The Motivations for Self-Injury in Psychiatric Inpatients

Elizabeth A. Osuch, Jennie G. Noll, and Frank W. Putnam

NONSUICIDAL self-injurious behavior (SIB) occurs in both culturally appropriate and culturally inappropriate forms. It is one of the diagnostic criteria for borderline personality disorder, but it occurs in several psychiatric and neurological populations. The personal intent of SIB in psychiatric populations is incompletely understood. A self-report scale (Self-Injury Motivation Scale; SIMS) to assess motivation for self-injury was developed. Relationships among motivation for SIB, characteristics of SIB, and psychopathology were explored. A semistructured interview and the SIMS, Dissociative Experiences Scale, Beck Depression Inventory, Davidson Trauma Scale, and Millon Clinical Multiaxial Inventory–II were given to 99 consecutively admitted inpatients. The SIMS had good reliability and validity. A high SIMS score suggested distinct psychopathology. Several factors on the SIMS differentiated motivations for SIB. Patients with different SIMS factor profiles had different psychopathology.

Intentional physical self-harm without suicidal intent broadly defines a group of behaviors both within and outside the realm of social acceptability (Favazza 1987). Included on one end of the spectrum are activities to "beautify" the body, which are culturally dependent and range from simple ear piercing to facial scarification and extreme elongation of the neck as found in certain African cultures (West 1984). Self-injury to beautify can be outside social acceptability within one aspect of society but encouraged within another, as in the case of extensive body piercing, tattooing, and so on, seen in some individuals today. The motivation of these self-harmful acts is evident: to become more attractive.

On the socially unacceptable end of the spectrum is nonsuicidal self-injurious behavior (SIB), whose intent is not to beautify, but which serves other purposes.

Elizabeth A. Osuch, MD, Biological Psychiatry Branch, National Institute of Mental Health, Bethesda, MD.

Jennie G. Noll, PhD, is Research Assistant Professor, USC School of Social Work, DC, Washington, DC.

Frank W. Putnam, MD, is Director, Mayerson Center for Safe & Healthy Children, Children's Hospital Medical Center, Cincinnati, OH.

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Address correspondence to Elizabeth A. Osuch, MD, Biological Psychiatry Branch, National Institute of Mental Health, Bldg. 10, Room 3N 212, MSC 1272, Bethesda, MD 20892-1272. Tel.: (301) 402-2947.

These are more common in some subpopulations, such as the characterologically disturbed, psychiatrically ill, and the neurologically/developmentally impaired. The incidence of SIB is reported to be as high as 40% in inpatient adolescents (Darche 1990). Incarcerated individuals also have a higher prevalence of SIB than the general population (Haines, Williams, and Brain 1995; Hillbrand, Young, and Krystal 1996). Patients with developmental and physiological abnormalities such as mental retardation, autism, Lesch-Nyhan syndrome, Tourette's syndrome, de Lange's syndrome, chronic renal failure (Matas and Robinson 1988), and Addison's disease (Kajathurai, Chazan, and Jeans 1983) are all at high risk for SIB. Chronic psychotic disorders are prominent in some of the most severe forms of self-harm such as eye enuclation and self-castration (Favazza 1989).

The question of the intent, motivation, or purpose of self-injury is not clear in the neurologically/developmentally disturbed population and is perhaps entirely biochemically driven. The question of the motivation or intent of socially unacceptable SIB in other psychiatric populations is less obvious and is the focus of the current study. This form of SIB is most often associated with borderline personality disorder (BPD; Herpertz 1995; Stone 1987), which contains self-injury within its diagnostic criteria (American Psychiatric Association, 1994). Because BPD is the only psychiatric diagnosis with self-injury as a criterion, it is common to hear the two equated in clinical settings. However, diagnostic correlates of this type of SIB also include eating disorders (Dulit, Fyer, Leon, Brodsky, and Frances 1994; Shearer 1994b; Simpson 1975); dissociative disorders (Coons and Milstein 1990; Shearer 1994a, 1994b; Zlotnick et al. 1996); obsessive-compulsive traits (Simeon, Stein, and Hollander 1995); substance abuse (Simpson 1975; Shearer 1994a; van der Kolk and Fisler 1993; Zlotnick et al. 1999); passive-aggressive, schizoid, and avoidant personality styles (Haines et al. 1995); posttraumatic stress disorder (PTSD; van der Kolk and Fisler 1993; Zlotnick et al. 1999); antisocial personality disorder (Zlotnick et al. 1999); alexithymia (Zlotnick et al. 1996), and other psychological factors (Simeon et al. 1992). Numerous articles associate SIB with reported histories of childhood abuse, especially sexual abuse (Romans, Martin, Anderson, Herbison, and Mullen 1995; Shearer 1994a; Silk, Lee, Hill, and Lohr 1995; Stone 1987; van der Kolk, Perry, and Herman 1991; Zlotnick et al. 1996).

In psychiatric settings, patients who engage in SIB tend to be both terrifying and infuriating for mental health professionals. One of the most difficult clinical situations is treating the patient who practices periodic, nonsuicidal self-injury that is not sufficiently life threatening to warrant inpatient hospitalization and/or that is too frequent to warrant repeated, crisis-oriented, short-term hospital stays. Gaining a better sense of the meaning of these behaviors and the functions they serve for patients could be beneficial to the clinician in helping to decrease them. This study used an inpatient psychiatric population to examine the motivation for SIB with the hopes of providing clinically useful information about this disturbing behavior.

Experimental data on the phenomenology of SIB in the psychiatric population is limited, in spite of considerable clinical experience. Favazza (1989) delineated twelve explanations for SIB offered by nonpsychotic patients, including tension release, return to reality in a dissociating individual, establishing control, establishing security or uniqueness, influencing others and getting their attention, and venting of anger. Simpson (1975) has reported the use of SIB for tension release, reintegration/repersonalization, anger expression, and possible affect modulation. Leibenluft, Gardner, and Cowdry (1987) found SIB used for exhilaration, distraction from psychic pain, revenge seeking, rage dissipation, escape from dysphoric states, and to express pain to others. Suyemoto and MacDonald (1995) collected data on adolescents who describe the use of SIB as a means of expression, control, depersonalization, and delineation of bound-

aries. Herpertz (1995) found similar reasons for SIB including tension release, expression of anger or revenge, longing for care and attention, self-hatred and self-punishment, and others. Suyemoto (1998) formulated six functional models to describe SIB, including environmental, anti-suicide, sexual, affect regulation, dissociation, and boundaries models. Shearer (1994a) developed a 17-item self-report questionnaire to investigate the functions served by SIB in BPD patients. He discovered that all items were endorsed by at least one of 41 BPD patients studied, and additional explanations were added by individuals at the investigator's request. Thus, Shearer concluded, SIB is a complex phenomenon in BPD patients that seems to defy easy generalization.

Shearer (1994a) did, however, observe that there was a subgroup of BPD patients who were unique in their use of SIB. Patients who scored high on the Dissociative Experiences Scale, as well as patients who scored high on a measure of PTSD, listed significantly different reasons for their SIB than other BPD patients. Other authors have reported amnesia for SIB in a dissociative population (Coons and Milstein 1990), and Leibenluft and colleagues (1987) have reported that approximately half of their subjects experienced analgesia when injuring themselves, although dissociative and PTSD characteristics were not assessed. In addition, Pitman, van der Kolk, Orr, and Greenberg (1990) found that patients with PTSD who are exposed to a stimulus resembling their original trauma experience naloxone-reversible analgesia, suggesting an opiate-mediated, stress-induced analgesia. Van der Kolk, Greenberg, Boyd, and Krystal (1985) stated that reexposure to trauma in PTSD patients produces a paradoxical sense of calm and control, suggesting that this leads such patients to high-risk behavior and self-destructive acts, including repeated SIB. Thus there is reason to believe that there are subcatagories of these self-mutilators with characteristics that could be delineated by testing.

The current study posed three questions: (a) Is it possible to quantify the motivations for SIB from patients' subjective reports in a way that is reliable and meaningful? (b) Do psychiatric patients who endorse different motivations for SIB have different psychopathology? (c) Do various characteristics/methods of SIB correspond to different motivations in patients? Developing a way to quantify the phenomenology of SIB could enable us to characterize distinct groups of self-mutilating patients who differ in their reasons for hurting themselves. Motivational differences may suggest different treatment approaches to provide the best mental health care possible.

Method

Subjects

Subjects were inpatients at a freestanding tertiary care psychiatric hospital and were recruited as consecutive admissions on each of two units in the hospital: the General Adult Unit and the Trauma Disorders Unit. Over a 5-month period 322 patients were admitted to both units. Of these, 140 (43.5%) gave oral and written informed consent to participate in the study after it was described to them in detail. As a result of short lengths of hospital stay, 72 (22.4%) of the 322 subjects admitted could not be entered into the study because they were either transferred or discharged too quickly. Forty-nine subjects (15.2%) were cognitively impaired (including from electroconvulsive therapy [ECT]), severely psychotic, or otherwise too psychiatrically ill to participate in the protocol. A pilot investigation demonstrated that inpatient, chronically thought-disordered individuals were not able to complete the self-report scales in a meaningful way. Results are reported on the 99 patients (30.7%), who agreed to the interview and completed the Self-Injury Motivation Scale (SIMS), plus at least one of the other measures. Forty-four (13.7%) came from the General Adult Unit, and 55 (17.1%) from the Trauma Disorders Unit.

All subjects were told that the study

asked about self-injury but that they did not need to have engaged in self-injury to participate. Demographic description of the total and SIB population is provided in Table 1. SIB subjects were those with "yes" responses to either of the interview questions "Have you ever done things to intentionally injure your body without intending to kill yourself?" or "Have you ever found that you had a physical injury that you could not account for but which could not have been done by anyone except you?" Care was taken to exclude those patients with only suicidal self-injury from the SIB group because these behaviors are thought to be distinct.

Retest of the SIMS was completed on 32 subjects from the Trauma Disorders Unit, either during a continuous admission, a subsequent admission, or at the Trauma Disorders Day Hospital associated with the inpatient unit. The test-retest interval ranged from 2½ to 11 weeks (mean 3.5 weeks).

Measures

Standard measures. Subjects received four standardized self-report instruments: the Dissociative Experiences Scale (DES; Carlson and Putnam 1993), the Beck Depression Inventory (BDI; Beck and Steer 1987), the Davidson Trauma Scale (DTS; Davidson et al. 1997), and the Millon Clinical Multiaxial Inventory–II (MCMI-II; Millon 1987). They were allowed several days to complete the scales while on the inpatient units. Of the 99 subjects, not all completed each instrument: Ninety-three completed the DES, 90 the BDI, 80 the DTS, and 96 the MCMI-II.

Table 1

SUBJECT DEMOGRAPHICS
(percents in parentheses)

	Non-SIB Subjects $N = 24$ (24)	SIB Subjects $N = 75$ (76)
Gender		
Female	14 (58.3)	69 (85.2)*
Male	10 (41.7)	12 (14.8)*
Age		
Median/Range	40.5/23–66	37/19–58*
Race		
White	22 (91.7)	76 (93.8)
Nonwhite	2 (8.3)	5 (6.2)
Education		
Secondary/ Trade	8 (33.3)	26 (32.1)
Advanced	16 (66.7)	50 (61.7)

*Significantly different from non-SIB group, $p < 0.05$.

Semistructured interview. Subjects underwent a 5–20-minute semistructured interview with one author (EAO). This ascertained whether subjects endorsed a history of SIB and the method(s) used, as well as history of unexplained/disowned injuries, most recent event, frequency of SIB, incidence of medical intervention, amnesia for SIB, analgesia during SIB, impulsivity of events, recent increase or decrease in frequency of SIB, and sense of relief following SIB. Questions about methods of SIB were open ended. Subjects were given a choice of six frequency ranges for their SIB. Other characteristics were reported as continuous variables in response to questions in the form: "What percentage of the time you hurt yourself or found yourself injured did you . . . ?"

Self-Injury Motivation Scale. All subjects were given the SIMS (Version 1), a self-report scale consisting of 35 questions in the form "I have injured myself to . . . " The response format was a numerical scale from 0 to 10, anchored at each end with "never" and "always," respectively. Subjects responded by circling a number. At the end an additional item read, "Other reasons not listed. Please describe in the space below," followed by several blank spaces. The scale took between 7 to 15 minutes to complete. Subjects who denied self-harmful acts were instructed to read through the scale and circle the zeros as appropriate. Scores were obtained by adding the numerical responses to each item. Averages were not used since the scores were skewed toward 0 and thus differences were easier to appreciate with sums.

Motivations included in the scale were influenced by Shearer's investigation (1994a), other published literature, and

clinical experience. Items were designed to consider a variety of adult patient groups including dissociative, characterologically disturbed, and acutely/transiently psychotic.

Five theoretical subscales of the SIMS were postulated: use of SIB to modify dissociative states, to modulate affect, to inflict self-punishment, to influence others, and as self-stimulation. Some items on the SIMS did not fit these theoretical categories but were relevant in past studies or clinical experience. Suicide was not one of the motivations included on the SIMS.

Statistical Analysis

Initial analysis revealed that SIMS and standardized instrument scores were nonnormally distributed; thus nonparametric statistics were used to calculate all correlations (Spearman) and comparisons of dichotomized groups (Mann-Whitney U-test). Group comparisons are two-tailed; Bonferroni corrections are stated for each analysis as relevant.

In addition to standard measures of reliability, criterion-referenced concurrent validity was tested by correlating SIMS scores with scores on the DES, BDI, and DTS and by comparing SIMS scores with MCMI-II subscales scores. MCMI-II subscales include 3 Modifier Indices (Disclosure, Desirability, Debasement), 10 personality types (Schizoid, Avoidant, Dependent, Histrionic, Narcissistic, Antisocial, Aggressive/Sadistic, Compulsive, Passive-Aggressive, and Self-Defeating), 3 severe dysfunctional personality variants (Schizotypal, Borderline, and Paranoid), 6 moderately severe Axis I clinical syndromes (Anxiety, Somatoform, Bipolar: Manic, Dysthymia, Alcohol Dependence, and Drug Dependence), and 3 more severe Axis I syndromes (Thought Disorder, Major Depression, and Delusional Disorder).

Factor Analysis

Scree plots and eigenvalues for the SIMS were derived, and a preliminary factor analysis of the SIMS was performed on the 99 questionnaires using the promax method with an oblique rotation to an equimax target. Subscale scores were then compared with scores on the DES, BDI, DTS, and MCMI, as well as characteristics and methods of SIB.

RESULTS

Methods of SIB reported, in order of decreasing frequency, were cutting/scratching; hitting self or objects; burning; substance abuse (licit and illicit, used as a means of inflicting injury or pain); head banging; picking, biting, or pinching skin or fingernails; eating disorder behavior (to cause damage or pain); bone breaking/joint dislocating; exacerbating or inflicting medical illnesses (including unnecessary operations); genital injury/masochistic sexual activity; jumping/falling from heights; hair pulling (to cause injury or disfigurement); and miscellaneous (self-flagellation, strangling, eating glass, etc.). Only the first four of these were endorsed by greater than 25% of subjects each. The mean number of different methods endorsed by SIB subjects was 3.0 ($SD = 1.64$, range = 1–7, $N = 75$).

Scale Characteristics

SIMS scores ranged from 0 to 275 (total possible 350); median score was 98. Cronbach's alpha for the SIMS was .96 ($N = 99$). Split-half correlation was .92 ($N = 99$, $p < .000001$), and Guttman split-half reliability was .95. Test-retest reliability was .70 ($N = 32$, $p < .00001$). The total SIMS did not correlate with gender, race, or educational level. There was a low negative correlation with age ($R = -.22$, $N = 99$, $p < .03$).

Scale validity was established by face validity and criterion-referenced concurrent validity. Items on the SIMS came from published literature on SIB and from clinical contact with patients, suggesting high face validity. Comparing the total SIMS score with scores on other instru-

ments used, the SIMS correlated most strongly with the DES ($R = .70$, $N = 93$, $p < .0000001$) and the BDI ($R = .60$, $N = 90$, $p < .000001$). It correlated with the DTS ($R = .40$, $N = 80$, $p < .005$). SIMS score correlated strongly with frequency of SIB ($R = .57$, $N = 99$, $p < .0000005$).

The SIMS subjects could be dichotomized as high (95 or over) and low (less than 95) scorers. High scoring subjects were significantly more likely to endorse at least two methods of SIB ($p < .005$), receive medical attention for their SIB ($p < .05$), and feel relieved by SIB ($p < .005$), suggesting more extensive SIB pathology. High and low SIMS subjects were significantly different ($p < .002$; Bonferroni corrected) on 12 of 25 MCMI-II subscales as compared by Mann-Whitney U-test. Table 2 shows the mean, standard deviation, adjusted *Z*, and significance level of high and low SIMS scorers on each MCMI-II subscale.

Literature on the use of MCMI-II base rate scores (BR) state that subscale BRs of 85 or above distinguish Axis I pathology as prominent and Axis II pathology as diagnosable (Everly and Newman 1993). High SIMS scorers are significantly more likely ($p < .002$) to demonstrate pathological levels on MCMI-II subscales Avoidant (mean score 100.1), Passive-Aggressive (mean score 87.0), Self-Defeating (mean score 99.6), Schizotypal (mean score 85.3), and Borderline (mean score 92.2) but not Dependent, Histrionic, Narcissistic, Antisocial, Aggressive/Sadistic, Compulsive, Paranoid, or others (see Table 2).

Factor Analysis

Scree plots, eigenvalues, and preliminary factor analysis supported a six-factor solution for the SIMS. The six factors accounted for 85% of scale variability. Cronbach's alphas ranged from 0.81 to 0.93. Item groupings are shown in Table 3. Factor subscale scores were sums of the numerical responses of items involved. Factor 1, Affect Modulation, referred to modifying either general affective experiences or specific affects such as fear, anger, shame or guilt, and suicidality. Median Factor 1 subscale score, for SIB subjects, was 57 ($N = 75$, range = 0–84, total = 90).

Factor 2, Desolation, had two items related to modulating affect, as in Factor 1, but the affect was isolation or emptiness. The remaining two items related to attempts to manage overwhelming internal or external stimuli. The median score for Factor 2 in SIB subjects was 18 ($N = 75$, range = 0–39, total = 40).

Factor 3 had six items, three of which involved self-punishment. Two of the other items suggested an internal ("to satisfy voices inside or outside of me") or external ("to please an important figure") entity telling the subject to act. These suggested a dichotomy, conflict, or duality for the endorser. The last item ("to remind myself that I'm alive when I otherwise feel dead") also had an implicit duality or conflict between the states of feeling dead and wanting to feel alive. This factor was called Punitive Duality because of the recurrent theme of punishment and the covert and overt dualities. The median score on Factor 3 for all SIB subjects was 18 ($N = 75$, range = 0–58, total = 60).

The five items in Factor 4, Influencing Others, referred to attempts to affect others by engaging in SIB. The median score for SIB subjects was 9 ($N = 75$, range = 0–45, total = 50).

Many of the items in Factor 5, Magical Control, implied a wish to have an impact on others, as in Factor 4, but the cause-effect relationship was perplexing or complicated. This was most evident in the first ("to protect important people") and fifth ("to hurt someone"), although even the last item ("it makes no sense to me") suggested confusion about cause and effect. There was evidence of magical thinking, as in Item 2 where the subject believes that one can control others by damaging one's own body. Subjects who endorsed these items seemed to have a confusion of self-other that was absent from Factor 4. For Factor 5 the median was 13 among SIB subjects ($N = 75$, range = 0–65, total = 70).

Factor 6, Self-Stimulation, had a median score of 6 in SIB subjects ($N = 75$,

Table 2

DESCRIPTIVE STATISTICS AND UNIVARIATE COMPARISONS FOR MCMI-II BASE RATE SCORES (U-TEST)

Code	Name	High SIMS subjects (N = 48) Mean	*SD*	Low SIMS subjects (N = 48) Mean	*SD*	Adjusted *Z*
X	Disclosure	81.1	15.9	63.9	17.2	–4.49***
Y	Desirability	49.2	18.7	53.1	17.1	–1.24
Z	Debasement	90.1	11.6	73.2	18.8	–4.79****
1	Schizoid	78.8	23.4	72.0	30.7	–0.91
2	Avoidant	100.1	17.6	83.4	24.2	–3.59**
3	Dependent	70.3	26.2	66.5	32.0	–0.09
4	Histrionic	55.9	28.9	49.9	31.8	–0.79
5	Narcissistic	50.5	29.2	47.7	31.4	–0.14
6a	Antisocial	70.8	23.7	54.8	19.7	–3.31*
6b	Aggressive/Sadistic	66.9	25.6	53.5	25.8	–2.34
7	Compulsive	51.0	26.9	63.5	21.1	–2.28
8a	Passive-Aggressive	87.0	25.3	62.3	27.4	–4.14***
8b	Self-Defeating	99.6	16.3	78.7	21.5	–4.84****
S	Schizotypal	85.3	25.0	66.3	20.2	–3.33*
C	Borderline	92.2	19.8	71.9	22.0	–4.12***
P	Paranoid	61.4	12.8	56.9	14.8	–1.24
A	Anxiety	83.3	19.8	76.5	24.1	–1.34
H	Somatoform	66.6	18.4	63.9	11.7	0.00
N	Bipolar: Manic	52.2	26.0	44.6	22.1	–0.82
D	Dysthymia	89.3	14.6	81.5	27.0	–0.55
B	Alcohol Dependence	68.3	18.5	50.4	17.4	–4.00**
T	Drug Dependence	67.6	22.2	49.9	19.0	–4.22***
SS	Thought Disorder	79.2	17.5	61.2	14.9	–4.96****
CC	Major Depression	84.0	17.0	68.9	22.3	–3.92**
PP	Delusional Disorder	58.1	14.5	48.2	19.4	–2.31

*$p < .002$.
**$p < .0005$.
***$p < .00005$.
****$p < .000005$.

range = 0–30, total = 40). The presence of an item related to causing a "release that feels like sexual release" and an item related to an attempt to "diminish feelings of sexual arousal" together in Factor 6 illustrates that motivations that appear to be opposites sorted together in this analysis.

Motivational Factors and Psychopathology

To compare the six motivational factors on the MCMI-II, correlations between each subscale and the six factors were calculated. Significant correlations ($p < .0003$; Bonferroni corrected) are shown in Table 4.

Factors 1–6 correlated somewhat differently among the DES, BDI, and DTS ($p < .008$; Bonferroni corrected). The DES correlated most strongly with Factor 3 ($R = .77, N = 93, p < .0000005$) and least strongly with Factor 4 ($R = .35, N = 93, p < .005$). Correlations with the BDI varied between a high with Factor 3 ($R = .64, N = 90, p < .0000005$) and a low with Factor 4 ($R = .32, N = 90, p < .005$). Correlations with the DTS were lower generally, from a high with Factor 1 ($R = .43, N = 80, p < .0005$) to a low with Factors 4 (*ns*) and 6 (*ns*).

Table 3

SIMS VERSION 1 FACTORS AND ITEMS

Factor 1: Affect Modulation

- To produce feelings and a sense of being real when I feel numb and "unreal"
- To distract myself from emotional pain by experiencing physical pain
- To decrease feelings of fear
- To prevent myself from acting on suicidal feelings
- To produce a feeling of distance or numbness when my feelings are too strong or overwhelming
- To decrease feelings of rage
- To feel physical pain when the other pain I am feeling is so overwhelming and confusing that I can't grasp it[a]
- To punish myself for being "bad" in some way (angry, selfish, stupid, etc.)
- To help me escape from uncomfortable feelings or moods

Factor 2: Desolation

- To diminish a feeling of being utterly alone
- To keep bad memories away
- To do something that only I have control of and no one else can control
- To diminish feeling so "empty"

Factor 3: Punitive Duality

- To punish myself for positive feelings or experiences
- To satisfy voices inside or outside of me telling me to do it
- To punish myself for telling secrets
- To remind myself that I deserve to be hurt or punished
- To please an important figure (God, the devil, or etc.), who wants me to do it
- To remind myself that I'm alive when I otherwise feel "dead"

Factor 4: Influencing Others

- To express anger at or seek revenge toward others
- To show others how hurt (damaged, hopeless), I am
- To show others how angry I am
- To irritate or shock someone in my life
- To seek support and caring from others when I can't or won't ask them directly

Factor 5: Magical Control

- To "protect" important people in my life
- To control the reactions and behavior of others
- To prevent myself from hurting someone else
- To "kill" a part of myself
- To hurt someone important in my life
- To control parts of myself that would otherwise control me
- It makes no sense to me; I don't know why I do it and it seems to serve no function

Factor 6: Self-Stimulation

- To provide a sense of excitement or stimulation that feels exhilarating
- To provide a sense of tension release that feels like sexual release
- To diminish feelings of sexual arousal
- To experience a "high" that feels like a drug high

Additional[b]

- To show others how strong or "tough" I am
- To prove to myself how much I can take

[a]This item is absent from Version 2 of SIMS, due to redundancy with Item 2, Factor 1
[b]Derived from write-in answers obtained during testing; added to SIMS Version 2.

Characteristics and Methods of SIB

Characteristics assessed included amnesia for SIB events, time from last SIB to interview, frequency of events, incidence of telling others about SIB, getting medical attention, analgesia during injury, feeling relieved by SIB, and frequency with which any relieved feelings correspond to the sight or feel of blood. There were correlations between Factor 3 and amnesia during SIB ($r = .36$, $N = 74$, $p < .006$), and Factors 1 and 3 and feelings of relief with SIB ($r = .35$, $N = 74$, $p < .006$, and $r = .37$, $N = 74$, $p < .006$, respectively) ($p < .006$; Bonferroni corrected). Correlations of feeling relieved with blood were not different from those of relief in gen-

Table 4

SIGNIFICANT MCMI-II SPEARMAN CORRELATIONS WITH SIMS FACTORS ($N = 96$)

Code	Name	Factor 1	2	3	4	5	6
X	Disclosure	.44**	.55****	.54****	.43**	.59****	.43**
Y	Desirability						
Z	Debasement	.51****	.58****	.64****		.53****	.47***
1	Schizoid						
2	Avoidant	.42**	.42**	.59****		.43**	.41**
3	Dependent						
4	Histrionic						
5	Narcissistic						
6a	Antisocial						.36*
6b	Aggressive/Sadistic						
7	Compulsive						
8a	Passive-Aggressive	.39*	.43**	.37*	.45***	.55****	.42**
8b	Self-Defeating	.56****	.57****	.69****	.43**	.55****	.40**
S	Schizotypal		.37*	.50****		.50****	.44**
C	Borderline	.42**	.46***	.46***	.45**	.56****	.37*
P	Paranoid						
A	Anxiety						
H	Somatoform						
N	Bipolar: Manic						
D	Dysthymia						
B	Alcohol Dependence		.41**		.36*	.38*	
T	Drug Dependence		.37*		.41**	.44**	.43**
SS	Thought Disorder	.46***	.53****	.61****		.59****	.50***
CC	Major Depression	.46***	.56****	.53****		.43**	.36*
PP	Delusional Disorder						

Note. Factor 1 = Affect Modulation; Factor 2 = Desolation; Factor 3 = Punitive Duality; Factor 4 = Influencing Others; Factor 5 = Magical Control; Factor 6 = Self-Stimulation.
*$p < .0003$.
**$p < .00005$.
***$p < .000005$.
****$p < .0000005$.
Omissions indicate nonsignificance.

eral. Comparisons between total SIMS and Factors 1–6 and methods of SIB are shown in Table 5 ($p < .013$; Bonferroni corrected). Only those methods of SIB that account for at least 25% of SIB were used in this analysis.

DISCUSSION

Findings

One of the goals of this study was to see whether patients' reports about a highly subjective quality—motivation for self-injurious behavior—could be converted into a quantifiable measure. A major finding of this study is that the SIMS had good reliability and validity, with a high Cronbach's alpha, split-half and Guttman coefficients, and test-retest reliability. A small negative correlation with age was the only demographic variable found to affect SIMS score. The face validity of the SIMS was excellent. Criterion-referenced concurrent validity was good. Subjects with SIMS scores of 95 or above were more likely to have high DES, BDI, and DTS scores and to be in the pathological range on MCMI-II measures of avoidant, passive-aggressive, self-defeating, schizotypal, and borderline character traits/dysfunctions. They were

Table 5

MANN-WHITNEY *U*-TESTS WITH METHODS OF SIB ($N = 75$)

		Factors					
Method	Total SIMS	1	2	3	4	5	6
Cutting	$Z = -3.2$**	$Z = -3.0$**		$Z = -4.1$****		$Z = -3.0$**	
Hitting	$Z = -2.5$*			$Z = -3.0$**		$Z = -2.9$**	
Burning							
Substances							

Note. Factor 1 = Affect Modulation; Factor 2 = Desolation; Factor 3 = Punitive Duality; Factor 4 = Influencing Others; Factor 5 = Magical Control; Factor 6 = Self-Stimulation.
*$p < .013$.
**$p < .005$.
***$p < .0005$.
****$p < .00005$.
Omissions indicate nonsignificance.

also more likely to have multiple methods of SIB, get medical attention for SIB, and experience feelings of relief with SIB. High SIMS scorers were not more likely to be dependent, histrionic, narcissistic, or compulsive than low SIMS scorers.

Two relevant clinical events occurred in the administration of the SIMS that speak to its face validity. One subject scratched herself superficially while completing the measure and smeared blood on the form. On follow-up, she stated, "I wanted to show you how hurt I am." Her responses on the SIMS reflected this motivation. Another patient, who had seriously cut herself several times in the hospital, did so again some time after completing the SIMS and stated that the scale reminded her of why she liked to cut herself. Thus *there are some unstable patients who may have increased urges to engage in SIB after completing the questionnaire.* All patients should be warned about possible increased urges to self-injure while taking the SIMS, and precautions should be taken for managing them.

It should be kept in mind that the SIMS did not measure frequency of SIB, although there was a strong correlation between SIMS score and SIB frequency. A high SIMS score resulted from the endorsement of a large number of motivations for SIB together with stronger endorsement of these motivations. Thus it may be thought of as reflecting greater use of SIB as a coping mechanism for a larger number of internal and external dilemmas.

Another focus of this study was to investigate whether different motivations for self-injury were associated with specific forms of psychopathology. This study found six factors representing different motivations for SIB. Considerable similarity exists between Factors 1 through 6, but there are also numerous differences. Moderate correlation between feelings of relief with SIB and Factor 1 is noteworthy: Patients who endorse affect-related motivations are likely to obtain emotional relief from SIB.

Clinical correlations with Factor 2 were clarified to one author (EAO), when an individual patient (not in the study) stated that she had recently been overwhelmed by painful affect and childhood recollections and thus "shut down," numbing all feelings and memories. She then described three of the four Factor 2 items spontaneously, in her own words, as reasons why she felt compelled to cut her arm with a knife.

It is clinically interesting that Factor 3 was the most strongly correlated with the DES, since items in this factor imply a dichotomy or significant conflict within the endorser. This factor also had the strongest correlation with Schizoid personality traits ($R = .34$, $p = .0006$; not significant with Bonferroni correction). Factor 3 was the only factor to correlate with

amnesia during SIB, and the most likely to be associated with cutting as a method. The strong correlation with the BDI suggests a predisposition to depression beyond that seen in other motivations, consistent with a depression-related need for self-punishment.

Factor 4 had the least Axis I and II pathology. Items here reveal clarity of self-other differentiation with clarity of cause and effect and may be suggestive of good internal object relations. In contrast, Factor 5, the other factor with items involving an impact on others, had extensive Axis II pathology. Several of the items in this factor involve a relationship to others that suggests very disturbed self-other differentiation. Comparison of Factors 4 and 5 may represent differences in the complexity and degree of disturbance of the internal world of SIB subjects. Factor 6 was not frequently endorsed in the population studied. There was no significant correlation with reports of analgesia with this factor, although items suggest a possible opiate-mediated effect.

There were similarities among factors when compared with standard instruments, and it may be suggested that there are only two significantly different factors: Factor 4 and the rest, with the former subjects exhibiting less psychopathology on Axis I and Axis II, compared with others. Such a dichotomy could be seen to divide patients into those with relatively intact object relations (Factor 4) and all others. Although greater numbers of subjects may demonstrate the validity of this simplification, it may also prove that the variability among more highly disturbed patients is useful for their characterization and treatment.

Clinicians working with the research subjects given the SIMS reported usefulness of the scale. Several patients asked their therapists to use it to go over their motivations for SIB. Anecdotally, the treaters in question stated that this exercise was helpful in assisting patients articulate and examine underlying motivations which had not previously been disclosed in the therapeutic setting. Thus, although its use requires precautions against repeated SIB (perhaps including a no-self-harm contract), the SIMS may prove to be a valuable clinical tool for patient treatment.

Limitations

The SIMS should be tested in more diverse samples and in other settings such as prisons (Bach-Y-Rita 1974; Haines et al. 1996) and adolescent inpatient settings where "contagion" effects of SIB have been reported (Rosen and Walsh 1989; Walsh and Rosen 1985). The motivations for SIB may be quite different in chronic psychotic patients with acute exacerbations of their illness, and the SIMS was found not to be useful in that population. The SIB subjects in this study were younger and more likely to be female than non-SIB subjects, a finding consistent with higher reported rates of SIB, BPD, and dissociative disorders in young females. The total sample number for this study is of moderate size, and the correlations here, many of which are robust, may diminish somewhat with a larger sample. Also, the stability of the factor analysis solution would be improved with a sample two or three times larger. It is possible that other factors would emerge in a larger and more varied sample. Structured interviews, concurrent historical reports, and perhaps biological measures will be needed to further validate the SIMS usefulness as a clinical and research tool.

Future Directions

A clinically relevant correlation to be addressed in future work is between past serious suicide attempt and various factors and/or characteristics of SIB. It will be important to see if any motivations on the SIMS are more likely to be endorsed in a highly suicidal population.

Treatment for SIB is limited but includes dialectical behavioral therapy, as developed and tested by Linehan and colleagues for BPD (Linehan 1993; Linehan, Armstrong, Suarez, Allmon, and Heard 1991; Linehan, Heard, and Armstrong 1993), and use of the opiate antagonist

naltrexone, which has been found to be helpful in medically ill (Lienemann and Walker 1989b) and developmentally disordered individuals (Lienemann and Walker 1989a). An important step in the further development of the SIMS will be to explore the relationship of the motivations with therapeutic responses to different interventions (e.g., interpersonal and behavioral therapies, dialectical behavioral therapy, and medications such as the SSRIs, antipsychotics, and opiate antagonists). Changes in SIMS scores may also serve as an outcome measure for treatment of SIB or as a signal for worsening SIB. It is possible that specific SIB motivations may correlate with neurobiological characteristics, such as diminished serotonin levels related to violence toward self and others. In this fashion, the SIMS may prove to be a useful tool to quantify and correlate motivations related to the serious clinical problem of nonlethal, self-injurious behaviors in psychiatric patients.

CONCLUSIONS

Among the various self-injuring populations, the motivation or the intent of the behavior can be either simple or complex. For acceptable forms of self-harm the intent is socially motivated and not subject to question within that cultural group (although it may be quite unclear to an outsider why facial scarification makes a person more attractive, for example). In the case of developmental disorders, intent for self-stimulating/self-injurious behaviors is largely neurobiological and related to the immediate internal or external environment of the individual (Rincover 1986). The motivations for SIB in populations between these polarized extremes presumably include conscious and unconscious intents that involve "meaning." This study has demonstrated that it is possible to examine motivations endorsed for a complex behavior and derive useful information about the psychopathology of the endorser.

REFERENCES

AMERICAN PSYCHIATRIC ASSOCIATION. Diagnostic and Statistical Manual of Mental Disorders, 4th ed. American Psychiatric Association, 1994.

BACH-Y-RITA, G. Habitual violence and self-mutilation. *American Journal of Psychiatry* (1974) 131: 1018–20.

BECK, A. T., and STEER, R. A. *Manual for the Beck Depression Inventory.* Harcourt Brace Jovanovich, 1987.

CARLSON, E. B., and PUTNAM, F. W. An update on the Dissociative Experiences Scale. *Dissociation* (1993) 6:16–27.

COONS, P. M., and MILSTEIN, V. Self-mutilation associated with dissociative disorders. *Dissociation* (1990) 3:81–7.

DARCHE, M. A. Psychological factors differentiating self-mutilating and non–self-mutilating adolescent inpatient females. *Psychiatric Hospital* (1990) 21(1):31–5.

DAVIDSON, J. R. T., BOOK, S. W., COLKET, J. T., TUPLER, L. A., BOTH, S., DAVID, D. et al. Assessment of a New Self-Rating Scale for Post-Traumatic Stress Disorder. *Psychological Medicine* (1997) 27(1):153–60.

DULIT, R. A., FYER, M. R., LEON, A. C., BRODSKY, B. S., and FRANCES, A. J. Clinical correlates of self-mutilation in borderline personality disorder. *American Journal of Psychiatry* (1994) 151: 1305–11.

EVERLY, G. S., and NEWMAN, E. C. The Millon Clinical Multiaxial Inventory–II: Introduction and overview. *Directions in Clinical Psychology* (1993) 3(15):8–15.

FAVAZZA, A. *Bodies under Siege: Self-Mutilation in Culture and Psychiatry.* Johns Hopkins University Press, 1987.

FAVAZZA, A. R. Why patients mutilate themselves. *Hospital and Community Psychiatry* (1989) 40: 137–45.

HAINES, J., WILLIAMS, C. L., and BRAIN, K. L. The psychopathology of incarcerated self-mutilators. *Canadian Journal of Psychiatry* (1995) 40:514–22.

HERPERTZ, S. Self-injurious behaviour: Psychopathological and nosological characteristics in subtypes of self-injurers. *Acta Psychiatrica Scandinavica* (1995) 91:57–68.

HILLBRAND, M., YOUNG, J. L., and KRYSTAL, J. H. Recurrent self-injurious behavior in forensic patients. *Psychiatric Quarterly* (1996) 67(1):33–45.

KAJATHURAI, A., CHAZAN, B. I., and JEANS, J. E. Self-mutilation as a feature of Addison's disease. *British Medical Journal* (1983) 287:1027.

LEIBENLUFT, E., GARDNER, D. L., and COWDRY, R. W. The inner experience of the borderline self-mutilator. *Journal of Personality Disorders* (1987) 1: 317–24.

LIENEMANN, J., and WALKER, F. D. Naltrexone for treatment of self-injury [Letter]. *American Journal of Psychiatry* (1989a) 146(12):1639–40.

LIENEMANN, J., and WALKER, F. D. Reversal of self-

abusive behavior with naltrexone [Letter]. *Journal of Clinical Psychopharmacology* (1989b) 9(6): 448–9.

LINEHAN, M. M. *Cognitive Behavior Treatment for Borderline Personality Disorder.* Guilford Press, 1993.

LINEHAN, M. M., ARMSTRONG, H. E., SUAREZ, A., ALLMON, D., and HEARD, H. L. Cognitive-behavioral treatment of chronically parasuicidal borderline patients. *Archives of General Psychiatry* (1991) 48: 1060–4.

LINEHAN, M. M., HEARD, H. L., and ARMSTRONG, H. E. Naturalistic follow-up of a behavioral treatment for chronically parasuicidal borderline patients. *Archives of General Psychiatry* (1993) 50:971–4.

MATAS, M., and ROBINSON, C. Diagnosis and treatment of monosymptomatic hypochondriacal psychosis in chronic renal failure. *Canadian Journal of Psychiatry* (1988) 33:748–50.

MILLON, T. *Manual for the Millon Clinical Multiaxial Inventory–II (MCMI-II).* National Computer Systems, 1987.

PITMAN, R. K., VAN DER KOLK, B. A., ORR, S. P., and GREENBERG, M. S. Naloxone-reversible analgesic response to combat-related stimuli in posttraumatic stress disorder. *Archives of General Psychiatry* (1990) 47:541–4.

RINCOVER, A. Behavioral research in self-injury and self-stimulation. *Psychiatric Perspectives on Mental Retardation* (1986) 9(4):755–66.

ROMANS, S. D., MARTIN, J. L., ANDERSON, J. C., HERBISON, G. P., and MULLEN, P. E. Sexual abuse in childhood and deliberate self-harm. *American Journal of Psychiatry* (1995) 152:1336–42.

ROSEN, P. M., and WALSH, B. W. Patterns of contagion in self-mutilation epidemics. *American Journal of Psychiatry* (1989) 146:656–8.

SHEARER, S. L. Brief reports: Phenomenology of self-injury among inpatient women with borderline personality disorder. *Journal of Nervous and Mental Disease* (1994a) 182:524–6.

SHEARER, S. L. Dissociative phenomena in women with borderline personality disorder. *American Journal of Psychiatry* (1994b) 151:1324–8.

SILK, K. R., LEE, S., HILL, E. M., and LOHR, N. E. Borderline personality disorder symptoms and severity of sexual abuse. *American Journal of Psychiatry* (1995) 152:1059–64.

SIMEON, D., STANLEY, B., FRANCES, A., MANN, J. J., WINCHEL, R., and STANLEY, M. Self-mutilation in personality disorders: Psychological and biological correlates. *American Journal of Psychiatry* (1992) 149:221–6.

SIMEON, D., STEIN, D. J., and HOLLANDER, E. Depersonalization disorder and self-injurious behavior. *Journal of Clinical Psychiatry* (1995) 5(Suppl. 4): 36–9.

SIMPSON, M. The phenomenology of self-mutilation in a general hospital setting. *Canadian Psychiatric Association Journal* (1975) 20:429–544.

STONE, M. H. A psychodynamic approach: Some thoughts on the dynamics and therapy of self-mutilating borderline patients. *Journal of Personality Disorders* (1987) 1:347–9.

SUYEMOTO, K. L. The functions of self-mutilation. *Clinical Psychology Review* (1998) 18(5):531–54.

SUYEMOTO, K. L., and MACDONALD, M. L. Self-cutting in female adolescents. *Psychotherapy* (1995) 32: 162–71.

VAN DER KOLK, B. A., and FISLER, R. E. The biologic basis of posttraumatic stress. *Family Violence and Abusive Relationships* (1993) 20:417–32.

VAN DER KOLK, B. A., GREENBERG, M., BOYD, H., and KRYSTAL, J. Inescapable shock, neurotransmitters, and addiction to trauma: Toward a psychobiology of post traumatic stress. *Biological Psychiatry* (1985) 20:314–32.

VAN DER KOLK, B. A., PERRY, J. C., and HERMAN, J. L. Childhood origins of self-destructive behavior. *American Journal of Psychiatry* (1991) 148: 1665–71.

WALSH, B. W., and ROSEN, P. Self-mutilation and contagion: An empirical test. *American Journal of Psychiatry* (1985) 142:119–20.

WEST, M., and MORRIS, J. (photographer). Fourth edition. *Abantu: An Introduction to the Black People of South Africa.* C. Struik Publishers, 1984.

ZLOTNICK, C., SHEA, M. T., PEARLSTEIN, T., SIMPSON, E., COSTELLO, E., and BEGIN, A. The relationship between dissociative symptoms, alexithymia, impulsivity, sexual abuse and self-mutilation. *Comprehensive Psychiatry* (1996) 37(1):12–6.

ZLOTNICK, C., MATTIA, J. I., and ZIMMERMAN, M. Clinical correlates of self-mutilation in a sample of several psychiatric patients. *Journal of Nervous and Mental Disease* (1999) 187(5):296–301.