Reliability and Factorial Structure of Indonesian Version of the Somatic Symptom Disorders – B Criteria Scale (SSD-12) in Undergraduate Students Sample

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Highlights

- Somatic symptom disorder (SSD) is a new diagnostic category in DSM-5 which emphasizes more on psychological distress than the absence of medical explanation of physical symptoms.
- The Somatic Symptom Disorders – B Criteria Scale (SSD-12) was a screening tool to assess psychological features of SSD with good psychometric properties in clinical and community settings.
- The Indonesian version of the SSD-12 had good reliability and validity.
- The SSD-12 was also applicable to be used as mental health screening tool in university student population.

Abstract

Background: Somatic symptom disorder (SSD) was one of prevalent mental health problems in community and clinical population, yet the prevalence among university students was still underexplored. A screening tool to assess SSD among university students is critical to enhance the mental health service provision in university settings. *Study aims*: This study aims to validate the Indonesian version of the Somatic Symptom Disorders – B Criteria Scale (SSD-12) as mental health screening tool in university student sample. *Method:* Forward-backward translation was conducted followed by content validity examination. A number 277 undergraduate students filled in the SSD-12 during the field test (85.5% was female, *M*= 19.7; *SD*= 1.44). Descriptive statistics, Cronbach's Alpha reliability analysis, Pearson's correlation, and confirmatory factor analysis were conducted to determine and examine item and scale characteristics, reliability, item-rest correlation, and factorial structure of the scale. *Result*: The result showed that the SSD-12 had excellent reliability as full-scale (α= .907) and had moderate and good reliability at sub-scale level (.693, .837, and .858 for cognitive, affective, and behavioral sub-scale. Confirmatory factor analysis showed acceptable fit indices for one-factor model (CFI=0.938; TLI=0.921; RMSEA=0.086; 90% CI= 0.071-0.102) and good fit indices for three-factors model (CFI=0.968; TLI=0.957; RMSEA=.064; 90% CI= 0.047-0.081). *Conclusion*: The Indonesian version of SSD-12 was valid and reliable to be used as screening instrument in Indonesian university student sample.

Keywords: Somatic Symptom; Scale Adaptation; College Students

INTRODUCTION

Somatic symptom disorder (SSD) is a new diagnostic category under group of somatic and related disorders in the Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-V), previously known as somatoform disorders in the Diagnostic and Statistical Manual of Mental Disorders 4th edition Text-Revised (DSM-IV-TR). It is explained that majority of somatoform disorders will be subsumed under SSD category, i.e., hypochondriasis, pain disorder, and somatization disorder (American Psychiatric Association, 2013). While somatoform disorders in DSM-IV-TR mostly require medically unexplained symptoms to establish the diagnosis, somatic symptom disorder employs positive psychological perspective and emphasize more on the perceived distress among individuals having somatic symptoms and its psychological manifestation, including excessive thoughts, feelings, or behaviors, towards the somatic symptoms. There are three criteria of SSD according to DSM-V (American Psychiatric Association, 2013; Dimsdale et al., 2013). First, the existence of one or more somatic symptoms which are distressing or disrupted individual's life in significant way (A-criteria). Second, the existence of excessive thoughts, feelings, or behaviors related to somatic symptoms or associated health concerns (B-criteria). Third, the persistent state of being symptomatic although the somatic symptoms are not continuously present (C-criteria).

SSD was among the prevalent mental disorders in the community and clinical population. Scoping review of SSD studies from January 2009 to May 2020 showed mean frequencies of SSD in pooled study in general population was 12.9% % [95% confidence interval (CI) 12.5–13.3%] (Löwe et al., 2022) using questionnaire-based assessment. Recent studies using standard diagnostic interview showed more variable prevalence across different population, i.e., 5% in general population in Taiwan (Huang et al., 2023), 33.8% in general hospital outpatients in China (Cao et al., 2019), and 21.6% among Chinese patients with breast cancer (Li et al., 2022). In the other hand, previous studies also showed that the prevalence of mental health problems in university student population was high, including somatic symptoms or complaints, anxiety, depression, and sleep problems (Gavurova et al., 2022; Schlarb et al., 2017). However, the prevalence of SSD according to DSM-V new diagnosis in university student population was still underexplored.

Detecting SSD among the university student population was important to enhance effectiveness of mental health service provision in university. SSD was associated with depression and anxiety and higher outpatient/emergency unit attendance (Huang et al., 2023). Moreover, somatic complaint was also associated with depression severity (Schlarb et al., 2017). Thus, addressing SSD would help treatment of other mental disorders more effective and prevent overutilization of unnecessary medical service.

The Somatic Symptom Disorders – B Criteria Scale (SSD-12) was the scale developed by Toussaint et al. (2017) which measure B-criteria of SSD. The B-criteria could show psychological manifestation of the mental health problem which provider could address more effectively during treatment process. Assessment of B-criteria of SSD was also recommended to specify it from common somatic complaints among individuals with physical illness (Dimsdale et al., 2013). To date, SSD-12 has had population-based norm for German population (Toussaint et al., 2018) and has been translated into Persian version (Abasi et al., 2022). However, its utilization in other country and population was still scarce, including in Indonesia and particularly for university student population.

Validation of the SSD-12 in another country, particularly in Asian region is important so that we can understand the prevalence and course of somatic symptom disorder across region. In

addition, validation of the SSD-12 into more specific population including university students will benefit mental health screening and service in university setting. Thus, the aim of this study was to validate the Indonesian version of the SSD-12 in Indonesian university student sample. Specifically, this study seeks to understand reliability and factorial structure of the SSD-12 in Indonesian university student sample.

METHOD

Study design

This study was a quantitative study that consists of two stages of study i.e., translation-adaptation stage and validation stage. The study was conducted in one university in Semarang, Central Java, Indonesia in 2020. Due to COVID-19 outbreak at the time of study, all activities in this study were conducted in online manner. The study adhered ethical standard as written in Declaration of Helsinki. All participants participated in this study signed informed consent electronically prior their participation.

Participant

A total of 277 students participated in this study. All participants were undergraduate students from Universitas Diponegoro, Semarang, Indonesia. Participants were recruited using convenience sampling technique. The inclusion criteria were active students from Universitas Diponegoro and willingness to participate in the study. No exclusion criteria were applied. Most of them were female, Javanese, and Muslims with mean age of 19.7 (SD= 1.44). Most of them were in their first year of study during their participation.

Instruments

Demographic questionnaire and the SSD-12 were used in this study. Name (optional), sex, ethnicity, religion, study major, and year of study were asked in demographic questionnaire. The SSD-12 consists of 12 items representing psychological feature of somatic symptom disorder. It has three sub criteria i.e., cognitive, affective, and behavioral aspects. The cognitive aspect consists of item 1, 4, 7, and 10. The affective aspect consists of item 2, 5, 8, and 11. The behavioral aspect consists of item 3, 6, 9, and 12. Sample item of the SSD-12 were “I think that my physical symptoms are signs of a serious illness”, “I am very worried about my health”, and “My health concerns hinder me in everyday life” for three aspects respectively. In the SSD-12, respondents were asked to respond each item in four options, ranging from “never” to “very often”. Responses were scored based on their option, ranging for 1 to 4. Item scores were then summed up to get sum score of the scale.

Procedure

Prior this study, the SSD-12 was translated from English version to Indonesian version. Translation-adaptation procedure was informed by International Test Commission Guidelines for translating and adapting test (International Test Commission, 2016). Permission has been obtained by the authors from scale developer to conduct the adaptation. Forward-backward translation were conducted by two independent bilingual translators with expertise in psychology. Three bilingual experts in clinical psychology then evaluated and rated the equivalence of backward-and-original version and forward-and-original version using 5-point Likert. The Aiken’s V coefficient of equivalence ranged from 0.42-1.00 between backward translation and original version and 0.75-1.00 between forward translation and original version. Items with

Aiken's V less than 0.92 were reviewed and revised or finalized by authors. Readability checking involving five undergraduate students showed that the final translation version was clear and understandable. The final Indonesian version of the SSD-12 was then administered to undergraduate students through Google Form.

Data Analysis

Descriptive statistics of demographic data, items, and the scale were analyzed. Reliability of the scale and subscales were analyzed using Cronbach's Alpha. Factorial structure of the scale was analyzed using Confirmatory Factor Analysis. All analysis were computed using Jamovi version 2.3.17.

RESULT

Participant's characteristics

In general, most participants were women (85.6%), Javanese (74.2%), Moslem (85.9%), freshmen (35.4%), majoring social science study program (70.4%), aged 17-27 years (M= 19.7; SD= 1.44). Detailed information of participants' demographic data can be seen at Table 1. The SSD-12 score of participants ranged from 12-59 (M= 28.5; SD= 9.52). Specifically, mean of each sub-criterion of participants were 9.15 (SD= 3.2), 10.4 (SD= 3.87), and 8.91 (SD= 3.67) for cognitive, affective, and behavioral sub-criterion respectively.

Table 1.
Demographic data of participants

Demographic Variable	Frequencies	Percentage
Gender		
Male	40	14.4%
Female	237	85.6%
Ethnicity		
Javanese	204	74.2%
Sundanese	15	5.5%
Batak	13	4.7%
Multiethnic	18	6.5%
Others	25	9.1%
Religion		
Islam	238	85.9%
Christian (Protestant)	23	8.3%
Christian (Catholic)	16	5.8%
Study Program		
Natural, engineering, and life sciences	82	29.6%
Social science and humanities	195	70.4%
Year of Study		
First year	98	35.4%
Second year	55	19.9%
Third year	57	20.6%
Fourth year	62	22.4%
Fifth year	2	0.7%
Sixth year	3	1.1%

Reliability analysis

The result of reliability analysis for the SSD-12 showed that the SSD-12 had excellent reliability with Cronbach's Alpha .907. Item-rest correlation of all items showed that all items corresponded with the scale function and supported internal consistency with value of .304 to.746. It also indicated that all items had good item discrimination index or ability to discriminate between individuals with higher extent of somatic symptom disorder and those with lower one. Reliability coefficients for each sub-criterion of the SSD-12 were moderate for cognitive sub-criterion (α= .693) and good for affective and behavioral sub-criterion (α were .837 and .858 respectively). Item-rest correlation of all items for each sub-criterion also showed good correspondence with overall subscale with value of .335-.630 for cognitive sub-criterion, .605-.712 for affective sub-criterion and .667-.734 for behavioral sub-criterion. The range of item-rest correlation for each subscale also indicated good item discrimination index. Item 7 had lowest item-rest correlation coefficient both in full-scale and cognitive sub-scale, but still above the recommended cutoff for item selection (Azwar, 2008). Detailed information of item characteristic was displayed in Table 2.

Table 2.
Mean, standard deviation, and item-rest correlation of full-scale and sub-scales of SSD-12

Item	Mean	SD	Item-rest Correlation			
			Full-scale	Cognitive Sub-scale	Affective Sub-scale	Behavioral Sub-scale
1	2.52	1.01	.613	.537		
2	2.99	1.07	.657		.605	
3	2.31	1.13	.622			.667
4	2.13	1.02	.721	.630		
5	2.63	1.13	.715		.672	
6	2.07	1.02	.746			.734
7	2.69	1.32	.304	.335		
8	2.19	1.23	.703		.695	
9	2.15	1.12	.706			.721
10	1.81	1.06	.554	.462		
11	2.61	1.28	.705		.712	
12	2.38	1.11	.674			.694

Confirmatory factor analysis

Two confirmatory factor analyses were performed, namely one-factor (general factor) model and three-factor model. Chi-square test result was regarded as descriptive index rather than statistical test because of its oversensitivity to sample size. RSMEA was used as alternative of model fitness testing. Model was considered fit with the data if minimum two of the following conditions obtained: 1) value of RSMEA < .05, 2) confidence interval included .05, and 3) p > .05 (Umar & Nisa, 2020). In addition, CFI and TLI were evaluated to indicate convergent validity of the scale with value > .9 considered acceptable and value > .95 considered good fit (Sun, 2005). Both models included small modification to original model from developer in which two pairs of items had residual correlation, namely item 1 with item 4 and item 8 with item 11, to get the better model fit. Both pairs of items were still in the same sub-criterion, so that correlating them in the model considered acceptable.

Table 3.
Model fit indices of two factorial models of SSD-12

Model	*df*	χ^2	*p*	RSMEA (90% Confidence interval)	CFI	TLI	Conclusion
One-factor	52	159	< .001	0.086 (0.071-0.102)	0.938	0.921	Acceptable
Three-factors	49	104	< .001	0.064 (0.047-0.081)	0.968	0.957	Good

Table 3 showed that three-factors model (Figure 2) was better than one-factor model (Figure 1) with good fit indices. However, the one-factor model was also acceptable. This result indicated that the SSD-12 had one latent or unidimensional factor with three aspects representing it. Moreover, each item had satisfying factor loading ranged from .309-.769 for one-factor model and .324-.831 for three-factors model. Those results indicated that each item could represent latent variable significantly (See Table 4 and 5). In addition, we performed correlation analysis across sub-criterion and found that each sub-criterion correlated significantly one to another (See Table 6).

Table 4.
Factor loadings of one-factor model of SSD-12

Item	Estimate	SE	*Z*	*p*	Standardized Estimate
Item 1	0.605	0.057	10.54	<.001	0.600
Item 2	0.739	0.058	12.69	<.001	0.691
Item 3	0.773	0.062	12.48	<.001	0.683
Item 4	0.723	0.055	13.09	<.001	0.709
Item 5	0.847	0.060	14.21	<.001	0.751
Item 6	0.817	0.052	15.80	<.001	0.807
Item 7	0.406	0.081	5.04	<.001	0.309
Item 8	0.876	0.066	13.30	<.001	0.716
Item 9	0.860	0.058	14.71	<.001	0.769
Item 10	0.600	0.060	9.92	<.001	0.568
Item 11	0.922	0.069	13.40	<.001	0.720
Item 12	0.805	0.059	13.61	<.001	0.728

Table 5.
Factor loadings of three-factors model of SSD-12

Factor	Item	Estimate	SE	*Z*	*p*	Standardized Estimate
Factor 1 (Cognitive)	Item 1	0.697	0.060	11.56	<.001	0.692
	Item 4	0.821	0.059	13.95	<.001	0.805
	Item 7	0.426	0.084	5.07	<.001	0.324
	Item 10	0.586	0.063	9.24	<.001	0.555
Factor 2 (Affective)	Item 2	0.748	0.058	12.79	<.001	0.699
	Item 5	0.881	0.059	14.88	<.001	0.781
	Item 8	0.885	0.066	13.41	<.001	0.723
	Item 11	0.939	0.069	13.68	<.001	0.733
Factor 3 (Behavioral)	Item 3	0.810	0.062	13.15	<.001	0.715
	Item 6	0.842	0.052	16.32	<.001	0.831
	Item 9	0.898	0.058	15.47	<.001	0.802
	Item 12	0.838	0.059	14.23	<.001	0.757

Table 6.

Correlation matrix between sub-scaless of the SSD-12

Sub-scale	Cognitive	Affective	Behavioral
Cognitive	-		
Affective	0.681***	-	
Behavioral	0.596***	0.741***	-

Note. ***p<.001

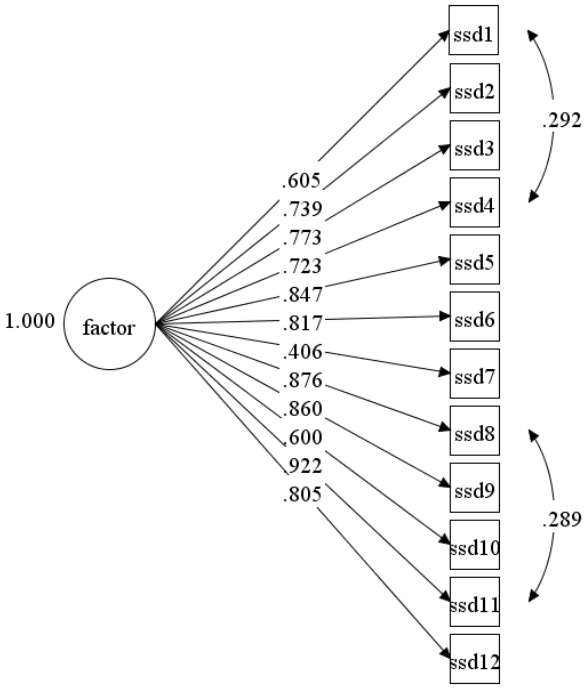

Figure 1. Diagram of one-factor model of SSD-12

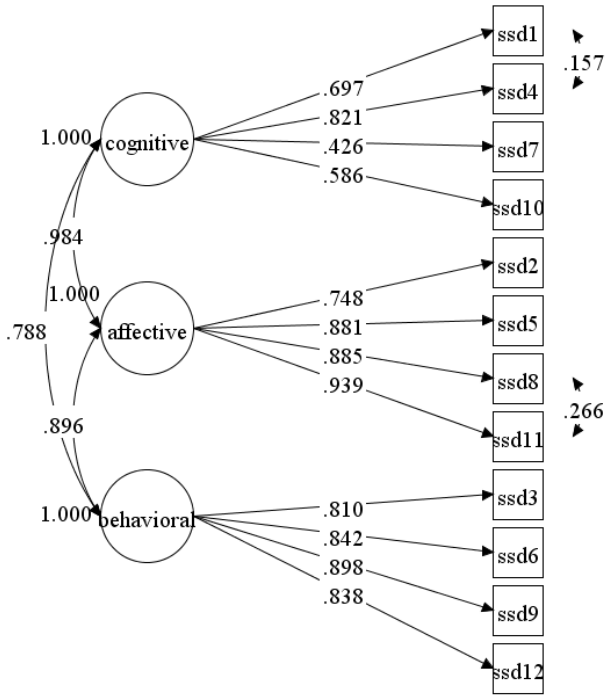

Figure 2. Diagram of three-factors model of the SSD-12

DISCUSSION

This study aimed to validate the SSD-12 as a screening instrument of B-criteron of somatic symptom disorder in Indonesian university student sample. Based on the confirmatory factor analysis, the results showed that the Indonesian version of SSD-12 had acceptable construct validity. In line with previous studies, both hypothesized models (one-factor and three-factor models) were fit with the data with the three-factor (cognitive, affective, and behavioral factors) model yielded better indices (Abasi et al., 2022; Toussaint et al., 2017, 2018). All items showed significant factor loadings in this study, although they had slightly lower estimates than those found in previous studies in Germany general population (Toussaint et al., 2017). The results also found similar results on previous studies regarding lower factor loading on item 7 and 10, both in the one-factor model and the three-factor model. Thus, it resonated the explanation of (Toussaint et al., 2017) that those items were more difficult to be judged by respondent due to different point of view respondent should take when responding them. Another explanation of lower factor loading on item 7 was because item 7 contains negative statement which may be also more difficult to be judged by respondents.

This study also found systematic correlation between item 1 and 4 and between item 8 and 11 on both the one-factor model and the three-factor model. Referring to the item wordings, the correlation might be found due to similar content of the items, especially for Indonesian people. Thus, the way Indonesian people responded to those pairs of items were similar too.

The result of Chronbach's alpha in this study supported the reliability of the Indonesian version of the SSD-12 in university student sample, which widen the characteristic of study population on previous studies from another country, such as clinical sample and general population (Abasi et al., 2022; Toussaint et al., 2017, 2018). The excellent reliability of overall scale showed that in general, each item of the SSD-12 was consistent to measure the psychological dimension of Somatic Symptom Disorders. The cognitive subscale showed lower coefficient due to the existence of more difficult item in it. However, all subscales' reliability were still considered acceptable.

As a new diagnosis in DSM-V, there was still limited psychological instrument to help screening and measuring the existence and level of somatic symptom disorder worldwide. Most researchers and clinicians used general screening scale such as the Somatic Symptom Checklist-90-revised (Derogatis et al., 1973) and the Patient Health Questionnaire-15 (Kroenke et al., 2002) as screening tool of somatic symptom disorders although it had limitation on the specificity to detect and inform somatic symptom disorders specifically. The SSD-12 was the first scale measuring psychological features of somatic symptom disorders and this study showed additional evidence of its potential benefit to be used in practical settings.

Adaptation and validation of the SSD-12 into Indonesian language has at least two advantages. First, it can help increasing detection of somatic symptoms disorders by differentiating it from common somatic complaints. Because mental health problems among Indonesian population are often disguised by somatic complaints, detecting which complaints are related to psychological problems is important to prevent unnecessary medical treatments. Second, it can help reducing the gap of untreated individuals with mental health problems, particularly in Indonesian university settings. The availability of mental health screening tool will be very beneficial to help university screen, detect, and treat their students with mental health problems.

Apart from the explained findings, this study had some limitation. First, the convergent validity and diagnostic utility (sensitivity and specificity) of the SSD-12 were not examined in

this study. In addition, to be more comprehensive in measuring somatic symptom disorders, the Somatic Symptom Checklist (SSS-8) was recommended to be added. Moreover, further study was recommended to also compare psychometric properties of the SSD-12 between clinical and non-clinical sample in Indonesia.

CONCLUSION

Based on the results, it can be concluded that Indonesian version of the SSD-12 was valid and reliable to be used as screening instrument of SSD in university student population. Both one-factor model and three-factor model were fit with the data with three-factor model had better fit indices. The SSD-12 can be scored both at a full-scale level and sub-scale level. The SSD-12 can be used as screening instrument to detect mental health problems among university students in Indonesia.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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