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The Indonesian Version of the Depressive Symptom Index-Suicidality Subscale: Adaptation and Psychometric Evaluation

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Abstract. Suicide is a severe health problem currently a global concern that causes approximately 703,000 deaths each year. 75% of suicide occurs at productive age, with university students as subgroups that are prone to experience suicidal thoughts and behaviors. This study aimed to adapt Depressive Symptom Index- Suicidality Subscale (DSI-SS) into the Indonesian language and evaluate its psychometric properties. The International Test Commission (ITC) requirements were used as a reference in the adaptation process. Moreover, to evaluate the psychometric properties, 510 university students from various regions in Indonesia participated in this study. The result showed that the DSI-SS Indonesia version has good psychometric properties. The corrected item-total correlation ranged from 0.837-0.872, with an alpha reliability coefficient of 0.936. The DSI-SS highly correlated with a test that evaluates depression symptoms (the PHQ-9) and a history of suicide attempts. The exploratory factor analysis also supports the validity evidence, indicating that the DSI-SS is a unidimensional scale.

Keywords: DSI-SS; measurement; suicide; university students

Data from World Health Organization (2021) estimated that in 2019 approximately 703,000 people died by suicide. Furthermore, suicide was the fourth leading cause of death among youth aged 15-29 years for both sexes. In Indonesia, approximately 6,544 individuals died due to suicide in 2019. Moreover, a survey conducted by (Prawira et al., 2021) revealed that 19.65% of participants aged 18-24 perceived that they would rather die and wanted to hurt themselves over the past two weeks.

University students are one of the subgroups that are prone to experience suicidal thoughts and behaviors (O'Neill et al., 2018) due to several demands and problems disturbing their psychological well-being. For example, a study by Richardson et al. (2017) found that financial strain correlates with poor mental health and suicidal behavior, particularly for those with lower emotional functioning (Bahmani et al., 2018). Moreover, Logan and Burns (2021) identify distinct factors associated with university students' psychological distress that can lead to suicidality, such as lack of balance in different aspects of life (study, health, relationship), new responsibilities such as independent adults (managing finances, decision making, household management), interpersonal conflict, and

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performance pressure.

As the first step to prevent suicide among university students, it is important to early detection of suicidal behavior. Sommers-Flanagan and Shaw (2017) assert that standardized screening tools such as assessment interviews and self-report questionnaires are more suitable to indicate suicidality comprehensively than diagnosis and demographic factors alone. Consequently, there is an urgency toward valid and reliable screening tools to measure suicidality, especially for university students.

Thus far, there have been screening instruments used to measure suicidality, such as the General Health Questionnaire-Suicide Subscale (GHQ-28) (Watson et al., 2001) Firestone Assessment of Self-Destructive Thoughts (FAST) (Firestone, 1998), P4 Screener from the Patient Health Questionnaire (Dube et al., 2010) and Beck Scale for Suicide Ideation (Dozois & Covin, 2004), although these scales have several weaknesses, such as not including items to measure both suicidal thoughts and behaviors or not measuring suicidal intent, consisting too many items, not providing a quantitative score, requiring training and professional qualifications, copyrighted and only can be used in a clinical setting (Batterham et al., 2015).

To compensate for those weaknesses, (Joiner et al., 2002) constructed and tested psychometric properties of the Depressive Symptom Index - Suicidality Subscale (DSI-SS) in young adults in general health settings. DSI-SS has the potential to be used widely as a screening device because it uses straightforward items, easy to use, brief, and has good psychometric properties (Joiner et al., 2002). Regarding psychometric properties, DSI-SS is a valid and reliable instrument among approximately 2800 (15-24-year-old) patients visiting Australian general practitioners. The scale's internal consistency and inter-item characteristics are acceptable. Moreover, there are expected associations between DSI-SS and certain variables, such as age, depressive symptoms, gender, and general emotional distress (Joiner et al., 2002). Therefore, it can be seen that DSI-SS is a promising scale to be used both in research and practical settings. The previous explanation states that it is necessary to create an Indonesian version of the DSI-SS and evaluate its psychometric properties. It is essential since, until now, there has yet to be an Indonesian version of this scale. In addition, through this study, researchers also need to examine whether this scale is adequate to measure suicidality outside the clinical population, particularly for university students.

Cross-cultural adaptation is needed to ensure the quality and equivalency of the Indonesian version of DSI-SS. Beaton et al. (2000) defined cross-cultural adaptation as a process in which the scale item is translated, considered, and adjusted to the cultural context in which the scale would be used. Therefore, this research aimed to execute cultural and language adaptation and then evaluate the psychometric properties of the DSI-SS Indonesian version. Subsequently, the psychometric properties of the adapted Indonesian version of DSI-SS are assessed using several parameters, such as corrected-item total correlation, reliability coefficient using Cronbach's alpha, then validity using construct validity.

Methods

Design

This study used a quantitative paradigm with a survey research study. In general, this study was conducted in three steps, such as 1) the adaptation process from the English version of DSI-SS to the Indonesian version, 2) the administration of the adapted version to the study population, and 3) the data analysis procedure.

Participants

This research was given clearance by the Faculty of Psychology, Universitas Gadjah Mada, with a clearance number of 3487/UN1/FPSi.1.3/SD/PT.01.04/2021. Participants were recruited through a convenience sampling procedure within a predetermined 15-day data collection period. Participants should be 18-25 years of age, Indonesian citizens, currently enrolled, and registered as active students at Universities in Indonesia. Exclusion criteria include non-Indonesian citizens, having non-active status due to academic leave or other purposes, and being registered as students from foreign universities.

A total of 529 individuals participated in this study. However, six participants (1.13%) were eliminated because they were students from universities outside Indonesia and 13 (2.46%) because they did not consent to use their data in this study. Therefore, only 510 participants were included in this research. Regarding gender distribution, 119 participants (23.3%) were males, and 391 (76.7%) were females. The mean age of participants was 19.73 years old (*SD* = 1.428, range = 18-25 years old). All participants were distributed to 66 public and private universities from 36 cities in Indonesia, such as Bandar Lampung, Jakarta, Sleman, Banjarmasin, Badung, and Mataram. For further detail, it can be seen in Table 1.

Table 1
Demographic Data of The Normative Group

Variables	Category	Frequency (*n*=520)	Percentage
Sex	Male	119	23.3%
	Female	391	76.7%
Age	18	83	16.3%
	19	183	16.3%
	20	130	35.9%
	21	53	25.5%
	22	37	10.4%
	23	11	7.3%
	24	8	1.6%
	25	5	1.5%
Education program	Diploma	8	1.6%
	Bachelor	492	96.5%
	Master	10	2.0%
Level	First Year	217	43%

Table 1 (Continued)

Demographic Data of The Normative Group

Variables	Category	Frequency (*n*=520)	Percentage
	Sophomores	145	28%
	Junior	91	18%
	Senior	57	11%
GPA	2.50-3.00	12	2%
	3.01-3.50	154	30%
	3.51-3.70	115	23%
	3.71-3.90	157	31%
	>3.90	60	12%
	Prefer not to say	12	2%
University location	Bali	5	1%
	Borneo	52	10%
	Java	438	86%
	Nusa Tenggara	3	1%
	Sumatra	12	2%
Mental disorder diagnosis	Yes	28	5.5%
	No	482	94.5%
Suicide attempt history	Yes	56	11%
	No	454	89%

This study used two instruments: the Depressive Symptom Inventory-Suicidality Subscale (DSI-SS) (Metalsky & Joiner, 1997) and the patient health questionnaire-9 (PHQ-9) (Spitzer et al., 1994). Despite these two measurements, participants also were asked about their history of lifetime suicide attempts. The DSI-SS is a self-report instrument consisting of four items, which aim was to identify the frequency and intensity of suicidal ideation and impulse in the past two weeks. This scale was initially developed by Metalsky and Joiner (1997) as a part of a more extensive depressive symptom index called the Hopelessness Depression Symptom Questionnaire. The score of DSI-SS on each item ranges from 0-3, whereas the total score interval is 0-12. A higher score represents greater severity of suicidal ideation. The PHQ-9 consists of 9 items developed to identify persons with depressive symptoms. Its score ranges from 0-27, with a higher score drawing more depressive symptoms. PHQ-9 has been widely used in both clinical and non-clinical populations. In the current sample, the coefficient alpha was 0.883 (Spitzer et al., 1994).

Data Analysis Procedures

The scale adaptation referred to a guideline from the International Test Commission (ITC) accompanied by technical aspects from Beaton et al. (2000) and Azwar (2012). Firstly, two translators who worked independently translated the original scale into Indonesian. All translators are Indonesian citizens with a minimum IELTS score of 7.0 and a psychology education background. Afterward, two translation

results were compared to produce a final translation draft based on their consensus. Next, the third translator was asked to back-translating the translation draft into English. The back-translation results were discussed with the scale developer to ensure equivalence. Afterward, the readability test was performed to see whether the study population could easily understand the instruction and content. Furthermore, the psychometric properties were evaluated by testing the item-total correlation, alpha reliability, and exploratory factor analysis.

Results

The Adaptation Process from the English Version of DSI-SS to the Indonesian Version

Firstly, the researchers request permission from Thomas Joiner as the scale developer in direct correspondence via email. After receiving the permission to adapt DSI-SS, the next step was forward translation. The original DSI-SS was translated by a translator who worked independently within one week. All of the translators are Indonesian with an IELTS score minimum of 7.0 and have a minimum of one year of experience living in English-speaking countries. The synthesis was performed to compile the final translation results of the two independent translators facilitated by the researcher. The translated and back-translated versions from each translator can be seen in Table 2.

Table 2
The Forward and Backward Translation of DSI-SS

No	Original Version	Translation A	Translation B	Agreed Translation	Backward Translation
1A	I do not have thoughts of killing myself	*Saya tidak memiliki pikiran untuk bunuh diri*	*Saya tidak pernah memikirkan untuk bunuh diri*	*Saya tidak memiliki pikiran-pikiran untuk bunuh diri*	I don't have thoughts of suicide
1B	Sometimes I have thoughts of killing myself	*Kadang saya memiliki pikiran untuk bunuh diri*	*Terkadang saya ada terpikir untuk bunuh diri*	*Saya kadang-kadang memiliki pikiran-pikiran untuk bunuh diri*	I sometimes have thoughts of suicide
1C	Most of the time I have thoughts of killing myself	*Hampir setiap waktu saya memiliki pikiran untuk bunuh diri*	*Saya sering memikirkan untuk bunuh diri*	*Saya sering memiliki pikiran-pikiran untuk bunuh diri*	I often have thoughts of suicide
1D	I always have thoughts of killing myself	*Saya selalu memiliki pikiran untuk bunuh diri*	*Saya selalu memikirkan untuk bunuh diri*	*Saya selalu memiliki pikiran-pikiran untuk bunuh diri*	I always have thoughts of suicide
2A	I am not having thoughts about suicide	*Saya tidak sedang memiliki pikiran untuk bunuh diri*	*Saya tidak memikirkan tentang bunuh diri*	*Saya tidak sedang memiliki pikiran-pikiran tentang bunuh diri*	I currently don't have thoughts of suicide

Table 2 (Continued)

The Forward and Backward Translation of DSI-SS

No	Original Version	Translation A	Translation B	Agreed Translation	Backward Translation
2B	I am having thoughts about suicide but have not formulated any plans	*Saya sedang memiliki pikiran tentang bunuh diri tetapi belum merancang rencananya*	*Saya memiliki pikiran untuk bunuh diri tetapi belum membuat rencana*	*Saya sedang memiliki pikiran-pikiran tentang bunuh diri, namun saya belum menyusun rencana apa pun*	I currently have thoughts of suicide, but I haven't made any plans
2C	I am having thoughts about suicide and I am considering possible ways of doing it	*Saya sedang memiliki pikiran tentang bunuh diri dan sedang menimbang cara yang memungkinkan untuk melakukannya*	*Saya memiliki pikiran untuk bunuh diri dan saya memikirkan cara-cara yang memungkinkan untuk melakukannya*	*Saya sedang memiliki pikiran-pikiran tentang bunuh diri dan mulai menentukan cara untuk melakukannya*	I currently have thoughts of suicide and starting to decide how to do it
2D	I am having thoughts about suicide and have formulated a definite plan	*Saya sedang memiliki pikiran tentang bunuh diri dan telah merancang rencana yang pasti*	*Saya memiliki pikiran untuk bunuh diri dan saya sudah membuat rencana yang pasti*	*Saya sedang memiliki pikiran-pikiran tentang bunuh diri dan telah membuat rencana yang jelas untuk melakukannya*	I currently have thoughts of suicide and have made a detailed plan to do it
3A	I am not having thoughts about suicide	*Saya tidak sedang memiliki pikiran untuk bunuh diri*	*Saya tidak memiliki pikiran untuk bunuh diri*	*Saya tidak sedang memiliki pikiran-pikiran tentang bunuh diri*	I currently don't have thoughts of suicide
3B	I am having thoughts about suicide but have these thoughts completely under my control	*Saya sedang memiliki pikiran tentang bunuh diri tetapi pikiran tersebut dibawah kendali saya sepenuhnya*	*Saya memiliki pikiran untuk bunuh diri tetapi saya masih dapat mengendalikan pemikiran ini*	*Saya sedang memiliki pikiran-pikiran tentang bunuh diri, namun saya sepenuhnya mampu untuk mengontrol pikiran-pikiran tersebut*	I currently have thoughts of suicide, but I can control it completely
3C	I am having thoughts about suicide but have these thoughts somewhat under my control	*Saya sedang memiliki pikiran tentang bunuh diri tetapi pikiran tersebut kira-kira dibawah kendali saya*	*Saya memiliki pikiran untuk bunuh diri tetapi saya masih dapat sedikit mengontrol pemikiran ini*	*Saya sedang memiliki pikiran-pikiran tentang bunuh diri, namun saya cukup mampu untuk mengontrol pikiran-pikiran tersebut*	I currently have thoughts of suicide, but I am quite capable to control it.

Table 2 (Continued)
The Forward and Backward Translation of DSI-SS

No	Original Version	Translation A	Translation B	Agreed Translation	Backward Translation
3D	I am having thoughts about suicide but have little or no control over these thoughts	*Saya sedang memiliki pikiran tentang bunuh diri tetapi pikiran tersebut tidak dibawah kendali saya*	*Saya memiliki pikiran untuk bunuh diri tetapi hanya punya sedikit atau sama sekali tidak ada kontrol terhadap pemikiran ini.*	*Saya sedang memiliki pikiran-pikiran tentang bunuh diri, namun saya kurang atau tidak mampu untuk mengontrol pikiran-pikiran tersebut*	I currently having thoughts of suicide, but I am less or not capable to control it.
4A	I am not having impulses to kill myself	*Saya tidak sedang memiliki dorongan untuk bunuh diri*	*Saya tidak memiliki dorongan dalam diri untuk bunuh diri*	*Saya tidak sedang memiliki dorongan yang kuat untuk bunuh diri*	I currently have no urge [RJ1] to suicide.
4B	In some situations I have impulses to kill myself	*Dalam beberapa situasi, saya memiliki dorongan untuk bunuh diri*	*Dalam beberapa situasi saya memiliki dorongan dalam diri untuk bunuh diri*	*Dalam beberapa situasi, saya memiliki dorongan yang kuat untuk bunuh diri*	In some situations, I feel the urge to suicide.
4C	In most situation I have impulses to kill myself	*Hampir pada seluruh situasi, saya memiliki dorongan untuk bunuh diri*	*Dalam banyak situasi, saya memiliki dorongan dalam diri untuk bunuh diri*	*Dalam kebanyakan situasi, saya memiliki dorongan yang kuat untuk bunuh diri*	In most situations, I feel the urge to suicide.
4D	In all situations I have impulses to kill myself	*Dalam setiap situasi, saya memiliki dorongan untuk bunuh diri*	*Dalam setiap situasi, saya memiliki dorongan dalam diri untuk bunuh diri*	*Dalam semua situasi, saya memiliki dorongan yang kuat untuk bunuh diri*	In every situation, I feel the urge to suicide.

According to Table 2. the items were relatively easy to translate. There were only a few minor differences between the first and second translators. For example, in item no one option C, "*Most of the time*" was translated to "*hampir setiap waktu*" by the first translator, but it was translated to "*Sering*" by the second translator. After being discussed, it was decided to use "*Sering*" because it was perceived as easier for participants to understand the time frame.

Backward translation was performed to ensure that the translated version aligned with the original version. This process involved one translator with similar requirements to the forward translator. After the back-translation process, the back-translated scale was given to the scale developer to be evaluated. A Thomas Joiner student from Florida State University reviewed the scale. After the

result of the back translation was consulted with the developer, it was found that some items still needed to be revised. In item 2, option C, the reviewer stated that "*Decide*" seems more definitive than "*Considering possible ways of doing it*". In item 3, option C, the reviewer assessed that the translation does not seem to capture the difference between the above level (option B and option C). In item 4, options A, the reviewer perceived that the terms "*Urge*" and "*Impulse*" differed in English. With these suggestions, the author did some revisions to ensure that the DSI-SS Bahasa Indonesia version equals the original version. The final version of the Indonesian DSI-SS can be seen in Table 3.

Table 3
The Final Version of the Indonesian DSI-SS

No	Item
1	*Selama dua minggu terakhir* 1. *Saya tidak memiliki pikiran-pikiran untuk mengakhiri kehidupan saya.* 2. *Saya kadang-kadang memiliki pikiran-pikiran untuk mengakhiri kehidupan saya.* 3. *Saya sering memiliki pikiran-pikiran untuk mengakhiri kehidupan saya.* 4. *Saya selalu memiliki pikiran-pikiran untuk mengakhiri kehidupan saya.*
2	*Selama dua minggu terakhir* 1. *Saya tidak sedang memiliki pikiran-pikiran tentang bunuh diri.* 2. *Saya sedang memiliki pikiran-pikiran tentang bunuh diri, namun saya belum menyusun rencana apa pun.* 3. *Saya sedang memiliki pikiran-pikiran tentang bunuh diri dan mulai mempertimbangkan cara untuk melakukannya.* 4. *Saya sedang memiliki pikiran-pikiran tentang bunuh diri dan telah membuat rencana yang jelas untuk melakukannya.*
3	*Selama Dua Minggu terakhir* 1. *Saya tidak sedang memiliki pikiran-pikiran tentang bunuh diri.* 2. *Saya sedang memiliki pikiran-pikiran tentang bunuh diri, namun saya sepenuhnya mampu untuk mengontrol pikiran-pikiran tersebut* 3. *Saya sedang memiliki pikiran-pikiran tentang bunuh diri, namun saya agak mampu untuk mengontrol pikiran-pikiran tersebut.* 4. *Saya sedang memiliki pikiran-pikiran tentang bunuh diri, namun saya kurang atau tidak mampu untuk mengontrol pikiran-pikiran tersebut*

Table 3 (Continued)
The Final Version of the Indonesian DSI-SS

No	Item
4	*Selama dua minggu terakhir*
	1. *Saya tidak sedang memiliki dorongan untuk mengakhiri kehidupan saya.*
	2. *Dalam beberapa situasi, saya memiliki dorongan untuk mengakhiri kehidupan saya.*
	3. *Dalam kebanyakan situasi, saya memiliki dorongan untuk mengakhiri kehidupan saya.*
	4. *Dalam semua situasi, saya memiliki dorongan untuk mengakhiri kehidupan saya.*

Readability Test

Readability tests involved five participants who were different from those who participated in the psychometric properties evaluation sample. All of them were university students, the same as the participant target in this scale. All respondents perceived that all items on the scale were easy to understand.

Stage 2: Evaluation of Psychometric Properties

Evaluation of psychometric properties of the Indonesian version of DSI-SS Item-total correlation and reliability To estimate the item-total correlation and reliability, 510 university students with the characteristics mentioned in the methodology section participated in this study. The internal consistency was evaluated using corrected item-total correlation. Whereas the reliability coefficient was estimated using the alpha reliability coefficient. The corrected item-total correlation value ranges from 0.837-0.872 from these analyses, with an alpha coefficient of 0.936. The item-total correlation and reliability of the DSI-SS Indonesian version can be seen in Table 4.

Table 4
Item-Total Correlation and Reliability of the DSI-SS Indonesian Version (n=510)

Item	Item-total correlation	Alpha
1	0.838	0.936
2	0.867	
3	0.872	
4	0.837	

Table 4 shows that all items have an item-total correlation above the minimum cut-off (0.25) as suggested in Kline (1986). It indicates that all items of the DSI-SS Indonesian version are adequate to distinguish between individuals who have suicidal ideation and who do not have that attribute. Moreover, this scale has an alpha reliability coefficient above 0.8. Thus, it could be concluded that it has satisfactory reliability (Nunnally, 1978).

Exploratory Factor Analysis

Exploratory factor analysis was performed to see how the items' distribution compared to the blueprint. Stevens (2009) advised that items with a loading factor greater than 0.4 should be maintained. The findings revealed a substantial correlation between the variables, with a value of the Bartlett Test of Sphericity's p-value of 0.00. Moreover, the factor analysis might continue referring to the KMO value 0.867. Table 5 below illustrates how each item's loading factors are linked to the measurement of interest.

Table 5
Rotated Factors of DSI-SS Indonesian Version (n=510)

Item	Factor 1	Uniqueness
DSI−SS_1	0.870	0.243
DSI−SS_2	0.906	0.179
DSI−SS_3	0.913	0.166
DSI−SS_4	0.870	0.242

Exploratory factor analysis was performed using maximum likelihood extraction in combination with a varimax rotation. According to Table 5, the loading factor for all items is above 0.4 and is evenly distributed across the predicted dimension. Thus, this scale has strong construct validity. It is demonstrated that the DSI-SS Indonesian version measures the dimension accurately.

Convergent Validity

The construct validity of the DSI-SS Indonesian version was estimated using convergent validity and factorial analysis. The PHQ-9 and history of suicide attempts were chosen as the criterion variables to be analyzed. The result of this estimation can be seen in Table 6.

Table 6
Convergent Validity Estimation

Variables	Pearson correlation	Sig
DSI-SS and PH9-9	0.478**	< 0.001
DSI-SS and suicide attempt history	0.301**	< 0.001

Table 6 illustrates the correlation between the DSI-SS Indonesian version and each variable is higher than 0.3. Therefore, it can be concluded that DSI-SS has adequate construct validity.

Score Distribution

Cut scores are frequently expected to distinguish individuals with a symptom or disease and those without in clinical settings. To help researchers and clinicians determine the cut points, Table 7 provides the frequency distribution for all samples. The whole sample's DSI-SS mean was 1.05 (*SD* = 2.01).

Table 7
Distribution of DSI-SS Suicidality Scores in a General Sample of Indonesian University Students

DSI-SS score	Frequency	Percentage	PHQ-9 mean (*SD*)	HMDa frequency	HSAb frequency
0	368	72.16%	16.63 (4.55)	22	13
1	26	5.10%	20.88 (5.77)	5	0
2	22	4.31%	21.23 (4.19)	2	3
3	23	4.51%	21.09 (0.45)	6	1
4	31	6.08%	24.19 (6.94)	7	6
5	13	2.55%	22.08 (4.37)	1	1
6	7	1.37%	23.00 (6.68)	2	0
7	9	1.76%	25.44 (7.84)	6	3
8	5	0.98%	27.00 (6.96)	2	1
9	1	0.20%	28.00 (-)	1	0
10	2	0.39%	28.00 (7.07)	1	0
11	2	0.39%	30.50 (4.95)	1	0
12	1	0.20%	12.00 (-)	1	0

aHMD: History of mental disorder bHSA: History of suicide attempt

Researchers find the cut-point of 3 and above appealing, although local changes should be made following the needs of clinicians and researchers. It can be seen that people who acquire a DSI-SS score of three obtain raised mean PHQ-9 scores.

Discussion

Suicide is a severe health problem currently a global concern (Ministry of Health of the Republic of Indonesia, 2019). In Indonesia, it was estimated that there are 1,800 deaths caused by suicide each year, and 75% happen at productive age (Ministry of Health of the Republic of Indonesia, 2019). In preventing suicide, it is essential to have a screening tool to measure suicidality, especially among Indonesian university students. University students are one of the subgroups that are prone to experience suicidal thoughts and behaviors (O'Neill et al., 2018). Therefore, the current study aims to adapt DSI-SS to the Indonesian language and to assess its qualities in the Indonesian university student population.

The DSI-SS, translated into Indonesian, had adequate psychometric properties and was easily understood by respondents. Based on the psychometric properties evaluation, the DSI-SS Indonesian version has good internal consistency and reliability (corrected-item total correlation > 0.25 and reliability coefficient > 0.7). Regarding the measure's convergent validity, it was discovered that the Indonesian DSI-SS strongly correlated with a test that measures depression symptoms (i.e., PHQ-9)

and the history of suicide attempts. It suggests that our measure captures a concept closely related to suicidal thoughts. The validity evidence is also supported by the construct validity using factor analysis, proving that DSI-SS has one factor, as mentioned by the theory. Another strength of the DSI-SS has concise but adequate for screening purposes. The scale using too many items does not align with the screening purpose because it is less efficient. On the other hand, using a single item to assess suicidal behavior is not recommended. The single-item evaluation of suicidal behaviors is linked to a fair degree of misclassification. According to a study by (Millner et al., 2015), single-item assessments fall short of capturing a wide range of distinctions in suicidal behaviors that may be crucial, such as passive ideation, different stages of the planning process, and aborted suicidal activity. Moreover, statistical simulations showed that the amount of misclassification seen in single-item measures (a false positive rate of 11% and a false negative rate of 10% among ideators) might significantly raise the likelihood of erroneous inferences from statistical tests.

Although the results were consistent with what was expected, the current study has several limitations. Firstly, this research did not assess the divergent validity. Moreover, in the convergent validity test, the criteria used were PHQ-9 and a history of a suicide attempt. These criteria may bring several drawbacks; PH9-9 is the scale to measure depression symptoms. Even though depression symptoms are related to suicidality, suicidal ideation is not always caused by depression. However, further research should consider using another measure more related to suicide, for example, using Beck Scale for Suicide Ideation (BSS) or other relevant scales. Another criterion is the history of suicide attempts. In this study, participants were only asked whether they had tried to end their lives. The potential problem is that DSI-SS measured the suicidal ideation in the past two weeks, whereas there is no information about when the suicide attempt(s) occurred.

The second drawback is that DSI-SS only aims to screen suicidal ideation but cannot always predict suicide attempts. A meta-analysis (May & Klonsky, 2016) showed that most suicide ideators do not attempt suicide. The most surprising finding was that while the frequently reported variables of despair and hopelessness did distinguish suicide ideators from people without histories of suicidality, they offered little to no insight into the distinction between attempters and ideators. A depressed diagnosis, the degree of depression, and PTSD were the only three variables significantly higher in suicide ideators compared to those who had never been suicidal. It is also supported by the Interpersonal-Psychological Theory of Suicide (IPTS). According to IPTS. that three domains must be present in an individual for suicide to occur, such as thwarted belongingness, perceived burdensomeness, and acquired capability for suicide. These first two domains contribute to the desire for suicide or suicidal ideation. However, to execute suicidal ideation into a suicide attempt, the third domain is needed for individuals to engage in possibly fatal self-harming behavior (e.g., suicide attempt) (Orden et al., 2010).

Afterward, the scale users should be careful in using this scale. Even though, by statistics, DSI-SS is an adequate instrument, several things can be attended to. It is important to remember that DSI-SS is a screening tool, not an assessment tool. According to Boudreaux and Horowitz (2014), since screening and assessment are different, the tools and techniques used should be seen as distinct

but related processes. For example, the Patient Health Questionnaire (PHQ)-2,8, a two-item depression screener, can be compared to the depression literature because it has a weak 38% positive predictive value for diagnosing the major depressive disorder. However, it is still one of the most commonly used quick screening instruments for depression in medical settings because it can help determine when additional action, such as additional assessment, is necessary (Kroenke et al., 2003).

Next, the uniqueness of the adapted language should be considered. For example, the word "*Kadang-kadang*, *sering*, *selalu*" (sometimes, often, always) can be interpreted subjectively. Moreover, the word *"Dalam kebanyakan situasi*" (in most situations) also can be interpreted differently between participants. Finally, the DSI-SS uses straightforward language that can elicit defensiveness. Research (Blanchard & Farber, 2020) found that approximately 70% of those who hid their suicidal thoughts gave at least one reason for doing so, usually because they feared the actual, practical repercussions of being honest. One of the factors underlying this phenomenon is asking a direct question about suicide. Therefore, these findings suggest that when using the DSI-SS as a calibration tool, it is crucial also to employ other measuring devices.

Conclusion

All items in the DSI-SS Indonesian version have item-total correlations over 0.25, and the scale has alpha reliability above 0.7. The factor analysis's findings also show one basic component, with the existing items evenly divided throughout this dimension. Moreover, the correlation coefficient between DSI-SS Indonesian version and the two criteria is relatively high. Consequently, the validity and reliability of the DSI-SS Indonesian version scale can be accepted. Therefore, this scale can be an alternative evaluation tool for measuring suicidality, especially in the Indonesian university student population.

Recommendation

Further research is advised to reevaluate the psychometric properties of the DSI-SS Indonesian version to more various samples (i.e., general population, clinical population, adolescents). Moreover, Receiver Operating Characteristics (ROC) analysis is needed to determine the cut-off score to distinguish high and low suicide risk groups within the context of suicide prevention research in the Indonesian university student population. The cut score for the DSI-SS may also be helpful as a suicide risk screening tool in clinical settings.

Declarations

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Author's Contributions

LG organized the research, wrote the manuscript, organized the data collection, and analyzed the data. FD reviewed the writing of the manuscript, supervised the statistical analysis process, and reviewed the data processing. S reviewed the writing of the manuscript and approved the final version of the manuscript.

Conflict of Interest

The author(s) declare no potential conflicts of interest concerning this article's research, authorship, and/or publication.

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