

The Validity and Reliability of the Turkish Version of the Inventory of Statements About Self-injury



Tezan BİLDİK¹, Oya SOMER², Bürge KABUKÇU BAŞAY³, Ömer BAŞAY⁴, Burcu ÖZBARAN

SUMMARY

Objective: Non-suicidal self-injury (NSSI) is defined as the repetitive deliberate destruction of one's body tissue without suicidal intent and is frequently repetitive. The aim of this study was to examine the psychometric properties of the Inventory of Statements About Self-injury (ISAS), a measure designed to comprehensively assess non-suicidal self-injury (NSSI). The ISAS assesses 13 functions of NSSI, as well as the frequency of 12 NSSI behaviors.

Method: The ISAS was administered to 529 high school students who had performed at least one NSSI behavior. The internal consistency and test-retest reliability of the scale were examined; for construct validity, the relationship between the Turkish form of the ISAS and various criteria scales was examined, and confirmatory factor analysis (CFA) was conducted.

Results: Consistent with previous research, factor analysis of the functions scale confirmed the good-fit of the original's 2-dimension model ($\chi^2=243$; s.d. = 59; NCI (χ^2/sd) = 4; RMSEA = 0.08 (.07-.09); CFI=0.97; NFI=0.97). In order to test the scale for construct validity, the Brief Symptom Inventory and Suicide Probability Scale were administered to participants, in addition to the ISAS, and the correlations with clinical constructs (e.g., suicidality, depression, anxiety) were in the expected direction. Also the reliability analysis revealed that the ISAS subscales demonstrated high internal consistency.

Conclusion: In the light of the findings, it was concluded that the Turkish version of ISAS could be used as a reliable and valid tool in assessing non-suicidal self-injury in research and treatment contexts.

Key Words: Non-suicidal self-injury, functions, reliability, validity, adolescence

INTRODUCTION

In clinical practice, adolescents and young adults who have NSSI behavior are encountered frequently. In investigations on community samples, it was found that NSSI occurs in 1/3 to 1/2 of adolescents. (Lloyd-Richardson et al. 2007, Yates et al 2008). The onset of NSSI is typically at adolescence and it frequently presents impulsively and more commonly during adolescence and early adulthood than in adulthood (Claassen et al 2006). In community sample studies including adolescents, the prevalence of NSSI was found to be between 14%-40% (Muehlenkamp and Gutierrez 2004, Ross and Heath 2002); and in studies with clinical samples between 40%-61% (Suyemoto 1998). There are few studies carried out on NSSI in our country. In a study conducted by Zoroglu et al (2003) in Istanbul with high school students, the prevalence

of NSSI was found to be 21.4%, with no difference between male and female participants. This is a quite high rate and is significant in that it indicates how common NSSI is among adolescents. In another study conducted in Istanbul in which 1258 adolescents participated, 57% of the participants stated that they inflicted harm on themselves at least once, which is quite a high rate (Lüleci 2007). In another study made in 2006 with 636 participants from two state universities, NSSI was found in 15.4% of the students (Toprak et al 2011). In a study performed with children and adolescents younger than 21 and who lived the life of street urchins, the rate of NSSI was found to be 21% (Ögel and Aksoy 2006). In clinical samples, in a retrospective file review of 730 cases presenting to outpatients clinic in an adolescent unit between January 2006-October 2007, 9% were determined to display 'cutting' behavior (Başay-Kabukçu et al 2009). While some studies

Received: 10.12.2011 - Accepted: 02.04.2012

¹Associate Prof., Ege University, School of Medicine, Department of Child Psychiatry, ²Psychol. Prof., Gediz University, Faculty of Arts and Sciences, Department of Psychology, Izmir;

^{3,4}Psychiatr., Dr. Doğan Baran Women's and Children's Hospital, Niğde, Turkey.

E-mail: tezanbildik@yahoo.com

in the literature suggest that NSSI is more common in girls (Laye-Gindhu ve Schonert-Reichl 2005), others state that there is no difference between sexes in this respect (Jacobson and Gould 2007). It is known that some risk factors (e.g. abuse, trauma etc.) and some psychopathological conditions (e.g. affective disorders, anxiety disorders, personality disorders etc.) are associated with NSSI.

Inventory of Statements About Self Injury (ISAS) is a two part scale developed by Klonsky and Glenn (2009). In the first part (*behaviors*), the lifelong frequency of 12 NSSI behaviors is asked. "*Cutting, biting, carving, burning, pinching, pulling hair, severe scratching, banging or hitting self, interfering with wound healing, rubbing skin against rough surface, sticking self with needles, and swallowing dangerous substances*" are questioned behaviors. In this part, participants are asked how often they perform each behavior. In addition, descriptive and structural characteristics of these behaviors are investigated through five additional questions. Reliability-validity studies of the Behaviors part of the Inventory was carried out by Klonsky and Onlino (2008) on 205 subjects with NSSI in a sample of 815 college students. In that study, inner consistency of 12 behaviors was reported to be high ($\alpha = .84$). The coefficient of the relation between items-overall score was a mean of .52, varying between .22-.60. For construct validity, the relation between overall score of NSSI and McLean Screening Instrument for Borderline personality (Zanarini et al . 2003) was assessed (by excluding suicide item) through correlation analysis and a relation at the level of $r = .37$ was found (with suicide item of ISASI, $r = .45$).

Participants who report "*one or more NSSI*" in the first part of the inventory (*behaviors*) were referred to answering the second part (*functions*). In this part, the function of 13 NSSI behaviors was questioned through 39 questions under two dimensions. Autonomous functions included 5 subscales: affect regulation (*sample item: I feel calm*), anti-suicide (*sample item: I am putting a stop to suicidal thoughts*), marking distress (*sample item: I am creating a physical sign that I feel awful*), self-punishment (*sample item: I am expressing anger towards myself for being worthless or stupid*) and anti-dissociation (*sample item: I am causing pain so I will stop feeling numb*). *Social functions* have 8 subscales: interpersonal boundaries (*sample item: I am establishing barriers between myself and others*), interpersonal influence (*sample item: I am letting others know the extent of my emotional pain*), revenge (*sample item I am getting revenge against others*), sensation seeking (*sample item: I am doing something to generate excitement or exhilaration*), peer bonding (*sample item: I am fitting in with others*), toughness (*sample item: I am seeing if I can stand the pain*), autonomy (*sample item: I am demonstrating that I do not need to rely on others for help*), self-care (*sample item: I am creating a physical injury that is easier to care for than my emotional distress*). Each function is evaluated with three questions and answered on

a three grade response key, "not relevant -0", "partially relevant-1", "very relevant -2". The validity-reliability study of the functions part of the inventory was carried out by Klonsky and Glenn (2009) in a study involving 235 college students. In factor analysis, two factors were obtained. The first factor evaluates interpersonal functions while the second factor evaluates intrapersonal functions. By adding the score of each subscale of social and autonomous functions, overall social and autonomous function scores are obtained. In addition, by adding all items of inventory, the ISAS functions overall score is obtained. For social and autonomous functions, inner consistency values were found to be .88 and .80, respectively, which is a very high level. Inner consistency of the ISAS behaviors part in the inventory was found to be $\alpha=.71$.

The aim of the present study was to evaluate the psychometric characteristics of Inventory of Statement About Self-Injury (ISAS) in a sample of high school students.

METHOD

Pilot study - Translation study

NSSI was first translated into Turkish by the investigators and then a consensus was obtained on items the translation of which showed variations. At the next stage, the Turkish form was administered to 20 adolescent patients undergoing treatment at the adolescent unit of the Ege University Child Psychiatry Department. During administration, adolescents were asked to evaluate the comprehensibility of each item in the Inventory. The items which were found difficult to comprehend were revised and the inventory was given in its final form.

Sample

The sample of the study comprised high schools participating in the project in the Izmir province in the 2010-2011 academic year to determine the "*the prevalence and nature of self injury behavior*". The overall number of students attending high schools at Izmir city center is 133,760 (private school: 6,666); and the number of students at high schools in counties is 51,411 (private school 1,102). In a study carried out in Istanbul with high school students, the prevalence of NSSI was reported to be 21% (Zoroğlu et al 2003). Accordingly, the size of the sample was calculated to be 1500 students while taking a 3% error tolerance, 99% confidence interval and 20% risk of not reaching them into account. Using stratified sampling, the planned sample was distributed between the city center and countries first, then between special high schools, normal high schools, vocational high schools and private schools. According to the information obtained from the Education Directorate of the Province, the mean number of students in a class in state high schools is approximately

26 and that in private schools is 17. The number of schools was determined by calculating the overall number of classes that should be reached and assuming that 4 classes would be reached at each school (1 class each from 9th, 10th, 11th and 12th year students). Accordingly, overall, 18 high schools (11 state schools and 1 private school from the city and 6 state schools from the counties) were identified and schools and classes that would be reached in schools were determined by a simple random sampling method. Overall, 1656 students in 18 high schools that were reached in the framework of this investigation formed the screening sample of the project study.

The study sample comprised 529 high school students from the screening sample who had at least one NSSI behavior and as a control group 250 high school students who did not have any NSSI behavior or did not attempt suicide. NSSI group and control groups were matched in terms of age, sex, and economic status.

Data Collection Tools

Inventory of Statements About Self Injury (ISAS): It was described in detail in the introduction.

Brief Symptom Inventory (BSI): It is a self-report scale of 53 items which was developed by Derogatis (1992) and is used commonly to screen various psychological symptoms. High overall scores indicate the frequency of symptoms. The adaptation of BSI to Turkish was made through three separate studies (Şahin and Durak 1994). It was reported that the scale has five factors. Namely, “anxiety,” “depression,” “negative self,” “somatization,” and “hostility”. Global indexes are termed as, “disorder severity index (GSI),” “total symptoms (PST),” and “symptoms distress index (PSDI).”

Suicide Probability Scale (SPS): It is a 36-item self-report scale developed by Cull and Gill (1988) which evaluates the attitudes and behaviors of individuals carrying a risk of suicide. High scores indicate that the probability of suicide is high. SPS has four subscales: *Hopelessness*, *suicidal ideation*, *negative self evaluation*, and *hostility*. If scores are high in a subscale, this specifically indicates an increased risk in that scale. Adaptation of the scale into Turkish and its reliability and validity study was carried out by Tuğcu (1996).

Procedure

Data collection was carried out during class hours based upon volunteering and before the students were informed that a study of self-injury in the young was being made. Subsequently, a sociodemographic information form, ISAS, BSI and SPS were administered. In the groups where test-retest would be made, students were asked to define themselves with a number which they would remember afterwards.

Analysis

Confirmatory factor analysis (CFA) was used to examine construct validity of ISAS. Again, in the context of construct validity, BSI and SPS were administered in addition to ISAS and whether it has the expected correlation with clinical constructs such as suicide, depression, and anxiety was examined with a correlation and variance analysis. Regarding reliability studies, inner consistency and test/retest reliability were investigated and item analysis was made.

RESULTS

Of the students participating 41.5% were boys (n=326) and 58.5% were girls (n=460). In the 14-17 age group, there were 553 students (71.6%) and in the 18-21 age group there were 219 students (28.3%). According to their self-perception, they described their socioeconomic levels as follows: 3.7% (n=29) poor, 27.9% (n=219) low income, 65.2% (n=511) moderate income and 3.2% (n=25) rich.

ISAS Part I. (*Behaviors*) Reliability and Validity Analysis Results

For NSSI behaviors in the first part of the Inventory, item analyses were made and inner consistency and test-retest reliability studies were made. Relations with external criteria scales were examined both for overall ISAS score and for each NSSI behavior separately. In the analysis made to determine whether there was any difference between sexes in terms of overall ISAS score, no statistically significant difference was found between girls and boys ($t = -.69$, $df = 520$, $p > .05$).

Reliability analysis

In the first part of the Inventory, 12 NSSI behaviors are addressed. There was no overall score calculated for these behaviors. The presence and frequency of behaviors are considered one by one and in the second part the function of these behaviors is examined. NSSI behavior may sometimes take a single form (for example cutting) while it may sometimes take multiple forms. Klonsky and Olinio (2008), based upon the idea that these behaviors are interconnected, performed inner consistency analysis for NSSI behaviors and reported quite high inner consistency rates. In the present study, the relation between NSSI and overall score and their inner consistency as a behavior group were investigated. In calculating overall score of NSSI behaviors, adding the frequency of behaviors directly may bring about misleading results. The frequency of each 12 NSSI behaviors questioned does not imply the same severity for each. For example, behavior of cutting ten times does not indicate the same severity as interfering with wound healing. While “*interfering with wound healing*” is a behavior that can be repeated and made more easily, “*cutting*”

is a behavior that requires more special conditions, has more severe results and occurs less frequently. Therefore, frequency distribution of each NSSI behavior was examined and according to their distribution, they were scored again as 0 (none), 1 (few), 2 (moderate), 3 (common). Thus, overall scores of NSSI behaviors were calculated, items analysis made, inner consistency and reliability examined and their relation with external criteria scales evaluated

According to the results of inner consistency and item analysis made for 12 NSSI behavior, (n=529): item-overall score correlations for NSSI behaviors vary between .33 (*burning*) and .55 (*severe scratching*) and the median value was .44. For overall NSSI, the coefficient of inner consistency was found to be $\alpha=.79$. These findings indicate that NSSI behaviors have quite a high inner consistency.

In order to investigate the consistency and maintenance of NSSI behaviors questioned in the Inventory in time, the Inventory was administered to 133 students again after an interval of four weeks. Test-retest reliability was found to be $r=.66$ for overall NSSI behaviors. Correlation coefficients of test-retest reliability of each of 12 NSSI behaviors varied between .38 and .73. The highest level of consistency was found in "*cutting*" behavior (.73), while the lowest level was found in, "*interfering with wound healing*" (.38).

Validity analysis

Construct validity

Expected relations with each NSSI behavior and their overall score and sub scale scores of Suicide Probability Scale (SPS) and Brief Symptom Inventory (BSI) were examined using correlation and one way variance analysis. As overall NSSI score is a continuous variable, correlation analysis was used in the examination of relations. However, in the examination of each behavior regarding scoring had four categories: (0, 1, 2, 3), variance analysis was employed. In variance analysis, these four categories were grouped as "low level" NSSI (0 ve 1) and "more intensive" NSSI (2 and 3) and these two groups were compared with both control groups and with each other.

The relation between overall score of ISAS and subscales of SPS and BSI was evaluated with Pearson correlation analysis. Accordingly, overall score of NSSI has positive correlation with: BSI *anxiety* ($r=.50, p<.001$), BSI *depression* ($r=.49, p<.001$), BSI *negative self* ($r=.46, p<.001$), BSI *somatization* ($r=.48, p<.001$), BSI *hostility/aggression* ($r=.48, p<.001$), BSI *GSI* ($r=.53, p<.001$), BSI *PST* ($r=.42, p<.001$) and BSI *PSDI* ($r=.43, p<.001$). Similarly, there is positive correlation between overall score of ISAS and SPS *hopelessness* ($r=.44, p<.001$), SPS *hostility* ($r=.50, p<.001$), SPS *suicidal ideation* ($r=.53, p<.001$), SPS *negative self evaluation* ($r=.13, p<.001$) and SPS overall score ($r=.53, p<.001$) (Table 1).

Table 1. Relation between overall score of ISAS and subscale and overall scores of BSI and SPS.

	ISAS overall score
Suicide probability scale	
Hopelessness	.43**
Hostility	.50**
Negative self Evaluation	.12**
Suicidal ideation	.53**
Overall score of scale	.53**
Brief symptom Inventory	
Anxiety	.50**
Depression	.49**
Somatization	.47**
Negative self	.46**
Hostility	.48**
Disorders Global severity Index (GSI)	.53**
Total symptoms (PST)	.42**
Symptom distress index (PSDI)	.43**

Pearson correlation index ** $p<.001$
 NSSI: Non suicidal self injury; BSI: Brief symptom Inventory; SPS: suicide Probability scale

BSI GSI scores were compared between groups using one-way ANOVA test and no statistically significant difference was found between the groups (*sticking self with needles*, [F(2, 787)=84.15, $p<.001$]; *banging or hitting self* [F(2, 787)=77.90, $p<.001$]; *pinching*, [F(2, 787)=80.48, $p<.001$]; *biting*, [F(2, 787)=89.35, $p<.001$]; *carving* [F(2, 787)=98.91, $p<.001$]; *cutting*, [F(2, 787)=92.78, $p<.001$]; *rubbing skin against rough surface*, [F(2, 787)=86.04, $p<.001$]; *pulling hair*, [F(2, 787)=96.77, $p<.001$]; *severe scratching*, [F(2, 787)=125.80, $p<.001$]; *burning*, [F(2, 787)=80.93, $p<.001$]; *interfering with wound healing*, [F(2, 787)=90.64, $p<.001$]; *swallowing dangerous substances*, [F(2, 787)=117.88, $p<.001$]).

SPS overall scores, were compared between groups using one-way ANOVA test and statistically significant difference was found between groups (*sticking self with needles*, [F(2, 783)=101.68, $p<.001$]; *banging or hitting self*, [F(2, 783)=95.71, $p<.001$]; *pinching* [F(2, 783)=89.19, $p<.001$]; *biting*, [F(2, 783)=97.07, $p<.001$]; *carving*, [F(2, 783)=114.35, $p<.001$]; *cutting*, [F(2, 783)=110.85, $p<.001$]; *rubbing skin against rough surface*, [F(2, 783)=101.65, $p<.001$]; *pulling hair* [F(2, 783)=96.77, $p<.001$]; *severe scratching* [F(2, 783)=134.04, $p<.001$]; *burning* [F(2, 783)=90.94, $p<.001$]; *interfering with wound healing* [F(2, 783)=106.84, $p<.001$]; *swallowing dangerous substances*, [F(2, 783)=129.08, $p<.001$]).

For both BSI and SPS, in two by two comparisons using PostHoc Bonferroni test, a significant difference was found between more intensive level NSSI and lower level NSSI group and control groups and between low level NSSI group and control group. There was only one exception to this. No significant difference was found in BSI GSI Scores between low and high level NSSI groups among students who reported *banging or hitting self* behavior. Similarly, in students reporting, *pinching and burning* behavior, no significant difference was found in SPS overall scores between these two groups of NSSI.

ISAS Part II. (Function) Results of Reliability and Validity Analysis

In the analysis made to determine whether there was any difference between sexes in terms of NSSI functions overall score, no significant difference was found between boys and girls ($t = -.22$ $df = 522$ $p > .05$).

Reliability analysis

According to the results of item analysis made for 39 items examining the functions of NSSI in the second part of the inventory ($n = 529$), correlations of item- overall score for functions varied between .40 and .62 with a median value of .48. Inner consistency coefficient for ISAS functions overall score was found to be $\alpha = .93$, indicating a very high level of inner consistency. According to the results of inner consistency and item analysis made for *autonomous functions*, correlations of item-overall score vary between .57 (*self punishment*) and .69 (*marking distress*) with a median value of .58. Inner consistency coefficient obtained for *autonomous functions* score was found to be, $\alpha = .81$, which indicates a quite high level of inner consistency. According to the results of inner consistency and item analysis made for *Social Functions*, correlations of item-overall score varied between .48 (*revenge*) and .71 (*autonomy*) with a mean value of .61. The inner consistency coefficient obtained in *Social functions* overall score was found to be $\alpha = .86$, which again shows a quite high level of inner consistency.

In the test-retest reliability study of the Inventory, correlation for overall function score was found to be $r = .64$ and it was respectively .60 and .58 for social and autonomous functions.

Validity analysis

Confirmatory Factor Analysis

In the present study, Confirmatory Factor Analysis was used to determine whether NSSI functions exhibit a two factorial structure in the context of construct validity as predicted by Klonsky and Olino (2008) and whether the relation between subscales and factors was compatible with the expected

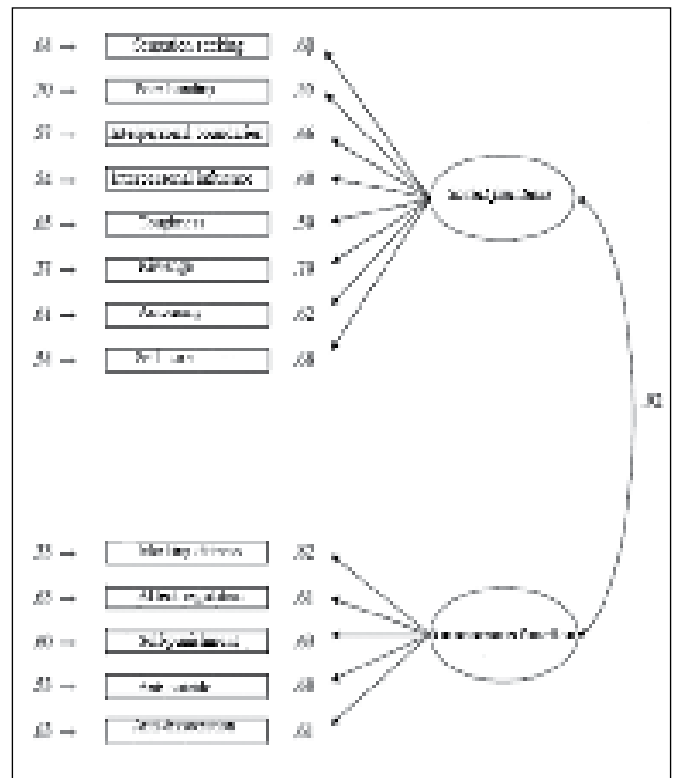


Figure 1. Factor structure of Functions in ISAS

structure in our culture as well. With this aim, parallel to the factor analysis findings of the authors, a measurement model, consisting of 13 observed variables and 2 implicit variables, was defined (Figure 1).

In this first model, errors in observed variables were defined independently of each other. When adjustment indexes and correction indexes defined in the model were examined, it was seen that some observed variables were more closely related to each other (e.g. *antisuicide-anti dissociation*) and error variances of five function pairs, which have closer relation with each other were evaluated (*interpersonal influence-peer bonding; sensation seeking-peer bonding; sensation seeking-toughness*). These 4 variable pairs whose error variances were related are among the observed variables of the same factors and due to their semantic proximity, suggestions of relating them to each other were found to be meaningful. Although *affect regulation* and *revenge* variables are under different factors, their error variances were found to be related. However, as error variance of revenge subscale is related to an index from the other factor, it is loaded .65 from its original factor. In conclusion, after modification is made in the model in the form of relating the error variances of five observed variable pairs, model parameters were predicted again and adjustment index values of measurement model defined indicate that model data adjustment is satisfactory ($\chi^2 = 243$; $s.d. = 59$; $NCI (\chi^2/sd) = 4$; $RMSEA = 0.08(.07-.09)$; $CFI = 0.97$; $NFI = 0.97$). Main parameters predicted with the measurement model

Table 2. Function overall score, factor scores and subscale scores mean and SD

N=529	Mean	SD
Autonomous functions		
Affect Boundaries	2,89	1,88
Self punishment	1,73	1,71
Anti-dissociation/feeling- generation	1,47	1,61
Anti-suicide	1,48	1,75
Marking distress	1,88	1,79
Overall autonomous functions	9,45	6,63
Social Functions		
Interpersonal Boundaries	1,11	1,40
Interpersonal influence	1,03	1,42
Revenge	1,51	1,64
Peer-Bonding	0,52	1,12
Self care	1,21	1,39
Sensation-seeking	0,90	1,37
Toughness	1,57	1,75
Autonomy	1,18	1,59
Overall social functions	9,02	8,32
Function overall score	18,47	13,95

are given in Figure 1. The Loadings of observed variables on all implicit factors vary between .55 and .82, with a median value of .63 (all factors loads are given in Figure 1). High correlation between implicit factors (.92) indicates that obtaining overall scores of functions is significant and that although subscales are collected under two factors, they are in fact collected under a single structure at secondary level. CFA results, when generally evaluated, support the inner construct validity of functions in the second part of the Inventory. Descriptive statistics for overall function score, factor scores and subscale scores are given in Table 2.

In addition, relation between overall score of ISAS and ISAS methods uniquely, autonomous functions, social functions and overall score of functions was examined with correlation analysis and the results are presented in Table 3.

Relations with Criteria Scales

In order to evaluate, construct validity, relations between ISAS scores and clinical scales were investigated. As seen in the table 4, there are significant relations between function scores and clinical scales and these relations are stronger in autonomous functions than in social functions.

Table 3. Relation between overall score of ISAS and done by one NSSI behaviors and autonomous functions, social functions and overall Function score

	Autonomous functions	Social Functions	Overall functions
KZVD Toplam puanı	.43**	.33**	.41**
Cutting	.24**	.20**	.24**
Banging or hitting self	.23**	.14**	.20**
Carving	.23**	.21**	.24**
Interfering with wound healing	.18**	.17**	.19**
Severe Scratching	.33**	.27**	.32**
Biting oneself	.18**	.13**	.17**
Swallowing dangerous substances	.27**	.25**	.28**
Pinching	.16**	.06	.12**
Pulling hair	.18**	.11*	.15**
Rubbing Skin against Rough Surface	.22**	.17**	.21**
Sticking self with needles	.12**	.12**	.13**
Burning	.07	.04	.06

Pearson correlation index, *p<0.05, **p<0.001

Table 4. Relation between BSI and SPS subscale and overall scores and autonomous function, social function and overall function scores

Symptoms	Autonomous functions	Social Functions	Overall function
Suicide Probability Scale			
Hopelessness	.47**	.37**	.46**
Hostility	.23**	.14**	.20**
Negative self evaluation	-.00	-.07	-.04
Suicidal Ideation	.55**	.46**	.54**
SPS overall score	.54**	.39**	.50**
Brief symptom Inventory			
Anxiety	.51**	.34**	.47**
Depression	.50**	.27**	.42**
Somatization	.45**	.33*	.42**
Negative self	.52**	.37**	.48**
Hostility	.50**	.30**	.43**
Disorders global severity Index (GSI)	.42**	.29*	.39**
Total symptoms (PST)	.50**	.31**	.44**
Symptom distress index (PSDI)	.42**	.29**	.39**

Pearson correlation index, **p<0.001

DISCUSSION

Upon general evaluation, findings of our investigation on inner consistency of ISAS, its factor structure and correlation between criteria scales support the reliability and the validity of the scale. One important aspect of this investigation is that it is the first investigation examining the reliability and validity of ISAS in Turkish culture. The results of the present study indicate that, consistent with the previous psychometric investigations on the issue (Glenn ve Klonsky, 2011; Klonsky & Glenn, 2009; Klonsky & Olino, 2008), ISAS is a reliable and valid measurement tool in the examination of NSSI behaviors and their functions.

Reliability and Validity analysis for the first part of ISAS (Behaviors)

According to the results of the investigation, in overall evaluation of NSSI behaviors questioned in the first part of the Inventory analysis indicate a quite high inner consistency ($\alpha=.79$) (item –overall score correlations median value is .44). i.e. although each person may display a different NSSI behavior, subjects who exhibit an NSSI behavior at a low rate exhibit other behaviors also at a low rate and those who exhibit a certain NSSI behavior at a high rate also do so with other behaviors.

According to the results of inner consistency and item analysis made by Klonsky and Olino (2008), Klonsky and Glenn (2009) for 12 NSSI behavior, inner consistency coefficient for overall NSSI were found to be respectively $\alpha=.84$ and $\alpha=.71$. The findings of the present study are largely congruent with the results of aforementioned studies.

In the evaluation of consistency of ISAS in time, compatible with previous psychometric investigations (Glenn and Klonsky, 2011; Klonsky and Glenn, 2009; Klonsky and Olino, 2008), higher consistency was found in some behaviors than others (median value .60). Similar to the results of Glenn and Klonsky (2011), “cutting” was found to be the ISAS behavior with highest consistency maintained in time.

The relations between ISAS scores related to NSSI behaviors and other clinical scales such as BSI and SPS were investigated. Significant relations between ISAS scores and BSI subscales and three global indexes mean that as the frequency of NSSI behaviors increases or decreases, psychological disorder symptoms show changes in the same directions. As seen in the present study, correlation between overall scores of ISAS and BSI subscales and three global indexes clearly demonstrate the expected relation between psychopathology and NSSI. These findings support the construct validity of ISAS in a Turkish sample. In another study carried out in Finland with a community sample, at least one psychiatric disorder was found in 79% of adolescents with NSSI (Hintikka et al 2009). In a

study on a clinical sample, it was established that of adolescents with self harm behavior, 88% had at least one psychiatric disorder (Nock et al 2006). Of adolescents under clinical follow up due to psychiatric disorder, 40% to 80% display NSSI behavior (Kerr et al 2010). Correlation between overall score of NSSI and depression subscale indicates the relation between NSSI and depressive affect as can be expected theoretically. Likewise, there are other studies demonstrating that depressive symptoms are associated with NSSI (Jacobson et al 2008, Martin et al 2010, Ross and Heath 2002).

It was also found that overall NSSI score was positively and significantly associated with SPS overall and subscale scores. In a study community based study carried out in Istanbul on high school students, it was reported that of adolescents with NSSI, 315 attempted suicide (Lüleci 2007). In a study carried out with 2875 young adults between the ages of 18-24, it was found that the number of NSSI behaviors was positively related to increased suicidal behavior (Whitlock and Knox 2007). Similarly, in the study of Nock et al (2006), on an adolescent inpatient group, it was found that the number of NSSI behaviors, the duration and variation of methods was significantly related to increased risk of suicide. In another study, it was shown that 39% of subjects with more than one NSSI behavior history and 21% of those with one NSSI behavior history exhibited suicidal behavior (suicide attempt, plan, ideation) (Whitlock et al. 2006). Patisson and Kahan (1983), reported that in those who exhibit NSSI behavior, suicide ideation at any time is present at the rate of 28%.

Correlations between overall score of ISAS, *negative self* subscale of BSI and subscales of SPS indicate the theoretical relation between NSSI and the feelings of guilt, failure and worthlessness in the adolescent when comparing him/her self with others. Another finding of the study draws attention to an important point i.e. the correlation between overall score of ISAS and negative self subscale of BSI is stronger than the correlation between overall score of ISAS and negative self evaluation sub scale of SPS (respectively $r=.46$ ve $r=.13$). *Negative self evaluation* subscale of SPS measures the negative attributes of the individual towards self. However, in SPS all subscales are scored in the direction of increased probability of suicide. Thus, an especially high score obtained in a subscale implies increased risk of suicide in that specific dimension (Ceyhun and Ceyhun 2003). This result indicates that as the intensity of NSSI behavior increases, rise in negative self evaluation of the adolescent is not in the direction of increased risk of suicide. Theoretically, it is natural to expect a weak positive relation between overall score of ISAS and negative self evaluation subscale of SPS. In adolescents with NSSI, excessive self criticism, disliking him/herself and intensive self directed anger is present. The desire to punish self and self directed anger are components strongly motivating non suicidal self harm behaviors (Klonsky 2007). NSSI

increases negative self perception while it decreases self esteem and thus initiates a vicious cycle for self harm (Klonsky and Muehlenkamp 2007). Findings obtained in the framework of this cyclical causality not only show the relation between NSSI and self punishment but also provide strong evidence for construct validity of ISAS.

When evaluated in the framework of construct validity, relations between BSI and SPS scales are all at the levels and directions theoretically expected, and findings are supportive of convergent quality of first part of the inventory (*Behaviors*).

Reliability and Validity Analysis for the Second Part (Functions) of ISAS

Studies on the functional scores of reliability and validity of NSSI examined in the second part of ISAS include inner consistency and test-retest reliability tests, adjustment of factor structure and examination of relation between ISAS and external criteria scales.

Results of inner consistency analysis and confirmatory factor analysis showed that items regarding the functions of NSSI behaviors form a dimension with very high inner consistency (for overall score of $\alpha=.93$), consistent with the original Inventory, and that they can be collected under two factors, namely *Autonomous Functions* ($\alpha=.81$) and *Social Functions* ($\alpha=.86$) while the second factor evaluates interpersonal functions such as: *interpersonal boundaries and peer bonding*, the first factor evaluates autonomous functions (intrapersonal functions: such as affect regulation and self punishment). These two factors are completely in keeping with the factors defined by Klonsky and Glenn (2009) and Nock and Prinstein (2004, 2005).

Functions in the second part of the inventory aim to account for NSSI behaviors and naturally it is expected that as the intensity of NSSI increases, function factor scores and overall score will also rise. Correlations obtained indicate that as the amount of NSSI increases, function scores increase as well. These findings as well as confirmatory factor analysis, inner consistency and item analysis results support the inner construct validity of the inventory.

Again in the context of construct validity, the relation of ISAS functions overall and subscale scores with the scales evaluating the characteristics expected to be associated with them was investigated. In the present study, the correlation between BSI and SPS scales and autonomous/social function and overall scores of ISAS was quite strong and a correlation was found to be stronger in autonomous functions than in social functions. Congruent with previous studies (Klonsky and Glenn 2008; Nock and Prinstein 2005), it was found that the relation between autonomous functions and depression and suicidal ideation was stronger when compared to social functions. These findings also are in accord with theoretical expectations and

findings of previous studies and support construct validity of the inventory.

When evaluated as a whole, findings of the study indicate that ISAS can be used safely and reliably in examining NSSI behavior in Turkish adolescent samples and clarifying their functions. Both in terms of behaviors and functions, findings show that as the intensity of NSSI behaviors increases, risks and pathological characteristics examined with clinical scales increase as well. Further follow up studies, which will elucidate which NSSI behaviors have stronger relation with psychopathological characteristics, whether risk distribution has a tendency to accumulate, whether these NSSI behaviors starting in early adolescence disappear in the long term and to what extent they point to long term risks, are required both in Turkey and in the World.

REFERENCES

- Başay-Kabukçu B, Bildik T, Tamar M ve ark. (2009) Assessment of the adolescents with self harming behavior and suicide attempts in an outpatient adolescent unit. The international Conference on Quality of life in child and adolescent mental health (ESCAP), Budapest, August 22-26, 2009.
- Ceyhun AG, Ceyhun B (2003) Lise ve üniversite öğrencilerinde intihar olasılığının değerlendirilmesi. Klinik Psikiyatri, 6: 217-24.
- Claassen CA Trivedi M, Shimizu I ve ark. (2006) Epidemiology of nonfatal deliberate self-harm in the United States as described in three medical databases. Suicide Life-Threat, 36: 192-212.
- Cull JG, Gill WS (1988) Suicide Probability Scale Manual. Western Psychological Services. Los Angeles, California.
- Derogatis LR (1992) The Brief Symptom Inventory-BSI administration, scoring and procedures manual-II. Clinical Psychometric Research Inc. USA.
- Favazza AR (1998) The coming of age of self-mutilation. The Journal of Nervous and Mental Disease, 186: 259-68.
- Glenn CR, Klonsky ED (2011) One-year test-retest reliability of the inventory of statements about self-injury (ISAS). Assessment, 18: 375-8.
- Hintikka J, Tolmunen T, Rissanen ML ve ark. (2009) Mental Disorders in Self-Cutting Adolescents. J Adolescent Health, 44: 464-7.
- Jacobson CM, Gould M (2007) The epidemiology and phenomenology of non-suicidal self-injurious behavior among adolescents: A critical review of the literature. Arch Suicide Res, 11: 129-47.
- Jacobson CM, Muehlenkamp JJ, Miller AL ve ark. (2008) Psychiatric impairment among adolescents engaging in different types of deliberate self-harm. J Clin Child Adolesc Psychol, 37: 363-75.
- Kerr PL, Muehlenkamp JJ, Turner JM (2010) Nonsuicidal Self-Injury: A review of current research for family medicine and primary care physicians. J Am Board Fam Med, 23: 240-59.
- Klonsky ED (2007) The functions of deliberate self-injury: A review of the evidence. Clin Psychol Rev, 27: 226-39.
- Klonsky ED, Glenn CR (2008) Psychosocial risk and protective factors. Self-injury in youth: The essential guide to assessment and intervention, MK Nixon, N Heath (Ed), New York, Routledge, s. 45-8.
- Klonsky ED, Glenn C (2009) Assessing the functions of non-suicidal self-injury: psychometric properties of the inventory of statements about self-injury (ISAS). J Psychopathol Behav Asses, 31: 215-9.
- Klonsky ED, Muehlenkamp JJ (2007) Self-injury: A research review for the practitioner. J Clin Psychol, 63: 1045-56.
- Klonsky ED, Olino TM (2008) Identifying clinically distinct subgroups of self-injurers among young adults: a latent class analysis. J Consult Clin Psychol, 76: 22-7.

- Laye-Gindhu A, Schonert-Reichl K (2005) Nonsuicidal self-harm among community adolescents: understanding the “whats” and “whys” of self-harm. *Journal of Youth and Adolescence*, 34: 447-57.
- Lloyd-Richardson EE, Perrine N, Dierker L ve ark. (2007) Characteristics and functions of non-suicidal self-injury in a community sample of adolescents. *Psychol Med*, 37: 1183-92.
- Lüleci S (2007) Kendini yaralama davranışı olan ergenlerin psikiyatrik ve sosyokültürel özellikleri. Yayınlanmamış Uzmanlık Tezi, T.C. Sağlık Bakanlığı Bakırköy Prof. Dr. Mazhar Osman Ruh Sağlığı ve Sinir Hastalıkları Eğitim ve Araştırma Hastanesi, İstanbul.
- Martin G, Swannell S, Hazell P ve ark. (2010) Self-injury in Australia: A community survey. *Med J Aust*, 193: 506-10.
- Muehlenkamp JJ, Gutierrez PM (2004) An investigation of differences between selfinjurious behavior and suicide attempts in a sample of adolescents. *Suicide Life Threat Behav*, 34: 12-23.
- Nock MK, Prinstein MJ (2005) Contextual features and behavioral functions of self-mutilation among adolescents. *J Abnorm Psychol*, 114: 140-6.
- Nock MK, Prinstein MJ (2004) A functional approach to the assessment of self-mutilative behavior. *J Consult Clin Psychol*, 72: 885-90.
- Nock MK, Joiner TE, Gordon KH ve ark. (2006). Non-suicidal self-injury among adolescents: Diagnostic correlates and relation to suicide attempts. *Psychiat Res*, 144 : 65-72.
- Ögel K, Aksoy A (2006) Kendine Zarar Verme Davranışı Raporu. Yeniden Yayın no:18, İstanbul.
- Pattison E, Kahan J (1983) The deliberate self-harm syndrome. *Am J Psychiatry*, 140: 867-72.
- 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.
- Suyemoto KL (1998) The functions of self-mutilation. *Clin Psychol Rev*, 18(5): 531-554.
- Şahin NH, Durak A (1994) Kısa Semptom Envanteri: Türk gençleri için uyarlanması. *Türk Psikoloji Dergisi*, 9:44-56.
- Toprak S, Çetin I, Güven T ve ark. (2011) Self-harm, suicidal ideation and suicide attempts among college students. *Psychiat Res*, 187: 140-4.
- Tuğcu H (1996) Normal ve depressif kişilerde çeşitli faktörlere göre intihar olasılığı. Yayınlanmamış Doktora Tezi, Hacettepe Üniversitesi, Ankara.
- Whitlock J, Eckenrode J, Silverman D (2006) Self-injurious behaviors in a college population. *Pediatrics*, 117(6): 1939-48.
- Whitlock J, Knox KL (2007) The relationship between self-injurious behavior with and without suicidal intent in a college population. *Arch Pediat Adol Med*, 161: 634-40.
- Yates TM, Tracy AJ, Luthar SS (2008) Nonsuicidal self-injury among “privileged” youths: longitudinal and cross-sectional approaches to developmental process. *J Consult Clin Psychol*, 76: 52-62.
- Zanarini MC, Vujanovic AA, Parachini EA ve ark. (2003) A screening measure for BPD: the McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD). *J Pers Disord*, 17: 568-73.
- Zoroglu SS, Tüzün U, Şar V ve ark. (2003) Suicide attempt and self-mutilation among Turkish high school students in relation with abuse, neglect and dissociation. *Psychiat Clin Neuros*, 57: p. 119-26.