

# Validation of the Indonesian Version of the Inventory of Statements About Self-Injury (ISAS) Questionnaire

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## Abstract

**Objective:** This current study aimed to validate the Indonesian version of the Inventory of Statements About Self-Injury (ISAS) questionnaire, which provides a better understanding of Non-Suicidal Self-Injury (NSSI) disorders.

**Method:** The study used a cross-sectional design and involved 314 adolescents and young adults in high school or university. A stratified sampling method was used. All participants filled out the ISAS questionnaire. Data were analyzed for content validity, construct validity, item discrimination value, and internal consistency (Cronbach's  $\alpha$ ). The translation process was carried out using forward and back-translation methods.

**Results:** The ISAS questionnaire consists of section I, the behavioral scale, and section II, the functional scale. For content validity, Aiken's V coefficient obtained for both scale sections I and II is in the range of 0.917 – 1. This result shows that all items on the scale have very good validity. Confirmatory Factor Analyses were carried out using Lisrel 8.80 software on section II, resulting in several goodness of fit values that were not good enough ( $\chi^2 = 457.68$ ;  $P < 0.000$ ;  $df = 64$ ;  $\chi^2 / df = 7.151$ , RMSEA = 0.130) and several other values that are quite acceptable (CFI = 0.95; SRMS = 0.057; NFI = 0.95; GFI = 0.83). The factor loading from section II ranges from 0.43 - 0.91. The item discrimination value using the corrected item-total correlation of section I is in the range of 0.031 - 0.837 and section II ranges from 0.290 – 0.854. The reliability analysis values in section I and II of the ISAS are  $\alpha = 0.527$  and  $\alpha = 0.966$ , respectively.

**Conclusion:** This is the first study to have validated the Indonesian version of the ISAS questionnaire. The Indonesian version of the ISAS questionnaire is considered a valid and reliable instrument to assess NSSI disorders.

**Key words:** Indonesia; Non-Suicidal; Questionnaire; Self-Injury; Validation; Version

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**N**on-suicidal self-injury (NSSI) is a serious public health issue that is currently receiving a significant amount of attention (1). It is a prevalent mental health concern among both adolescents and adults (2). Individuals who participate in NSSI are also more likely to attempt suicide and ultimately end their own lives. Out of 400 individuals who attempt suicide, only 100 require medical assistance. Studies on NSSI in teenagers have grown over the past ten years due to its inclusion in the Diagnostic and Statistical Manual of Mental Disorders-5th edition (DSM-5) by the American Psychiatric Association (APA) in 2013 and the growing prevalence of self-harm behaviors in adolescent populations (3).

According to the DSM-5, NSSI refers to intentional harm inflicted on the surface of the body, which is not socially acceptable and lacks suicidal intent. This definition excludes suicidal behavior, eating disorders, body piercing, and religious rituals. It also excludes indirect or unintentional self-injurious behaviors. The most commonly employed methods of NSSI include cutting, scratching, pounding, bashing, carving, and scraping (4).

NSSI is more common in middle-aged and young adults. A bibliometric analysis has revealed that the prevalence of NSSI is 46.5% in adolescents and 23% in young adults (5). During this time, psychiatrists, psychotherapists, teachers, and other professionals who work with children, adolescents, and families need to be especially vigilant in identifying this phenomenon (6).

Diagnosis of NSSI is still relatively new, and in the DSM 5 it is categorized as still requiring further study; thus, tools are needed to detect NSSI disorders. One instrument to detect NSSI is the Inventory of Statements About Self-Injury (ISAS) (7). Although the ISAS is a commonly used tool for evaluating NSSI, its psychometrics have not been thoroughly examined in the Indonesian youth population; therefore, it is uncertain whether results from other cultures can be applied to Indonesia. For example, the leading religious traditions in Indonesia forbid suicide behavior. This practice is also prevalent in schools, where adolescents are taught that attempting suicide is one of Islam's greatest sins and that doing so will deny them access to heaven and all of its benefits. As a result, people may feel bad after making a suicidal attempt and turn to NSSI rather than suicidal attempts, which could lead to greater scores on the NSSI's anti-suicide function. Consequently, a separate study is needed to examine the ISAS in the Indonesian culture. Because no valid and reliable ISAS questionnaire can be used in the Indonesian population, we conducted a validation study for the Indonesian version of the ISAS questionnaire. The validation of this questionnaire will also assist mental health professionals in early detection of this disorder.

## Materials and Methods

### Study Design

This study was conducted using a cross-sectional design.

### Participant and Procedure

Participants were obtained using a stratified sampling method. 314 adolescents and young adults from state high schools in Padang City and medical students of Andalas University were included in this study. The inclusion criteria encompassed adolescents and young adults aged 13-30 years old with good literacy and willingness to be respondents. Exclusion criteria comprised individuals with a history of psychiatric disorders or being under treatment by a psychiatrist. Using stratified sampling, samples were chosen proportionately to each institution and high school and based on the estimated sample size. The sample size was 314 based on a sample size calculation and a 95% confidence level was used.

Participants were asked for their consent through informed consent, and then we sent an ISAS questionnaire through Google form to them. The participants were instructed to write only their initials and were informed that their data would be confidential. The research has passed an ethical test from the ethical commission team at the Faculty of Medicine, Andalas University (No: 276 /UN.16.2/KEP-FK/2023).

### Instrument

The Inventory of Statements About Self-Injury (ISAS) questionnaire was utilized in this study. This questionnaire was developed by Klonsky *et al.* in 2009. This measure was designed to comprehensively assess the functions of non-suicidal self-injury (NSSI). The ISAS questionnaire consists of section I, the behavioral scale, and section II, the functional scale. The first section (section I) of the ISAS assesses the lifetime frequency of 12 NSSI behaviors performed "intentionally (i.e., on purpose) and without suicidal intent." The following behaviors are assessed: banging/hitting oneself, biting, burning, carving, cutting, wound picking, needle-sticking, pinching, hair pulling, rubbing skin against rough surfaces, severe scratching, and swallowing chemicals. Participants are requested to provide an estimation of the frequency with which they have engaged in each behavior. Another five additional questions assess descriptive and contextual factors, including the age of onset, the experience of pain during NSSI, whether NSSI is performed alone or in the presence of other people, the time between the urge 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, alpha coefficients for the interpersonal and intrapersonal scales were .88 and .80, respectively (7).

Those who have endorsed one or more NSSI behaviors should complete the second section (section II) 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. The ISAS assessment rates each of its 13 functions on a scale of 0 to 6 based on how relevant they are to an individual's experience of non-suicidal self-harm. Each function is assessed by three items and rated as "0-not relevant," "1-somewhat relevant," or "2-very relevant." The alpha coefficients for the interpersonal and intrapersonal scales were .88 and .80, respectively, indicating excellent internal consistency (7).

The translation process involved both forward and back-translation methods. Two native Indonesian speakers who were fluent in English translated the English version into Indonesian, while two other bilingual translators blindly back-translated the preliminary initial instrument into English. Subsequently, the Indonesian version was compared with the original version by the university's English language committee. When discrepancies were noticed between the two versions, each item underwent additional back translation until deemed satisfactory.

For content validity, two psychiatrists and one psychologist from Andalas University reviewed the instrument, considering local information, context, and culture. The outcome of the adaptation process was the development of a final Indonesian version of the ISAS questionnaire, assessed for the adaptation and content validity of the instrument.

#### Statistical Analysis

Descriptive statistics were obtained from demographic factors. The content validity of this data uses Aiken's V coefficient for section I and section II. Confirmatory factor analysis was performed to examine the construct validity by Lisrel 8.80 software only for section II. Reliability analysis was conducted for the first section and the second section. Reliability analysis was measured using the Cronbach alpha test. For the demographic factor, internal consistency (Cronbach's  $\alpha$ ) and the item discrimination value data were analyzed by the SPSS-25 software. The questionnaire was deemed reliable if the Cronbach's alpha test value was  $> 0.6$ .

## Results

Participants were aged between 14-30 years (mean = 20.8, SD = 2.56), the majority of whom fell within the age range of 19-25 years (238) (75.8%) (Table 1). We found that the response rate was 26.3% for men and 73.8% for women because there are more female medical students than males at Andalas University, with a ratio of 3:1.

#### Content Validity

The content validity of this data uses the Aiken's V coefficient from three experts. The coefficient obtained for the scale sections I and II (the ISAS behavioral and functional scales) is in the range of 0.917–1. This result shows that all items on the scale have very good validity (the Aiken's V coefficient moves from 0-1).

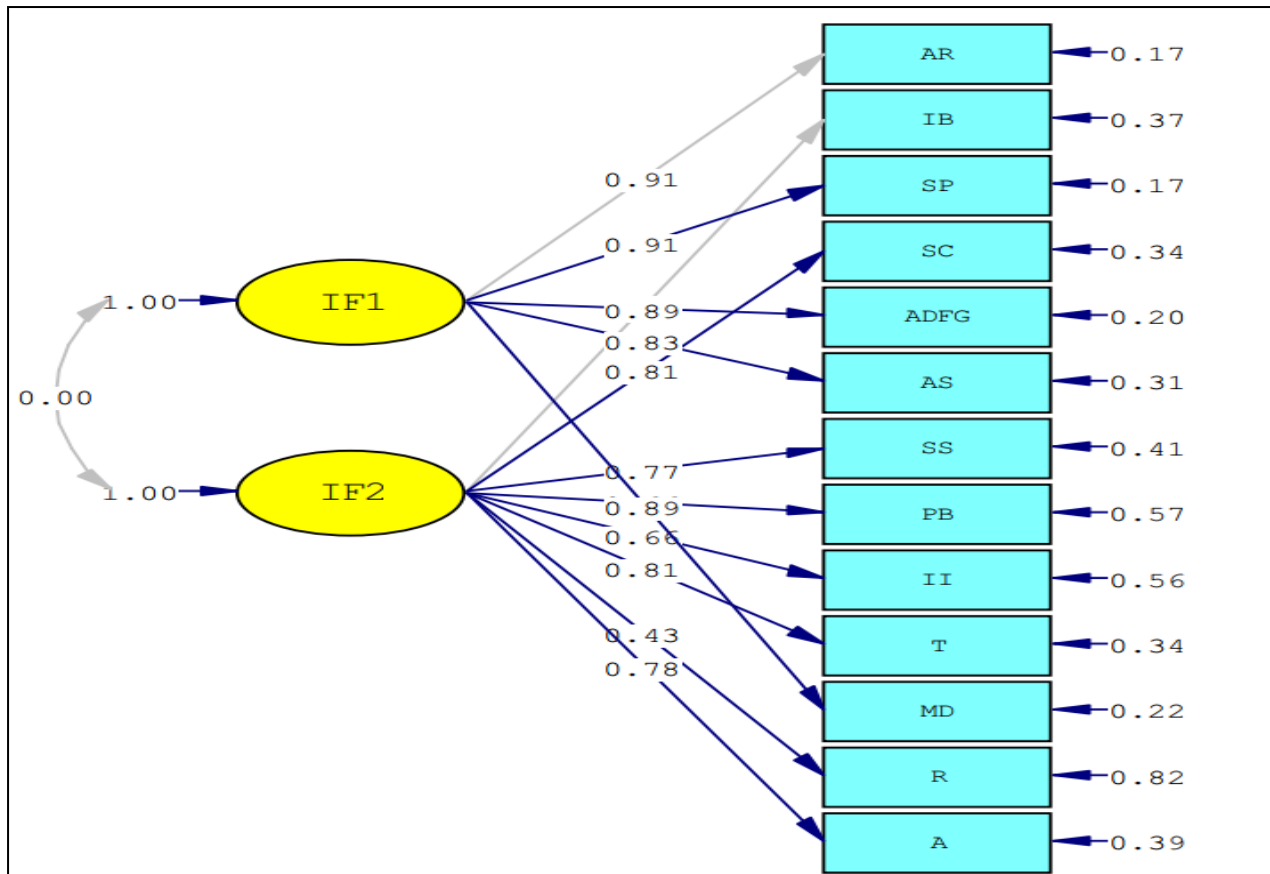
**Table 1. Demographic Characteristics of Study Participants**

Variable	N (%)
Gender	
Female	231 (73.6)
Male	83 (26.3)
Age	
14-18	64 (20.3)
19-25	238 (75.8)
26-30	12 (3.8)

Note: N: 314 (r: 0.0930), All items can be used.

#### Construct Validity

Confirmatory Factor Analyses were carried out using the Lisrel 8.80 software on the section II (ISAS functional scale) of the scale (N = 314), producing several goodness of fit values that were not good enough ( $\chi^2 = 457.68$ ;  $P < 0.001$ ;  $df = 64$ ;  $\chi^2/df = 7.151$ , RMSEA = 0.130) and several other quite acceptable values (CFI = 0.95; SRMS = 0.057; NFI = 0.95; GFI = 0.83) (Figure 1). The factor loading from section II is in the range of 0.43-0.91 (the factor loading coefficient ranges from 0–1; the closer a coefficient to 1, the better (Table 2). The highest factor loading score is 0.91, namely the dimension of affect regulations and self-punishment, while the lowest is 0.43, namely the dimension of revenge.



**Figure 1. The Structure of the Inventory of Statements About Self-Injury Functions.**

Note: IF1: intrapersonal factor, IF 2: interpersonal factor, IB: Interpersonal Boundaries, SP: Self Punishment, SC: Self-Care, ADFG: Anti-dissociation/feeling-generation, AS: Anti-suicide, SS: Self-care, PB: Peer-bonding, II: Interpersonal influence, T: Toughness, MD: Marking distress, R: Revenge, A: Autonomy

**Table 2. The Results of the Confirmatory Factor Analysis Showed the Factor Loadings for each Dimension of Inventory of Statements About Injury Statements (ISAS) Section II**

	Dimension	Factor Loading
Intrapersonal Factor	Affect regulation (AR)	0.91
	Self-punishment (SP)	0.91
	Anti-dissociation/feeling-generation (ADFG)	0.89
	Anti-suicide (AS)	0.83
	Marking distress (MD)	0.89
Interpersonal Factor	Interpersonal boundaries (IB)	0.80
	Self-care (SC)	0.81
	Sensation-seeking (SS)	0.77
	Peer-bonding (PB)	0.60
	Interpersonal influence (II)	0.66

Toughness (T)	0.81
Revenge (R)	0.43
Autonomy (A)	0.78

**Reliability Analysis**

Section I of the ISAS (the ISAS behavioral scales) has internal consistency with Cronbach's alpha of 0.527, and the item discrimination value using corrected item-total correlation is in the range of 0.031 - 0.837 (Table 3). For section II of the ISAS (ISAS functional scales), Cronbach's alpha was 0.966 (Table 3), indicating very satisfactory internal consistency. If the Cronbach's alpha value is > 0.60, it means that the questionnaire is reliable. The item discrimination value using item-total correlation correction is in the range of 0.290–0.854 has

shown in Table 4. Thus, it can be concluded that all items in section II can be used.

**Table 3. Reliability Analysis Inventory of Statements About Self-Injury Section**

	Cronbach's Alpha	N of Items
Section I	0.527	12
Section II	0.966	39

**Table 4. Corrected Item-Total Correlation of each Item Statement of Inventory of Statements About Self-Injury Section II**

	Statement ("When I self-harm, I am ...)	Corrected Item-Total Correlation
Item01	calming myself down	0.756*
Item02	creating a boundary between myself and others	0.721*
Item03	punishing myself	0.496*
Item04	giving myself a way to care for myself (by attending to the wound)	0.638*
Item05	causing pain so I will stop feeling numb	0.733*
Item06	avoiding the impulse to attempt suicide	0.725*
Item07	doing something to generate excitement or exhilaration	0.627*
Item08	bonding with peers	0.290*
Item09	letting others know the extent of my emotional pain	0.307*
Item10	seeing if I can stand the pain	0.632*
Item11	creating a physical sign that I feel awful	0.667*
Item12	getting back at someone	0.302*
Item13	ensuring that I am self-sufficient	0.621*
Item14	releasing emotional pressure that has built up inside of me	0.824*
Item15	demonstrating that I am separate from other people	0.648*
Item16	expressing anger towards myself for being worthless or stupid	0.848*
Item17	creating a physical injury that is easier to care for than my emotional distress	0.701*
Item18	trying to feel something (as opposed to nothing) even if it is physical pain	0.755*

Item19	responding to suicidal thoughts without actually attempting suicide	0.695*
Item20	entertaining myself or others by doing something extreme	0.527*
Item21	fitting in with others	0.494*
Item22	seeking care or help from others	0.547*
Item23	demonstrating I am tough or strong	0.589*
Item24	proving to myself that my emotional pain is real	0.777*
Item25	getting revenge against others	0.419*
Item26	demonstrating that I do not need to rely on others for help	0.633*
Item27	reducing anxiety, frustration, anger, or other overwhelming emotions	0.673*
Item28	establishing a barrier between myself and others	0.630*
Item29	reacting to feeling unhappy with myself or disgusted with myself	0.854*
Item30	allowing myself to focus on treating the injury, which can be gratifying or satisfying	0.641*
Item31	making sure I am still alive when I don't feel real	0.717*
Item32	putting a stop to suicidal thoughts	0.732*
Item33	pushing my limits in a manner akin to skydiving or other extreme activities	0.527*
Item34	creating a sign of friendship or kinship	0.513*
Item35	keeping a loved one from leaving or abandoning me	0.604*
Item36	proving I can take the physical pain	0.689*
Item37	signifying the emotional distress I'm experiencing	0.809*
Item38	trying to hurt someone close to me	0.356*
Item39	establishing that I am autonomous/independent	0.657*

## Discussion

NSSI is more prevalent now in adolescents and young adults, but this disorder is often underdiagnosed and overlaps with other psychiatric disorders such as depression or personality disorders. Therefore, there is a need for valid tools to detect the NSSI disorder (8, 9). This study confirms the validity of the Indonesian version of the ISAS questionnaire. The original questionnaire was not well understood by the population in Indonesia, so validating the translated version is important for future research. The ISAS questionnaire is necessary to assess the psychometrics of the NSSI population and help understand their interpersonal and intrapersonal functioning.

From this study, we obtained a reliability value of  $\alpha = 0.527$  for section I of the ISAS (behavior scale). Reliability shows how consistent or reliable a test or

measurement tool is. The higher the reliability value, the better the measurement consistency (10). However, the value of 0.527 is still relatively low or not good enough and indicates considerable variability in the measurements. This could mean that the test or measurement tool may not consistently measure what it is supposed to measure or that there may be other factors that influence the measurement results. If possible, it is important to make improvements to the measuring tool or re-measure to ensure smoothness. During section I, participants were asked about the frequency of self-harm behavior throughout their lives. The question was open-ended, which resulted in a wide range of answers from the respondents. Some reported a frequency of 1, while others reported a frequency of more than 1000. It was necessary to categorize the responses based on their frequency, such as never, less than 10 times a month, 10-100 times a month, and more than 100 times a month.

Because this question requires a recall answer, it is highly influenced by a person's memory. Someone may not remember the exact number of times but be able to remember the range.

In section I of the ISAS questionnaire, we obtained the corrected item-total correlation value range of 0.031 - 0.837. Some of the corrected item-total correlation values were less than 0.3 (Table 5). However, in general, values higher than 0.3 are often considered a sign of a fairly strong correlation between the items and the total score (11). It is important to remember that the assessment of the corrected item-total correlation value must be made by considering various factors, including the number of respondents, test structure, and the purpose and context of the measurement. In some cases, even values lower than 0.3 may be acceptable depending on these factors. In addition, the interpretation of corrected item-total correlation values must always be viewed in the context of the overall analysis or test reliability. A test is not only measured by individual scores but also by the combination of all items as well as other factors that influence its consistency.

**Table 5. Corrected Item-Total Correlation of each Item Statement of Inventory of Statements About Self-Injury SectionI**

items	Corrected Item-Total Correlation
1 Cutting	0.188
2 Biting	0.327
3 Burning	0.165
4 Carving	0.140
5 Pinching	0.577
6 Pulling hair	0.370
7 Severe Scratching	0.837
8 Banging or Hitting Self	0.371
9 Interfering with wound healing	0.753
10 Rubbing skin against rough surface	0.391
11 Sticking self with needles	0.279
12 Swallowing dangerous substances	0.031

Cronbach's alpha for section II of the ISAS ( $\alpha = 0.966$ ) was similar to the original version of the inventory in a study by Klonsky *et al.* (7) which was higher than 0.7, indicating that this inventory had a good fit for the Indonesian population. Table 4 shows that the corrected

item-total correlation value ranges from 0.290–0.854 thus, we can conclude that all items in section II of the Indonesia version of the ISAS questionnaire can be used. Higher corrected item-total correlations in a test result in a higher value of  $\alpha$  coefficient. In test construction, the corrected item-total correlation is used to define the association of the item with the total score on the other items (12).

The results of the confirmatory factor analysis in section II of the ISAS showed the factor loadings between 0.43 and 0.91. A loading factor score of 0.43 was obtained for the revenge dimension, which is less than 0.5. As a general guideline, many researchers consider a factor loading above 0.5 to indicate a fairly strong relationship between the latent variable and its indicators (8). In the context of confirmatory analysis, "loading factor" refers to a parameter that shows how well an indicator represents the construct being measured in a confirmatory model. The loading factor value is a coefficient that measures the strength of the relationship between latent variables (unobserved constructs) and indicators (observed variables) in confirmatory factor analysis (CFA). The loading factor value can vary between -1 to 1. If the loading factor value is close to 1, it indicates a strong relationship between the latent variable and the indicator, indicating that the indicator well measures the construct being measured. If the factor loading value is close to zero, it demonstrates a weak relationship between the latent variable and its indicators, indicating that the indicators may not be effective in measuring the construct. If the loading factor value is negative, it shows the opposite direction of the relationship between the latent variable and the indicator. However, it is important to note that there are no definite cut-off values for factor loadings that demonstrate adequate construct validity because the evaluation of factor loadings must be conducted in the context of the model as a whole, including theoretical consistency, statistical validity, and substantive interpretation of the findings. As a general rule of thumb, many researchers consider a factor loading above 0.5 to indicate a fairly strong relationship between the latent variable and its indicators (13, 14). A loading factor value of 0.43 for the revenge factor (Table 2) can be interpreted as a moderate relationship between the latent variable and its indicators. Even though this value does not reach a high level, as expected from the loading factor value which is close to 1, the value of 0.43 still indicates a significant relationship between the latent variable and the indicator. In some cases, a loading factor value of 0.43 can still be considered adequate depending on the research context and the construct being measured. However, it is important to consider other factors in the assessment, such as theoretical consistency, other statistical validity, and substantive interpretation of the findings. In general, a loading factor value above 0.3 is often considered an indication of a reasonable relationship between the latent variable and

its indicators. In the case of a loading factor value of 0.43, there is an indication that the indicator has made a significant contribution in measuring the construct being measured, although there may be room for further improvement.

In this study, all items in section II have high reliability. Many previous studies related to the ISAS have shown a significantly high internal consistency for the total scale. Based on research from Nisar H *et al.* in Pakistan, the validity of the ISAS-U and ISAS-E was investigated using Cronbach's  $\alpha$  coefficient. Cronbach's  $\alpha$  coefficient for total points was 0.91. The results revealed that all the items have confirmed strong factorial validity in the context of Pakistani culture and are quite helpful in hospital settings to address this health issue (15). Similar to the study by Vigfusdottir *et al.* in Norway they obtained ISAS reliability 0.88 and 0.84 which means it has good reliability (16).

According to Hasking and Boyes (17), principal axis factoring revealed five factors (Affect Regulation, Negative Social Outcomes, Communication, Pain, and Negative Self-Beliefs), which differentiated people with a history of NSSI from people with no history of NSSI. Correlations with measures of self-efficacy, emotion regulation, and NSSI functions offer convergent and discriminant validity. Cronbach's coefficient for total points was 0.80. The questionnaire appears to be a reliable and valid measure of NSSI outcome expectancies that could be a useful addition to the measurement toolkit when investigating cognitive variables related to NSSI (17).

The ISAS in Korean, which measures the frequency and functionality of NSSI, is a valid and trustworthy tool for assessing NSSI activities in adult Koreans. In line with earlier research, the Korean version of the ISAS functional scales also features a two-factor structure with intrapersonal and interpersonal functions. The internal consistency of the ISAS sections I and II was excellent (Cronbach's  $\alpha = 0.85$  and  $0.92$ ,  $n = 539$ ) (18).

As a result, we confirmed the adequate reliability and validity of both the behavioral and functional scales of the ISAS and identified a factor structure of intrapersonal and interpersonal functions for NSSI behaviors, and these findings were similar to the results of previous studies (12, 17) and verified by CFA.

The ISAS questionnaire has been translated into Indonesian. Most of the items are valid, and the questionnaire can be used. Reliability analysis, especially for part II, shows that the questionnaire has good reliability; therefore, the translated version may be used for clinical or research purposes in the future.

### Limitation

In this study, we did not examine criterion validity, concurrent validity, or discriminant validity because there are no validated questionnaires for comparison available in Indonesia that assess the behavior and function of self-harm. Validation studies usually

evaluate reliability in a brief timeframe. However, when the construct being measured is prone to change over time, the stability of the measurement may not be assured over longer periods. Additionally, people's moods can change depending on their situations or stressors. Another limitation relates to the nature of the information requested from respondents: they were asked to remember past events, which may affect the accuracy of their remembering in detail depending on the extent to which the event caused scars or trauma to a person.

### Conclusion

The Indonesian version of the ISAS questionnaire, especially section II, has been shown to be valid and reliable in assessing NSSI disorders in the Indonesia population. It is helpful in developing more precise treatment plans for individuals with particular reasons for NSSI, as well as in assisting mental health practitioners in determining the future trajectory of NSSI. Suggestion: In part I or the frequency of self-harm behavior in the ISAS questionnaire, it should be grouped using categories so that it can provide more valid and reliable test results.

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### Conflict of Interest

None.



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