



Psychometric Evaluation of the Warwick–Edinburgh Mental Well-Being Scale on Indonesian Students

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Abstract

Article Information:

Received June 04, 2023

Revised November 20, 2023

Accepted November 22, 2023

Keywords:

Psychometrics

Mental Health

Warwick-Edinburgh Mental

Health Scale

Students

Identification of mental health at the university is an important issue. This study aims to evaluate the psychometric performance of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) as an instrument for assessing the mental health of students in Indonesia. The WEMWBS scale has validation in the UK, France, Norway, Spain, and China in various populations, and there needs to be clarity about the Indonesian version of the psychometric characteristics of WEMWBS in the student population. Four hundred twenty-three students from universities in Indonesia participated in this research. Internal consistency and scale factorial validity were examined after using the Indonesian version. All data analyses done by using SPSS version 23. The Indonesian version of WEMWBS showed high internal consistency (0.90). The results of the confirmatory analysis showed that only thirteen items could be grouped into one factor. A moderate relation exists between the Indonesian version of WEMWBS and the other scale. The findings of this study are essential for measuring students' mental health. These results can provide a reliable tool for evaluating mental health for students and have important implications for developing interventions in health promotion at the university.

INTRODUCTION

Mental health is a condition of awareness of ability, overcoming stresses in life, working productively, contributing to society (World Health Organization, 2014), or happiness (Lamers et al., 2011). However, they also have potential of negative health mentalities such as sadness, unhealthy, and unhappiness. This mental illness can occur on children, adolescents, or adults. This perspective relates to aspects of hedonics (happiness, joy, and satisfaction) and eudaimonics (psychological functions, autonomy, positive relationships with others, and a sense of purpose in life) (Dos Santos et al., 2015; Galderisi et al., 2015).

Students in higher education are high-risk population groups experiencing psychological distress (Larcombe et al., 2016) and are vulnerable to mental illness, sadness, and emotions (Eisenberg et al., 2013). This issue is essential for universities because students' mental health severity increases (Baik et al., 2019). Mental health in students is a condition of pressure, stress, and sleep disorders that affect their academic

performance (American College Health Association, 2018), pressure to achieve success in academic goals (El Ansari & Stock, 2010), lifestyle changes and adjustments (Roberts et al., 2000), emotional problems and physical illness (Adams et al., 2008), and influence academic and school dropouts (Bruffaerts et al., 2018).

Recent studies report a link between mental health, lower self-efficacy, motivation, and academic dissatisfaction (Lipson & Eisenberg, 2018) and increased depression and student anxiety (Marthoenis et al., 2018). Therefore, this mental health study is essential, and researchers conduct studies to fill in the blanks due to the lack of mental health studies in the right population (Hu et al., 2007).

In the development of mental health measurement, several scales can be used according to specific identification and intervention needs, such as using the Cognitive Therapy Rating Scale to assess cognitive therapy competency (Goldberg et al., 2020). The Drinking Motives Questionnaire scale measures the level of addiction (Grant et al., 2007). Generalized Anxiety Disorder (GAD) is used to identify the level of anxiety (Wittchen & Hoyer, 2001). Furthermore, to identify bipolar personality, use the Mood Disorder Questionnaire (MDQ) scale (Hirschfeld et al., 2000) and the Patient Health Questionnaire (PHQ) to find symptoms of depression (Kroenke et al., 2010). Using the Yale-Brown Obsessive-Compulsive Scale (YBOCS) to identify and treat patients with obsessive-compulsive disorder (Woody et al., 1995) or the Sheehan-Suicidality Tracking Scale (SSTS) to detect symptoms of suicide (Amado et al., 2014).

All mental health scales are used to obtain information about individual disorders as well as screen for several conditions, but they are not always practical in their use, such as PHQ, GAD, and YBOCS, which still need to determine potential diagnoses that can cause bias; these scales will mark the patients with anxiety, depression, or obsessive-compulsive disorder. Then, the SSTS and MDG scales require patients to respond to irrelevant questions (Tai-Seale et al., 2013). The bottom line is that most current mental health assessment solutions are flawed (Dunning et al., 2004), and rather than helping to support accurate diagnosis, they become a barrier for patients and practitioners (Funnell et al., 2022).

Mental health assessment scales should provide a multidimensional approach that assists individuals in assessing, diagnosing, and monitoring by establishing baselines, measuring change through intervention, as well as measuring outcomes longitudinally (Newson et al., 2020) and supporting positively focused interventions (Blasco-Belled et al. 2023) so that items in the scale can ask about positive aspects of mental health (Lukat et al., 2014). One of them is the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS).

The Warwick-Edinburgh Mental Well-Being Scale is identical to a scale with positively worded items, representing positive well-being attributes and covering feelings and function, so the scale's responses are easy to complete and capture the general meaning of well-being in society (Tennant et al., 2006; Clarke et al., 2011). In

addition, WEMWBS can be applied to non-clinical settings and includes mental health education programs such as mental health literacy, social, and emotional learning in educational settings (Taggart et al., 2013; Maheswaran et al., 2012).

The Warwick-Edinburgh Mental Health Scale (WEMWBS) starts with an "Affectometer 2" study (a measure of mental health) and produces its psychometric development recommendations (Tennant et al., 2007). This scale comprises 14 positive word phrases in hedonic and eudaimonic aspects to measure positive, healthy mental health (Tennant et al., 2007). WEMWBS scale validation encompasses diverse populations, including adolescents (Bass et al., 2016; López et al., 2013), adults (Bartram et al., 2011; Castellví et al., 2014; Powell et al., 2013; Tennant et al., 2007), and clinical populations (Stewart-Brown et al., 2009).

Cross-cultural variations can affect instrument responses (Scott et al., 2007). Several studies were evaluated for different populations, including North Ireland (Lloyd & Devine, 2012), the general population of Spain (Castellvi et al., 2014; Lopez et al., 2013), the general population of France (Trousselard et al., 2016), the general population of Italy (Gremigni & Stewart-Brown, 2011), Denmark (Koushede et al., 2019), Norwegian adolescents (Ringdal et al., 2018; Smith et al., 2017), Brazilian Portuguese population (Dos Santos et al., 2015), China (Dong et al., 2019; Fung, 2019), Pakistani health nurse (Waqas et al., 2015), Pakistani English-speaking people in the United Kingdom (Taggart et al., 2013). The level of internal consistency value of the WEMWBS scale is good and has a similar value to reports in other studies (Clarke et al., 2011; Taggart et al., 2013; Tennant et al., 2007; Waqas et al., 2015).

Mental health problems in Indonesia are serious problems (Hartini et al., 2018) because they increase the risk of more severe health problems in the future (Hopper & Moninger, 2017). Therefore, support for health programs in higher education is essential (Griebler et al., 2017), and the purpose of this study is ultimately to contribute to health promotion in higher education.

In Eastern countries, there is a Chinese version of WEMWBS research on a student population with a dominant ethnic Chinese population (Fung, 2019). Still, the study is difficult to apply in Indonesia due to population characteristics consisting of various ethnicities (including Malay, Chinese, and Arabic), and these cultural and language differences determine how interpretations of concepts about mental well-being are made (Christopher & Hickinbottom 2008).

Other researchers have used the Indonesian version of WEMWBS for the student population by finding structural models that are not entirely valid, and some items do not measure hedonic and eudaimonic factors (Hartanto, 2017). However, the study's limitations were that it did not explain the items and the different ages of study population. Because age differences affect taxonomic differences in personality (Shiner & Caspi, 2003) and determine mental health conditions (Keyes, 2007). The existing Indonesian version of the WEMWBS study is incomplete. Evaluation of this scale is

essential to check the validity of measurements because problems will occur if mental well-being measures are unavailable (Stewart-Brown, 2002).

In educational settings, student learns satisfaction measures to assess student satisfaction and it is often associated with identifying students' mental situations (Chang et al., 2012). The principle is that learning satisfaction is seen in terms of its influence as a mental-emotional complex determined by the level of comfort a person feels at school (Topala & Tomozii, 2014). In reviewing mental health in the school context, school institutions also need to get an overview of external support and internal characteristics that have the potential to act as protective factors through the application of the Student Resilience Survey and Academic Resilience Survey scales (Brewer et al., 2019; Khairina, 2020; Ramdani et al. al., 2021), including Indonesia. Because it is related to students' protective factors while at school and comparing the two scales, which are similar to the WEMWBS scale in assessing positive feelings (Tennant et al., 2007), it is necessary to measure psychometric properties to assess the Indonesian version of the WEMWBS to produce findings that can be used to identify the mental well-being of students in higher education.

This research aims to obtain an evaluation of the psychometric properties of the Indonesian version of the WEMWBS by determining the content validity of the items, evaluating the representativeness of the items in the construct (Haynes et al., 1995), and assigning items to construct dimensions (Newman et al., 2013). Content validity assesses the extent to which a scale instrument represents the construct targeted for a particular assessment purpose (Haynes et al., 1995). This validity includes several aspects, such as the representativeness of the construct explanation, the clarity of scale instructions, the linguistic aspects of the items (words and grammar), and the adequacy of item responses. The higher the scale's validity, the more accurately the target construct fits its purpose (de Von et al., 2007).

On the other hand, although construct validity is important, content validity tends to receive less attention in assessment practice (Johnston et al., 2014); precisely at the same time, content validity is a necessary condition for other aspects of construct validity. Then, confirmatory factor analysis (CFA) is used to verify the factor structure of the observed variables to test the hypothesis that has a relationship between the observed variables and the underlying latent construct (DeVellis, 1991). The Student Resilience Survey scale becomes an external comparison scale for testing validity to complete the measurement.

METHOD

This study used a quantitative approach to maintain empirical assumptions and create meaning through objectivity (Cresswell et al., 2003). The research design in this study used descriptive, correlational, and factor analysis to identify phenomenon-based attributes. The sample selection in this study was a simple random sampling based on the

research objective of testing the psychometric properties of the Indonesian version of the WEMWBS test.

Respondents

Respondents were students from various backgrounds in study programs at a university in Bandung. The researcher explained to the students the purpose of the research, how to work on the questionnaire, and how to return the questionnaire. The 500 questionnaire packages distributed in class, 451 students were able to complete their questionnaires, with a response rate of 95%. After the screening, only 423 questionnaires met the requirements for analysis (64.58% female students and 35.42% male students). Before data collection, the researcher obtained ethical approval from both heads of study programs at Telkom University. The researcher only used questionnaire identification numbers documented in the center of the student advisory data system to protect participants' identities.

Instrument

The data collection tool used in this study was the Warwick-Edinburg Mental Well-Being Scale (WEMWBS). This scale consists of 14-item statements, which were responded using a five-Likert scale with a value of 1 (never) to 5 (always). This scale measures three factors: positive affect (e.g., joy, feelings of optimism, and relaxation), psychological functioning (e.g., clear thinking, energy, self-acceptance, and competence), and interpersonal relationships (Tennant et al., 2007). The total WEMWBS score ranges from 14 to 70, with higher scores indicating greater mental well-being. In contrast, the comparison instrument, namely the Student Resilience Survey (SRS), which consists of 47 items, aimed to assess student resilience, including a series of external support and internal characteristics as protective factors.

Translation scale

Translating the WEMWBS scale from the original scale into Indonesian aimed to achieve a common understanding of the concept. The translation measures in this study refers to cross-cultural self-report adaptation guidelines (Beaton et al., 2000). The first step was inviting four linguists to translate from the English scale into Indonesian. One linguist knew about the WEMWBS scale, while the other did not. Second, re-translation into Indonesian by other linguists using a consensus on the semantic differences that have arisen and produced an agreed version of the translation. Thirdly, it is translated back into the original language, and finally, it is consolidated into the Indonesian version as a finalization before testing it in the field (*see the appendix*).

Data analysis

This study used several analytical techniques, such as descriptive analysis by calculating the average and standard deviation of the Indonesian version of the WEMWBS scale, correlation analysis between items, evaluation of convergent validity to estimate the correlation coefficient of the WEMWBS score, and the SRS scale (which is considered a good instrument). Then, confirmatory factor analysis was used to evaluate

the single-factor model, as suggested in the previous WEMWBS literature (Dong et al., 2016; Stewart-Brown et al., 2009). In the CFA analysis, items with a factor score more than 0.50 can be interpreted as having practical significance when the sample size is more than 350 respondents (Hair et al., 2010). All data analysis in this study used SPSS software version 23.

RESULTS

The fourteen items of WEMWBS were given a score of 1 (never) to 5 (always), and the total scale score was calculated by adding up 14 individual item scores; the minimum score was 14, and the maximum was 70. The results of the Indonesian version of the WEMWBS descriptive statistics show that the mean item scores ranged from 2.99-4.12 (Table 1), while the total *mean-SD* was 51.82-8.59 (with 95% confidence intervals; skewness,.058; kurtosis,-.291), with a *median* value of 51.38.

Table 1
Descriptive Statistics and Reliability of the Indonesian Version of WEMWBS (N=423)

No	Item	Min	Max	Mean	SD	Variance	Alpha
	<i>Selama ini...</i>						
1	Saya merasa optimis terhadap masa depan.	1.00	5.16	4.12	0.903	0.816	0.649
2	Saya merasa bermanfaat	1.00	4.94	3.68	0.922	0.852	0.661
3	Saya merasa rileks.	1.00	4.85	3.77	0.914	0.836	0.434
4	Saya merasa tertarik pada orang lain.	1.00	4.35	2.99	0.945	0.893	0.389
5	Saya punya sisa energi.	1.00	5.18	3.77	0.924	0.854	0.540
6	Saya telah menangani masalah dengan baik.	1.00	5.11	3.77	0.919	0.845	0.677
7	Saya sudah berpikir jernih.	1.00	5.46	4.12	0.912	0.832	0.675
8	Saya merasa nyaman dengan diri saya sendiri.	1.00	5.00	3.90	0.911	0.830	0.673
9	Saya merasa dekat dengan orang lain.	1.00	4.57	3.35	0.931	0.868	0.651
10	Saya merasa percaya diri.	1.00	4.96	3.77	0.919	0.845	0.707
11	Saya sudah bisa mengambil keputusan sendiri tentang berbagai hal.	1.00	5.02	3.77	0.918	0.843	0.574
12	Saya merasa dicintai.	1.00	4.31	3.01	0.940	0.885	0.553
13	Saya tertarik pada hal-hal baru.	1.00	5.03	4.12	0.894	0.799	0.558
14	Saya merasa ceria.	1.00	4.73	3.60	0.919	0.846	0.700

The median value in the Indonesian version of the WEBWBS is the same as that of 51 in the previous WEBWBS study (Tennant et al., 2007). The Indonesian version of WEMWBS has an internally consistent reliability value (Cronbach's alpha) of 0.90. The correlations between the total of Indonesian WEMWBS items ranged from 0.170 to 0.708, with a significant overall value ($p < 0.001$) (Table 2).

Table 2*Correlation Matrix for the 14 Indonesian Versions of WEMWBS Items (N=423)*

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1													
2	.670	1												
3	.303	.311	1											
4	.314	.293	.307	1										
5	.349	.402	.394	.252	1									
6	.436	.525	.260	.222	.475	1								
7	.454	.496	.246	.201	.369	.708	1							
8	.511	.465	.353	.193	.355	.517	.30	1						
9	.442	.453	.256	.310	.333	.444	.508	.508	1					
10	.475	.522	.229	.296	.327	.513	.594	.594	.584	1				
11	.356	.341	.220	.170	.319	.550	.495	.495	.400	.519	1			
12	.394	.431	.266	.355	.305	.369	.355	.355	.447	.423	.361	1		
13	.431	.345	.280	.234	.416	.337	.383	.383	.426	.446	.395	.325	1	
14	.497	.471	.357	.314	.447	.499	.515	.513	.572	.558	.378	.425	.496	1

Note: All correlations are significant at the 0.001 level (2-tailed)

The results of exploratory factor analysis were carried out to test the suitability of the data according to the factors with the Kaiser-Meyer-Okin (KMO) sample measurement and the Bartlett roundness test. The KMO value of the Indonesian version of the WEMWBS scale is 0.918. At the same time, the Bartlett roundness test is statistically significant ($p < 0.001$), so the factors in the Indonesian version of the WEMWBS can support the correlation matrix. Then, the loading factors for each item range is from 0.488 to 0.770. Thirteen items are grouped into one factor, and one item (item no. 4) describes the factor of others (Table 3).

Table 3*EFA factor loading results for 14 Indonesian versions of WEMWBS items (N=423)*

Item	Factor 1	Factor 2
1	.713	
2	.726	
3	.488	
4		.614
5	.601	
6	.746	
7	.748	
8	.742	
9	.717	
10	.770	
11	.649	
12	.614	
13	.623	
14	.759	

The correlation value between the Indonesian version of WEMWBS and other scales as a comparison (SRS) shows a significant positive relationship at a moderate level (Table 4).

Table 4
Correlation between the Indonesian Version of WEMWBS and Other Scales
(Construct Validity)

	<i>N</i>	<i>r</i>	<i>p</i>
WEMWBS-ID x SRS	423	0.642**	<0.001

DISCUSSION

This study aims to test and validate the Indonesian version of the WEMWBS scale from the original version of the WEMWBS (Tennant et al., 2007) using a population of Indonesian students and test the correlation with the tested Student Resilience Scale (SRS) (Lereya et al., 2016). The Indonesian version of WEMWBS has demonstrated high reliability, with significant correlations between items. The exploratory factor analysis of this scale produces two factors, with the emergence of one item (no. 4) separate from all items. This finding is similar to studies of WEMWBS adaptation in Pakistani populations (Waqas et al., 2015) and Brazilian populations (Dos Santos et al., 2015).

In particular, item numbers 3 and 4 in the Indonesian version of the WEMWBS show relatively low scores in reliability and correlation between items, as well as loading other factors in the exploration (especially item no. 4). These findings confirm the previous Indonesian version of WEMWBS research (Hartanto, 2017), related to the existence of items that do not fulfill the hedonic and eudaimonic aspects. Thus, to produce better findings, further item construction is required. Differences in social systems and cultures affect people's judgments (Heine, 2010), and these values will become essential to their understanding of reality.

There are several challenges when translating WEMWBS into the Indonesian version. This means that you must pay attention to the structure of the language. When translating, developers must find a common understanding of the student population. Apart from understanding the meaning, it is also necessary to consider more precise and more concrete sentences so as not to give rise to double or ambiguous meanings, as in point no. 4 (“...*saya merasa tertarik pada orang lain*”), which is less potent in explaining mental well-being factors because understanding among students is not uniform. To explore the representation of well-being, perhaps the word ‘*tertarik*’ in the sentence is ‘*minat*’ (interest) in interacting with others.

The Indonesian version of WEMWBS has good reliability and validity for the student population; these findings are similar to the original scale. So, it can be said that the WEMWBS scale has cross-cultural characteristics. When adopting another tested scale as a comparison to investigate the construct validity, the results show a significant positive correlation between the two scales, indicating a correlation between students' mental well-being and resilience. In general, the results of this study indicate that the WEMWBS translated into Indonesian (through suggested steps of translation) is a helpful scale and represents a reliable quantitative scale for identifying mental well-being symptoms among university students in Indonesia, thereby making cross-cultural comparisons of mental well-being scores very possible for future studies.

There are several limitations in this study, mainly related to the availability of data. This study does not provide information about the cultural background or economic level, as used in previous studies (Tennant et al., 2007), which was considered to influence the results. First, participant of this research was only on one group of students, so the results may not represent all students from various cultures. Second, this study used a population of students from the same faculty. However, students' differentiation in other study interests may indicate different levels of mental well-being, such as medical study programs, etc. Third, research requires a larger sample so that it is more representative of the general student population. For future researchers, the Indonesian version of the WEMWBS scale can be used, but it is recommended to use a variety of diverse population groups.

Using the Indonesian version of the WEMWBS scale is very important and valuable for higher education in dealing with students' mental health problems, which require severe treatment (Hartini et al., 2018). The study's implications are focused on several roles, namely academic advisors who deal with the conditions of students who experience pressure due to academic and social demands. Every year, students' academic progress can be monitored through the WEMWBS scale to provide information about their condition and learning readiness. The role of academic advisors becomes more active in providing attention and encouragement for learning motivation to students.

This scale is also essential for guidance and counseling units in prevention, distribution, and adjustment (Surya, 1988), in addition to monitoring and caring for students who experience psychological stress or other symptoms related to mental (non-academic) problems. As an early detection, this quantitative report on the Indonesian version of the WEMWBS scale can identify the degree of students' problems and assist counselors in managing treatment management in the form of counseling as well as clinical deepening in a therapeutic direction to make students aware of their abilities, work productively, and be involved in developing student activities on and off campus.

This scale is also meaningful for selecting new students to achieve campus health. Apart from being a mental health mapping, this scale can provide an overview of the readiness of teaching staff to deal with various student conditions. In addition, it can be a tool for determining the quality of campus health, which determines campus promotion programs, as well as designing special curricula on personal development and mental health, bearing in mind that the role of higher education is not only responsible for science, knowledge, and technology but also for morals and character.

CONCLUSION

The psychometric properties of the Indonesian version of the WEMWBS scale in the student population in Indonesia have achieved significant results through the analytical test stage using quantitative methods. The results of this research are based on what was previously explained that the adaptation of the WEMWBS scale from the original version to the Indonesian version achieved a very high level of reliability,

followed by solid item quality. One item that requires language improvement is a research limitation and a suggestion for future research. Comparisons with other scales are pertinent. This research shows that the Indonesian version of the WEMWBS student mental health assessment scale can be used in higher education. The implications of this research are especially for academic supervisors and counseling guidance units in detecting student mental health disorders and as a tool to increase the role and activation of their duties in the functions of prevention, distribution, supervision, and treatment to improve student life in a more positive academic manner, awaken student potential, and support students to be active in self-development and adjustment through activities that contribute to cognitive and social growth in the higher education environment.

ACKNOWLEDGMENT

The author would like to thank Dr. Sarah Steward-Brown (University of Warwick, UK), originator and author of the original instrument, the Warwick-Edinburg Mental Well-Being Scale (WEMWBS), Dr. Iis Kurnia (Telkom University, Indonesia), and Sarah Aisha, M.A. (Padjadjaran University), as a team of experts in supporting scale translation and back translation. The researcher would like to thank the student respondents who are willing to contribute to this research.

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