual Meeting of the International Society for the Study of Self-Injury, Chapel Hill, NC.
- Cheng, H.-L., Mallinckrodt, B., Soet, J., & Sevig, T. (2010). Developing a screening instrument and at-risk profile for nonsuicidal self-injurious behavior in college women and men. *Journal of Counseling Psychology, 57*, 128–139. doi:10.1037/a0018206
- Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159. doi:10.1037/0033-2909.112.1.155
- Conterio, K., & Lader, W. (1998). *Bodily harm: The breakthrough healing program for self-injurers*. New York, NY: Hyperion Press.
- DiLillo, D., DeGue, S., Kras, A., Di Loreto-Colgan, A. R., & Nash, C. (2006). Participant responses to retrospective surveys of child maltreatment: Does mode of assessment matter? *Violence and Victims, 21*, 410–424. doi:10.1891/0886-6708.21.4.410
- Gratz, K. L. (2001). Measurement of deliberate self-harm: Preliminary data on the Deliberate Self-Harm Inventory. *Journal of Psychopathology and Behavioral Assessment, 23*, 253–263. doi:10.1023/A:1012779403943
- Gratz, K. L., Conrad, S. D., & Roemer, L. (2002). Risk factors for deliberate self-harm among college students. *American Journal of Orthopsychiatry, 72*, 128–140. doi:10.1037/0002-9432.72.1.128

- Green, B. (1996). Trauma History Questionnaire. In B. H. Stamm (Ed.), *Measurement of stress, trauma, and adaptation* (pp. 366–369). Lutherville, MD: Sidran Press.
- Gutierrez, P. M., Osman, A., Barrios, F. X., & Kopper, B. A. (2001). Development and initial validation of the Self-Harm Behavior Questionnaire. *Journal of Personality Assessment, 77*, 475–490.
- Hansen, W. B., Paskett, E. D., & Carter, L. J. (1999). The Adolescent Sexual Activity Index (ASAI): A standardized strategy for measuring interpersonal heterosexual behaviors among youth. *Health Education Research, 14*, 485–490.
- Hasking, P., Momeni, R., Swannell, S., & Chia, S. (2008). The nature and extent of non-suicidal self-injury in a non-clinical sample of young adults. *Archives of Suicide Research, 12*, 208–218. doi:10.1080/1381110802100957
- Heath, N. L., Toste, J. R., Nedecheva, T., & Charlebois, A. (2008). An examination of nonsuicidal self-injury among college students. *Journal of Mental Health Counseling, 20*, 137–156.
- International Society for the Study of Self-Injury. (2007, June). *Definitional issues surrounding our understanding of self-injury*. Conference proceedings from the annual meeting of the International Society for the Study of Self-injury, Montreal, Quebec, Canada.
- Jacobson, C. M., & Gould, M. (2007). The epidemiology and phenomenology of non-suicidal self-injurious behavior among adolescents: A critical review of the literature. *Archives of Suicide Research, 11*, 129–147. doi:10.1080/1381110701247602
- Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S.-L. T., . . . Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*, 959–976. doi:10.1017/S0033291702006074
- Kessler, R. C., Berglund, P., Borges, G., Nock, M., & Wang, P. S. (2005). Trends in suicide ideation, plans, gestures, and attempts in the United States, 1990–1992 to 2001–2003. *JAMA: Journal of the American Medical Association, 293*, 2487–2495. doi:10.1001/jama.293.20.2487
- Kline, P. (2000). *A psychometrics primer*. London, England: Free Association Books.
- Klonsky, E. D., & Glenn, C. R. (2009). Assessing the functions of non-suicidal self-injury: Psychometric properties of the Inventory of Statements About Self-Injury (ISAS). *Journal of Psychopathology and Behavioral Assessment, 31*, 215–219. doi:10.1007/s10862-008-9107-z
- Klonsky, E. D., & Olino, T. M. (2008). Identifying clinically distinct subgroups of self-injurers among young adults: A latent class analysis. *Journal of Consulting and Clinical Psychology, 76*, 22–27. doi:10.1037/0022-006X.76.1.22
- Kress, V., Newgent, R., Whitlock, J., & Mease, L. (in press). Spirituality, life satisfaction, and life meaning: Protective factors for non-suicidal self-injury. *Journal of College Counseling*.
- Lam, L. T., Peng, Z., Mai, J., & Jing, J. (2009). The association between Internet addiction and self-injurious behaviour among adolescents. *Injury Prevention, 15*, 403–408. doi:10.1136/ip.2009.021949
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*, 159–174. doi:10.2307/2529310
- Linehan, M. M., Comtois, K. A., Brown, M. Z., Heard, H. L., Wagner, A. (2006). Suicide Attempt Self-Injury Interview (SASII): Development, reliability, and validity of a scale to assess suicide attempts and intentional self-injury. *Psychological Assessment, 18*, 303–312. doi:10.1037/1040-3590.18.3.303
- Lloyd, E. E., Kelley, M. L., & Hope, T. (1997, April). *Self-mutilation in a community sample of adolescents: Descriptive characteristics and provisional prevalence rates*. Poster session at the annual meeting of the Society for Behavioral Medicine, New Orleans, LA.
- Lloyd-Richardson, E. E., Perrine, N., Dierker, L., & Kelley, M. L. (2007). Characteristics and functions of non-suicidal self-injury in a community sample of adolescents. *Psychological Medicine, 37*, 1183–1192. doi:10.1017/S003329170700027X
- McCabe, S. E., West, B. T., & Wechsler, H. (2007). Trends and college-level characteristics associated with the non-medical use of prescription drugs among US college students from 1993 to 2001. *Addiction, 102*, 455–465. doi:10.1111/j.1360-0443.2006.01733.x
- Muehlenkamp, J., Brausch, A., Quigley, K., & Whitlock, J. (2013). Interpersonal features and functions of nonsuicidal self-injury. *Suicide and Life-Threatening Behavior, 43*, 67–80. doi:10.1111/j.1943-278X.2012.00128.x
- National Institute on Alcohol Abuse and Alcoholism. (2012). *College drinking*. Retrieved from <http://pubs.niaaa.nih.gov/publications/CollegeFactSheet/CollegeFactSheet.pdf>
- Nock, M. K., Holmberg, E. B., Photos, V. I., & Michel, B. D. (2007). Self-Injurious Thoughts and Behaviors Interview: Development, reliability, and validity in an adolescent sample. *Psychological Assessment, 19*, 309–317. doi:10.1037/1040-3590.19.3.309
- Nock, M. K., & Prinstein, M. J. (2004). A functional approach to the assessment of self-mutilative behavior. *Journal of Consulting and Clinical Psychology, 72*, 885–890. doi:10.1037/0022-006X.72.5.885
- Nock, M. K., & Prinstein, M. J. (2005). Contextual features and behavioral functions of self-mutilation among adolescents. *Journal of Abnormal Psychology, 114*, 140–146. doi:10.1037/0021-843X.114.1.140
- Polk, E., & Liss, M. (2007). Psychological characteristics of self-injurious behavior. *Personality and Individual Differences, 43*, 567–577. doi:10.1016/j.paid.2007.01.003
- Rodham, K., & Hawton, K. (2009). Epidemiology and phenomenology of nonsuicidal self-injury. In M. Nock (Ed.), *Understanding nonsuicidal self-injury* (pp. 37–62). Washington, DC: American Psychological Association.
- Ross, S., & Heath, N. (2002). A study of the frequency of self-mutilation in a community sample of adolescents. *Journal of Youth and Adolescence, 31*, 67–77. doi:10.1023/A:1014089117419
- Selekman, M. D. (2009). *The adolescent and young adult self-harming treatment manual: A collaborative strengths-based brief therapy approach*. New York, NY: Norton.
- Shadel, W. G., Shiffman, S., Niaura, R., Nichter, M., & Abrams, D. B. (2000). Current models of nicotine dependence: What is known and what is needed to advance understanding of tobacco etiology among youth. *Drug and Alcohol Dependence, 59*(Suppl. 1), 9–22. doi:10.1016/S0376-8716(99)00162-3
- Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin, 86*, 420–428. doi:10.1037/0033-2909.86.2.420
- Vereecken, C. A., & Maes, L. (2006). Comparison of a computer-administered and paper-and-pencil administered questionnaire on health and lifestyle behaviors. *Journal of Adolescent Health, 38*, 426–432. doi:10.1016/j.jadohealth.2004.10.010
- Walsh, B. W. (2012). *Treating self-injury: A practical guide* (2nd ed.). New York, NY: Guilford Press.
- Whitlock, J., Eckenrode, J., & Silverman, D. (2006). Self-injurious behaviors in a college population. *Pediatrics, 117*, 1939–1948. doi:10.1542/peds.2005-2543
- Whitlock, J., & Knox, K. L. (2007). The relationship between self-injurious behavior and suicide in a young adult population. *Archives of Pediatrics and Adolescent Medicine, 161*, 634–640. doi:10.1001/archpedi.161.7.634
- Whitlock, J., Muehlenkamp, J., & Eckenrode, J. (2008). Variation in non-suicidal self-injury: Identification of latent classes in a community population of young adults. *Journal of Clinical Child and Adolescent Psychology, 37*, 725–735. doi:10.1080/15374410802359734

- Whitlock, J., Muehlenkamp, J., Eckenrode, J., Purington, A., Barrera, P., Abrams, G., . . . Smith, E. (2013). Non-suicidal self-injury as a gateway to suicide in adolescents and young adults. *Journal of Adolescent Health, 52*, 486–492. doi:10.1016/j.jadohealth.2012.09.010
- Whitlock, J., Muehlenkamp, J., Purington, A., Eckenrode, J., Barreira, P., Abrams, G. B., . . . Knox, K. (2011). Nonsuicidal self-injury in a college population: General trends and sex differences. *Journal of American College Health, 59*, 691–698. doi:10.1080/07448481.2010.529626
- Williams, F., & Hasking, P. (2010). Emotion regulation, coping and alcohol use as moderators in the relationship between non-suicidal self-injury and psychological distress. *Prevention Science, 11*, 33–41. doi:10.1007/s11121-009-0147-8
- Yates, T. M., Tracy, A. J., & Luthar, S. S. (2008). Nonsuicidal self-injury among “privileged” youths: Longitudinal and cross-sectional approaches to developmental process. *Journal of Consulting and Clinical Psychology, 76*, 52–62. doi:10.1037/0022-006X.76.1.52
- You, S., Van Orden, K. A., & Conner, K. R. (2011). Social connections and suicidal thoughts and behavior. *Psychology of Addictive Behaviors, 25*, 180–184. doi:10.1037/a0020936

Received May 28, 2013

Revision received March 10, 2014

Accepted March 13, 2014 ■