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J Psychopathol Behav Assess. Author manuscript; available in PMC 2017 December 19.

Published in final edited form as:

J Psychopathol Behav Assess. 2009 September ; 31(3): 215–219. doi:10.1007/s10862-008-9107-z.

Assessing the functions of non-suicidal self-injury: Psychometric properties of the Inventory of Statements About Self-injury (ISAS)

E. David Klonsky and **Catherine R. Glenn**

Stony Brook University

Abstract

The present study reports the psychometric properties of the Inventory of Statements About Self-injury (ISAS), a measure designed to comprehensively assess the functions of non-suicidal self-injury (NSSI). The ISAS assesses 13 functions of NSSI, as well as the frequency of 12 NSSI behaviors. The ISAS was administered to 235 young adults from a college population who had performed at least one NSSI behavior. Consistent with previous research, ISAS functions comprised two factors representing interpersonal and intrapersonal functions. In addition, the ISAS factors exhibited excellent internal consistency and expected correlations with both clinical constructs (e.g., borderline personality disorder, suicidality, depression, anxiety) and contextual variables (e.g., tendency to self-injure alone). Findings support the reliability and validity of the ISAS. The ISAS may be useful in research and treatment contexts as a comprehensive measure of NSSI functions.

Keywords

Self-injury; functions; motivations; assessment; deliberate self-harm; self-mutilation

Non-suicidal self-injury (NSSI) is defined as the deliberate destruction of one's body tissue without suicidal intent and for purposes not socially sanctioned. NSSI is associated with many psychiatric problems, including Borderline Personality Disorder (BPD), suicidality, anxiety, and depression (Klonsky & Glenn, 2008; Klonsky, Oltmanns, & Turkheimer, 2003; Nock et al., 2006; Whitlock & Knox, 2007). Because rates of NSSI have increased in recent years (Jacobson & Gould, 2007; Ross & Heath, 2002; Whitlock, Eckenrode, & Silverman, 2006), there is new urgency to better understand and treat the behavior.

Recently, research has begun to focus on the functions of NSSI (Klonsky, 2007; Klonsky, in press; Nock & Prinstein, 2004; 2005; Rodham, Hawton, & Evans, 2004). Understanding why people engage in NSSI could enhance prevention and treatment (Kress, 2003; Muehlenkamp, 2006). However, a recent empirical review found that the assessment of NSSI functions has been inadequate: most existing measures of NSSI functions have unknown psychometric properties and none are comprehensive in their assessment of NSSI

E. David Klonsky, PhD, Assistant Professor, Department of Psychology, Stony Brook University, Stony Brook, NY 11794-2500, (631) 632-7801, E.David.Klonsky@stonybrook.edu.

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functions (Klonsky, 2007). The Functional Assessment of Self-Mutilation (FASM; Lloyd, Kelley, & Hope, 1997; Nock & Prinstein, 2004; 2005) has the most well-established psychometric properties of existing measures but does not assess several functions documented in the literature (e.g., functions related to sensation seeking, coping with suicidal thoughts, and interpersonal boundaries) (Klonsky, 2007; Klonsky & Weinberg, in press).

The present study describes the psychometric properties of the Inventory of Statements About Self-Injury (ISAS), a new measure designed to assess NSSI functions comprehensively. The ISAS assesses each function documented in the research literature (see Klonsky, 2007) plus several additional functions. The additional functions were selected on the basis of discussions with NSSI researchers and treatment professionals and the content of websites designed by and for self-injurers. In all, 13 functions are measured (see Appendix). The ISAS also includes an initial section assessing lifetime frequency of 12 NSSI behaviors, although this section is not necessary if history and topography of NSSI are evaluated by other means (e.g., Nock, Holmberg, Photos, & Michel, 2007). An abridged version of the ISAS showed promise for distinguishing among self-injurers with different psychological profiles (Klonsky & Olino, 2008).

Methods

Participants and Procedure

Participants were 235 young adults from a college sample: 55% female; 41% Caucasian, 39% Asian, 6% African American, 14% other ethnicity; mean age 18.5 (SD=1.1). Participants were students in lower-level psychology courses at a large university in the northeastern United States. Data were collected at three mass testing sessions, where participants provided informed consent and completed demographic questionnaires, the ISAS, and several clinical measures for course credit. The study sample of 235 were those who endorsed NSSI behaviors among 761 students who participated in the mass screening; the endorsement rate of 30.8% is lower than some estimates of NSSI rates in college students (e.g., 35%; Gratz, 2001) but higher than others (e.g., 17%; Whitlock et al., 2006). The majority of participants (82.3%) endorsed more than one NSSI behavior. Participants were informed that their data were confidential. Each questionnaire packet was identified by a unique participant number, and participants were instructed not to write their names on the questionnaires. The study was approved in the university's Institutional Review Board.

Measures

Inventory of Statements About Self-Injury (ISAS)—The first section of the ISAS assesses lifetime frequency of 12 NSSI behaviors performed “intentionally (i.e., on purpose) and without suicidal intent.” The behaviors assessed are: banging/hitting self, biting, burning, carving, cutting, wound picking, needle-sticking, pinching, hair pulling, rubbing skin against rough surfaces, severe scratching, and swallowing chemicals. Participants are asked to estimate the number of times they have performed each behavior. Five additional questions assess descriptive and contextual factors, including age of onset, the experience of pain during NSSI, whether NSSI is performed alone or around others, time between the urge

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to self-injure and the act, and whether the individual wants to stop self-injuring; the latter four use a multiple-choice format. The behavioral scales have demonstrated good reliability and validity (Klonsky & Olino, 2008).

Those endorsing one or more NSSI behaviors are instructed to complete the second section of the ISAS. The second section assesses 13 potential functions of NSSI: affect-regulation, anti-dissociation, anti-suicide, autonomy, interpersonal boundaries, interpersonal influence, marking distress, peer-bonding, self-care, self-punishment, revenge, sensation seeking, and toughness. Each function is assessed by three items, rated as "0-not relevant," "1-somewhat relevant," or "2-very relevant" to the individual's "experience of [non-suicidal] self-harm"; thus, scores for each of the 13 ISAS functions can range from 0 to 6. Sample items for each of the 13 functions are listed in the Appendix.

Depression Anxiety Stress Scales (DASS-21)—The DASS-21 is a reliable and valid self-report instrument including two scales measuring depression and anxiety (Henry & Crawford, 2005). Each scale includes seven multiple-choice items.

The McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD)—The MSI-BPD is a self-report measure of the DSM-IV BPD criteria that includes 10 true-false items. The MSI-BPD exhibited sensitivity and specificity above .90 in young adults when compared to a validated structured interview (Zanarini et al., 2003). Internal consistency in the current sample was adequate (α=.73).

Youth Risk Behaviors Survey (YRBS)—The YRBS (Kann, 2001) is administered by the U.S. Center for Disease Control to assess health-risk behaviors, and includes reliable items assessing suicide ideation and attempts (Brenner et al., 2002). The item assessing a history of suicide ideation is, "Have you ever seriously thought about killing yourself?" The item assessing a history of attempted suicide is, "Have you ever tried to kill yourself?" Each item could be answered either "yes" or "no."

Results

First, descriptive properties were examined for each of the clinical measures: the DASS-21, MSI-BPD, and YRBS. The DASS Depression scale had a mean of 5.41 (*SD*=5.30), and excellent internal consistency (α=.88). The DASS Anxiety scale had a mean of 5.12 (*SD*=4.50), and excellent internal consistency (α=.82). The MSI-BPD had a mean of 4.83 (*SD*=2.64), and good internal consistency (α=.73). Regarding the YRBS suicide ideation and attempt items, 48% of participants endorsed a history of ideation, and 19% reported having attempted suicide.

Second, the psychometric properties of the ISAS functional scares were examined. An exploratory factor analysis (principal axis factoring in SPSS) with promax rotation was used to examine the structure of functions measured by the ISAS (see Table 1). Inspection of eigen-values and the scree plot indicated a robust two-factor solution that was consistent with previous work (Nock & Prinstein, 2004; 2005)[1]. The first factor represented interpersonal functions (autonomy, interpersonal boundaries, interpersonal influence, peer-

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bonding, revenge, sensation seeking, and toughness; eigenvalue=5.9). The second factor represented intrapersonal functions (affect-regulation, anti-dissociation, anti-suicide, marking distress, self-care, and self-punishment; eigenvalue=1.6). This factor structure did not meaningfully differ by gender or ethnicity (details available from corresponding author upon request).

Third, scores for functions belonging to each factor were summed to form interpersonal and intrapersonal functions scales. Coefficient alphas for the interpersonal and intrapersonal scales were .88 and .80, respectively, indicating excellent internal consistency. To compare endorsement of intrapersonal and interpersonal functions, we pro-rated the scores by dividing the scales scores by the number of subscales on each scale, five for the intrapersonal scale and eight for the interpersonal scale. Consistent with previous research (Nock & Prinstein, 2004; Klonsky, 2007), intrapersonal functions (*prorated M*=1.7, *SD*=1.4) were more often endorsed than interpersonal functions (*prorated M*=0.7, *SD*=1.0), [$t(234)=13.3$, $p<.001$, Cohen's $d=.83$]. The mean total score for the ISAS was 14.3 (*SD*=13.3). In addition, consistent with previous findings (Rodham et al., 2004), intrapersonal functions were more strongly endorsed by women (*M*=9.3, *SD*=6.9) than men (*M*=7.1, *SD*=6.9), [$t(233)=2.4$, $p<.02$)]. In contrast, women (*M*=5.1, *SD*=6.0) and men (*M*=6.3, *SD*=9.5) were comparable in their endorsement of interpersonal functions [$t(233)=1.2$, $p=.23$)]. Regarding the 13 individual functions, using a conservative alpha of .01 in light of multiple comparisons, gender differences were only observed for sensation-seeking; specifically, men (*M*=1.0, *SD*=1.5) were more likely than women (*M*=0.5, *SD*=1.0) to endorse this function [$t(233)=3.0$, $p<.005$)].

Finally, clinical and contextual correlates of intrapersonal and interpersonal functions were computed to examine construct validity (see Table 2). In general, higher scores on either intrapersonal or interpersonal functions were correlated with higher scores on clinical measures. Consistent with previous research, intrapersonal functions were correlated more highly with depression and suicidal ideation than interpersonal functions (Nock & Prinstein, 2005). Also as expected, only intrapersonal functions were associated with the tendency to self-injure alone and not around others.

Discussion

The present study describes the psychometric properties of the ISAS, a measure designed to comprehensively assess the functions of NSSI. The ISAS fills an important need because previous measures have not assessed NSSI functions comprehensively (Klonsky, 2007). In a large sample of young adults who have self-injured, ISAS functions exhibited a robust, two-factor structure. The first factor represents interpersonal functions (e.g., interpersonal influence, peer-bonding) by which NSSI is socially reinforced, and the second factor represents intrapersonal functions (e.g., affect-regulation, self-punishment) by which reinforcement is self-focused. These two factors appear to map directly onto the factors labeled ‘social’ and ‘automatic’ by Nock and Prinstein (2004; 2005). In addition, ISAS

[1]Nock and Prinstein (2004;2005) refer to the two factors as social and automatic functions. We use the terms interpersonal and intrapersonal because we feel they are more descriptive.

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functional scales exhibited mean levels of endorsement consistent with previous research. Specifically, endorsement was highest for the affect-regulation function followed by the self-punishment function, and lower for interpersonally-oriented functions – a pattern similar to findings from a recent empirical review (Klonsky, 2007). Finally, ISAS scales correlated with clinical variables and the social context of NSSI in a manner that was consistent with research and theory, and thus, supportive of the ISAS' construct validity.

Only one functional scale exhibited potentially surprising properties. Self-care (i.e., self-injuring to create a physical wound that one can care for more easily than one's emotional distress) would seem to fit better as an intrapersonal than interpersonal function, but loaded more highly on the interpersonal factor. Notably, its loading on the interpersonal factor was only .41, only slightly higher than its .33 loading on the intrapersonal scale. Future studies should therefore examine if self-care is best conceptualized as an intrapersonal or interpersonal function.

The ISAS may be useful in research and clinical contexts when a thorough assessment of NSSI functions is warranted. For example, one may utilize a comprehensive and valid measure to document the presence and topography of NSSI (e.g., the Self-Injurious Thoughts and Behaviors Interview; Nock et al., 2007), and then administer the ISAS to comprehensively assess NSSI functions. However, if time is limited and a brief evaluation of NSSI history is needed, the initial section of the ISAS provides a valid assessment of which and how often 12 different NSSI behaviors have been performed.

The present study is the first to examine psychometric properties of the ISAS, and several limitations should be addressed by future research. One limitation is the measurement of clinical variables (e.g., depression, anxiety, personality disorder) via self-report questionnaires. Future studies may wish to utilize structured interviews that have been developed to maximize diagnostic reliability and validity. The present study utilized questionnaires to facilitate data collection from a large number of participants.

Second, participants were drawn from a college sample. A college sample was utilized for three reasons. First, rates of NSSI are disproportionately high in college samples, highlighting the need to study NSSI in this population (Whitlock et al., 2006). A second reason was the feasibility of obtaining a large sample, which is necessary to examine the factor structure of an instrument with numerous scales. Third, a non-clinical sub-sample of self-injurers allows for the possibility of participants both with and without serious psychopathology, which is useful for evaluating relationships between different NSSI functions and different levels of psychopathology. Clearly, the next step is to verify the validity of the ISAS in psychiatric samples. A final limitation is that the present study did not examine clinical utility of the ISAS. Future research should examine the properties of the ISAS in treatment samples, including the ability of the ISAS to inform case conceptualization and ultimately improve treatment outcomes.

Acknowledgments

This work was supported in part by the Office of the Vice President of Research at Stony Brook University and a grant MH080096 from the National Institute of Mental Health.

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Appendix

Table 3

Names and sample-items for 13 functions measured by the ISAS

Affect Regulation	…calming myself down.
Anti-Dissociation	…causing pain so I will stop feeling numb.
Anti-Suicide	…putting a stop to suicidal thoughts.
Autonomy	…demonstrating that I do not need to rely on others for help.
Interpersonal Boundaries	…creating a boundary between myself and others.
Interpersonal Influence	…letting others know the extent of my physical pain.
Marking Distress	…creating a physical sign that I feel awful.
Peer Bonding	…fitting in with others.
Revenge	…getting back at someone.
Self-Care	…creating a physical injury that is easier to care for than my emotional distress
Self-Punishment	…expressing anger towards myself for being worthless or stupid.
Sensation Seeking	…doing something to generate excitement or exhilaration.
Toughness	…seeing if I can stand the pain.

Note. Each item begins with the stem "When I harm myself I am…" There are three items for each function.

References

Brenner ND, Kann L, Mcmanus SA, et al. Reliability of the 1999 youth risk behavior survey questionnaire. Journal of Adolescent Health. 2002; 31:336–342. [PubMed: 12359379]

Gratz KL. Measurement of deliberate self-harm: Preliminary data on the Deliberate Self-Harm Inventory. Journal of Psychopathology and Behavioral Assessment. 2001; 23:253–263.

Henry JD, Crawford JR. The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. British Journal of Clinical Psychology. 2005; 44:227–239. [PubMed: 16004657]

Jacobson CM, Gould M. The epidemiology and phenomenology of non-suicidal self-injurious behavior among adolescents: A critical review of the literature. Archives of Suicide Research. 2007; 11:129–147. [PubMed: 17453692]

Kann L. The Youth Risk Behavior Surveillance System: Measuring health-risk behaviors. American Journal of Health Behavior. 2001; 25:272–277. [PubMed: 11322626]

Klonsky ED. The functions of deliberate self-injury: A review of the evidence. Clinical Psychology Review. 2007; 27:226–239. [PubMed: 17014942]

Klonsky ED. The functions of self-injury in young adults who cut themselves: clarifying the evidence for affect-regulation. Psychiatry Research. in press.

Klonsky, ED., Glenn, CR. Psychosocial risk and protective factors for self-injury. In: Nixon, MK., Heath, N., editors. Self-injury in youth: The essential guide to assessment and intervention. New York: Routledge; 2008.

Klonsky ED, Olino TM. Identifying clinically distinct subgroups of self-injurers among young adults. A latent class analysis. Journal of Consulting and Clinical Psychology. 2008; 76:22–27. [PubMed: 18229979]

Klonsky ED, Oltmanns TF, Turkheimer E. Deliberate self-harm in a nonclinical population: Prevalence and psychological correlates. American Journal of Psychiatry. 2003; 160:1501–1508. [PubMed: 12900314]

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Klonsky, ED., Weinberg, A. Assessment of non-suicidal self-injury. In: Nock, MK., editor. Understanding non-suicidal self-injury: Current science and practice. American Psychological Association Press; (in press)

Kress VEW. Self-injurious behaviors: Assessment and diagnosis. Journal of Counseling and Development. 2003; 81:490–496.

Muehlenkamp JJ. Empirically supported treatments and general therapy guidelines for non-suicidal self-injury. Journal of Mental Health Counseling. 2006; 28:166–185.

Lloyd, EE., Kelley, ML., Hope, T. Self-mutilation in a community sample of adolescents: Descriptive characteristics and provisional prevalence rates; Poster presented at the annual meeting of the Society for Behavioral Medicine; New Orleans, LA. 1997.

Nock MK, Holmberg EB, Photos VI, Michel BD. Self-Injurious Thoughts and Behaviors Interview: Development, reliability, and validity in an adolescent sample. Psychological Assessment. 2007; 19:309–317. [PubMed: 17845122]

Nock MK, Joiner TE, Gordon KH, Lloyd-Richardson E, Prinstein M. Non- suicidal self-injury among adolescents: Diagnostic correlates and relation to suicide attempts. Psychiatry Research. 2006; 144:65–72. [PubMed: 16887199]

Nock MK, Prinstein MJ. A functional approach to the assessment of self-mutilative behavior. Journal of Consulting and Clinical Psychology. 2004; 72:885–890. [PubMed: 15482046]

Nock MK, Prinstein MJ. Contextual features and behavioral functions of self-mutilation among adolescents. Journal of Abnormal Psychology. 2005; 114:140–146. [PubMed: 15709820]

Rodham K, Hawton K, Evans E. Reasons for deliberate self-harm: Comparison of self-poisoners and self-cutters in a community sample of adolescents. Journal of the American Academy of Child and Adolescent Psychiatry. 2004; 43:80–87. [PubMed: 14691363]

Ross S, Heath N. A study of the frequency of self-mutilation in a community sample of adolescents. Journal of Youth and Adolescence. 2002; 31:67–77.

Whitlock J, Eckenrode J, Silverman D. Self-injurious behaviors in a college population. Pediatrics. 2006; 117:1939–1948. [PubMed: 16740834]

Whitlock J, Knox KL. The relationship between self-injurious behavior and suicide in a young adult population. Archives of Pediatrics and Adolescent Medicine. 2007; 161:634–640. [PubMed: 17606825]

Zanarini MC, Vujanovic A, Parachini EA, Boulanger JL, Frankenburg FR, Hennen J. A screening measure for BPD: The Mclean Screening Instrument for Borderline Personality Disorder. Journal of Personality Disorders. 2003; 17:568–573. [PubMed: 14744082]

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Table 1

Structure of ISAS Functions

Function	Mean (SD)	Factor 1 Interpersonal Functions *(α = .87)*	Factor 2 Intrapersonal Functions *(α = .80)*
Affect Regulation	3.0 (2.1)	-.14	**.69**
Anti-Dissociation	1.0 (1.6)	.21	**.50**
Anti-Suicide	0.8 (1.5)	. 35	**.42**
Marking Distress	1.5 (1.8)	.04	**.82**
Self-Punishment	2.0 (2.1)	-.14	**.84**
Autonomy	0.6 (1.3)	**.64**	.11
Interpersonal Boundaries	0.8 (1.4)	**.52**	.26
Interpersonal Influence	0.8 (1.4)	**.54**	.23
Peer Bonding	0.5 (1.3)	**.98**	-.26
Revenge	0.6 (1.4)	**.53**	.16
Self-Care	0.8 (1.4)	**.41**	.33
Sensation Seeking	0.7 (1.3)	**.87**	-.18
Toughness	1.0 (1.4)	**.65**	.02

Note. For each of the 13 functional scales scores can range from 0 to 6. Factor loadings greater than .4 are bolded.

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Table 2
Clinical and Contextual Correlates of ISAS Functions

Clinical/Contextual Variable	Factor 1 Interpersonal Functions	Factor 2 Intrapersonal Functions
Depression	.25*	.41*
Anxiety	.32	.38
Borderline Personality Disorder	.29*	.44*
Suicide Ideation	.24*	.36*
Attempted Suicide	.27	.30
Self-injuring while alone	.10*	.33*

Note. Correlations above .16 are statistically significant at an alpha level of .01.

*Indicates correlation for intrapersonal functions is significantly greater than the corresponding correlation for interpersonal functions at an alpha of .03.