Jurnal Kajian Bimbingan dan Konseling, 9(2), 2024, 75-81
DOI: 10.17977/um001v9i22024p75-81
ISSN 2503-3417 (online) | ISSN 2548-4311 (print)

Rasch Validation of Arabic Scale of Mental Health (ASMH) in Indonesian Version to Measure Adolescent Mental Health

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Article history
Received: 30 September 2023
Revised: 12 November 2023
Accepted: 22 November 2023

Keywords
Adolescent
Mental health
Rasch

Abstract
Mental health is a crucial aspect for adolescents, as those with poor mental health may experience conditions ranging from depression and anxiety disorders to suicidal tendencies. Identifying mental health issues is essential, necessitating an instrument to assess adolescent mental health. This study aims to adapt the Arabic Scale of Mental Health (ASMH) into Indonesian and evaluate its validity using the Rasch model. The adaptation process followed the Procedures and Guidelines for Translating Counselling Assessment as outlined by Lenz, Gómez Soler, Dell'Aquilla, and Uribe. The translated instrument was administered to 685 high school and vocational school students from Yogyakarta. The instrument was then analyzed using the Rasch model to determine its suitability for use. Results indicate that the adapted instrument is deemed appropriate for use based on statistical analysis using the Rasch model.

How to cite: Last Name, F., Last Name, E., & Last Name, A. J. (20xx). Manuscript title. *Jurnal Kajian Bimbingan dan Konseling, x*(x), xx–xx. doi: 10.17977/um001vxxixx20xxpxx-xx

1. Introduction

Mental health is a crucial aspect at every stage of life, from childhood through adolescence to adulthood. Mental health disorders are characterized by abnormalities in thoughts, emotions, behavior, and relationships with others (WHO, 2020). The prevalence of mental health problems or illnesses has been increasing in recent years, with the majority of mental health issues occurring between the ages of 15 and 24 (Basta et al., 2018; WHO, 2017). Studies on adolescent mental health problems indicate that a significant proportion of adolescents exhibit substantial symptoms of mental health conditions such as depression, generalized anxiety disorder, or suicidal tendencies (Oswalt et al., 2020).

According to international data, the peak age of onset for mental disorders is 14.5 years (Solmi et al., 2021). Recent prevalence findings in developed countries such as England show that approximately one in seven adolescents (14.4%) aged 11-19 years experiences at least one mental disorder (NHS Digital, 2018). Emotional disorders, including anxiety and depression, are the most common mental disorders experienced by young people, followed by behavioral disorders. Recent data indicates that adolescent mental health is deteriorating (NHS Digital, 2017). In Indonesia, mental health issues are increasingly prevalent. The rate of mental disorders in Indonesia continues to rise year by year. According to the Basic Health Research (Riset Kesehatan Dasar, 2018), the prevalence of acute mental illnesses such as schizophrenia in individuals over 15 years of age in 2018 was approximately 470,000 people. This means that seven out of 1000 households have a member with schizophrenia, and the prevalence of mental-emotional disorders such as bipolar disorder, depression, and anxiety disorders is around 19 million people.

Zaini and Komarudin (2022) explain that mental health instruments aid in the early detection of mental disorder symptoms. By identifying mental health problems early, individuals can receive necessary treatment and support before issues escalate. Trisnawati (2023) also explains that instruments enable the monitoring of mental health development over time. This allows health professionals to observe changes in mental health levels, the effectiveness of interventions, and the impact of lifestyle changes.

The provision of appropriate measurement instruments to assess adolescent mental health is essential. Existing mental health instruments in Indonesia include the mental health scale developed by Kristiyanto, Fitriani, and Sahayati (2022), which focuses on stress, anxiety, and depression aspects. Additionally, Aziz et al. (2021) developed an alternative measurement model for studying student mental health using the Mental Health Scale (SKM-12), which includes positive aspects (positive emotions, love, and life satisfaction) and negative aspects (anxiety, depression, and loss of control). Mental health screening was also conducted by Rizki et al. (2022) using the DAS-42 instrument, which measures depression, anxiety, and stress.

This research aims to adapt the Arabic Scale of Mental Health (ASMH) (Khalek, 2011) into Indonesian. Most mental health instruments developed by experts are based on disease models. However, low levels of psychological distress do not always indicate good mental health or high subjective well-being (Khalek, 2012). As instruments based on disease models already exist, there is a need to develop instruments that measure mental health based on positive indicators. The advantage of the ASMH instrument is its focus on positive indicators, namely self-confidence, satisfaction, meaningful life, enjoyment, optimism, and stability. The adapted instrument can provide more detailed and diverse information about the measured items and constructs, with Rasch analysis being particularly useful for identifying problematic items (David, 2019).

2. Method

This research falls under the category of cross-cultural adaptation, specifically adapting the Arabic Scale of Mental Health (ASMH) into Indonesian using the Procedures and Guidelines for Translating Counselling Assessment as outlined by Lenz, Gómez Soler, Dell'Aquilla, and Uribe (2017). This process consists of six stages: (a) forward translation; (b) translation review, decentering, and reconciliation of content; (c) back translation. The instrument was translated by language experts to ensure that the statement items can be easily understood by research subjects without altering the meaning of the original items. (d) Team review and further cultural adaptation: at this stage, the translation results were reviewed and evaluated by the research team in collaboration with mental health experts in Indonesia to ensure that the instrument items are culturally appropriate for Indonesia without altering their original meaning. (e) Pretesting and revision: the instrument was pilot tested with 684 high school and vocational school students in Yogyakarta. The final step was (f) team review and consensus forming. The validity and reliability of the Indonesian version of the ASMH instrument were assessed using the Rasch model.

3. Results

The instrument, which underwent a translation process from English to Indonesian, was tested on 684 students from four high schools and four vocational schools in the Special Region of Yogyakarta (DIY). Data were collected using Google Forms under the supervision of Guidance and Counseling teachers at each school. The obtained data were then analyzed using the Rasch model.

The instrument developed is an adaptation of the Arabic Scale of Mental Health, consisting of 50 statement items, 10 of which are filler items included to control response direction. This instrument was developed by prioritizing positive indicators of adolescent mental health rather than negative indicators. The mental health measurement in this instrument comprises six components: satisfaction, self-confidence, optimism, enjoyment, meaningful life, and stability. Each statement item in the instrument reveals positive aspects of the individual, thus not containing unfavorable items.

The first analysis employed was the unidimensionality test. This test is used to determine the extent to which the instrument's variance measures what it is supposed to measure. Based on the

analysis results, it was found that the raw variance value showed a value of 42.4%, falling into the "good" category. This "good" category means that the Indonesian version of ASMH tested can measure adolescent mental health without being influenced by other variables.

The second analysis was the rating scale test or scale accuracy test. The rating scale test is used to determine whether respondents can understand the differences in each alternative answer.

Table 1. Rating Scale Test

Category	Observed Average	Andrich Treshold
1	-0.99	None
2	0.00	-1.97
3	0.97	-0.09
4	2.16	2.07

Based on the analysis presented in Table 1, it is observed that the observed average and Andrich threshold values show an increasing trend. This indicates that respondents understand the differences between each alternative answer. The third analysis is a validity test used to determine whether the statement items in the instrument are acceptable or not. The criteria used refer to Sumintono and Widhiarso (2015), who state that an item is considered valid when: (1) The Outfit Mean Square (MNSQ) value, used to determine the consistency of answers with the difficulty level of the statement items, falls within the criteria of 0.5 < MNSQ < 1.5; (2) The Outfit Z Standard (ZSTD) value, used to determine how compatible the statement items are with the expected model, falls within the criteria of -2.0 < ZSTD < +2.0; (3) The Point Measure Correlation (Pt Measure Corr) value, used to describe how well the statement items perform - whether they are not understood, responded to differently, or confusing compared to other items - falls within the criteria of 0.4 < Pt Measure Corr < 0.85.

Table 2. Validity Results (Model Fit)

Item No.	Input MNSQ	Output MNSQ	Output ZSTD	Pt Measure Corr
36	3.64	4.50	9.90	-0.28
18	1.38	1.50	8.10	0.44
25	1.09	1.29	5.00	0.49
22	1.27	1.23	3.50	0.58
19	1.16	1.22	3.90	0.54
39	1.21	1.19	3.10	0.54
30	1.19	1.07	1.20	0.55
16	1.18	1.16	2.60	0.50
31	1.10	1.16	2.80	0.52
34	1.13	1.13	2.30	0.51
5	1.08	1.12	2.20	0.59
8	1.12	1.08	1.30	0.59
38	1.10	1.11	1.90	0.60
17	1.10	1.01	0.20	0.56
21	1.07	1.02	0.40	0.61
33	1.07	1.05	1.00	0.60
4	0.99	1.01	0.20	0.65
23	0.96	0.90	-1.70	0.68
6	0.93	0.87	-2.30	0.70
2	0.89	0.91	-1.70	0.63
1	0.80	0.90	-1.80	0.65
3	0.89	0.90	-1.90	0.60
26	0.89	0.89	-2.20	0.67
11	0.85	0.88	-2.30	0.59
27	0.88	0.87	-2.40	0.65
14	0.83	0.80	-3.80	0.73
28	0.80	0.83	-3.30	0.62
24	0.83	0.80	-3.80	0.72
32	0.82	0.83	-3.40	0.71
20	0.79	0.76	-4.70	0.73
7	0.79	0.77	-4.60	0.73

Item No.	Input MNSQ	Output MNSQ	Output ZSTD	Pt Measure Corr
13	0.78	0.78	-4.40	0.68
40	0.77	0.76	-4.60	0.65
12	0.77	0.77	-4.80	0.72
15	0.74	0.73	-5.50	0.73
35	0.72	0.73	-5.30	0.72
10	0.66	0.66	-7.30	0.75
9	0.66	0.65	-7.40	0.73
29	0.60	0.60	-8.60	0.73
37	0.60	0.60	-8.70	0.73

Table 2 demonstrates that item number 36, "I live life optimistically," is deemed unsuitable based on MNSQ, ZSTD, and Pt Measure Corr criteria. Consequently, this statement item is declared unfit and is considered eliminated. Based on the data analysis in Table 2, items 18, 25, 22, 19, 39, 30, 16, 31, 34, and 5 are declared unfit through the ZSTD criteria but are considered fit according to the outfit MNSQ and Pt Measure Corr criteria. However, the ZSTD value is said to be highly sensitive for large samples above 500, as there is a tendency for values above 3. Therefore, some experts recommend that this criterion not be used for large samples (Suminto & Widhiarso, 2015). Nevertheless, when considering the obtained infit, the above 10 items meet the requirements to be declared fit because the values obtained are greater than 1.46. Given these criteria, the above 10 items will be retained in the instrument model used.

The fourth analysis is a reliability test used to examine the consistency of the Indonesian version of the ASMH instrument. An instrument is considered reliable when it is used to measure a variable repeatedly and shows consistent results. In the RASCH Model, an instrument's reliability can be assessed through person reliability and item reliability.

Table 3. Instrument Reliability Test Results

	Separation	Reliability	Alpha Cronbach
Person	4.03	0.94	0.96
Item	9.04	0.99	

From the perspective of the item test, the Indonesian version of ASMH has a separation value of 9.04 with a reliability score of 0.99. This indicates that the instrument has functioned quite well as it has a diverse range of difficulty. When viewed from the subject's perspective, the separation value is 4.03 and the reliability is 0.94, meaning that the subjects used are sufficiently varied as they have a wide range of abilities.

4. Discussion

This research has produced a mental health instrument that is declared suitable for use in Indonesia based on statistical calculations performed. Of the 40 statement items in the Indonesian version of ASMH that were analyzed, item number 36 was declared unsuitable, resulting in 39 statement items and 10 filler items in the instrument. Khalek (2011) also explained that in developing an instrument, several aspects need to be considered, such as removing irrelevant, ambiguous, and repetitive statements, editing items to be concise and clear, and ensuring only one idea is targeted for each statement.

As a comparison, a product moment analysis using SPSS was conducted, resulting in all items used in the Indonesian version of ASMH being declared valid. However, based on the test results using the RASCH model, it was stated that there is one item, item number 36, which was declared invalid. The use of several validation methods in instrument development is important in the scale development procedure (Boateng et al., 2018)

Measuring mental health is important because it is estimated that one in five adolescents experience mental health disorders each year (Kieling et al., 2019). However, due to several obstacles, mental health problems in adolescents are underdiagnosed and inadequately addressed (Letimaki,

et al., 2021; Patel et al., 2018). Mental health needs attention and is important to identify as a preventive measure to avoid more serious impacts from not intervening to help adolescents overcome these problems (Yusuf, et al., 2021; Fazel et al., 2022). Previous studies have revealed a variety of mental health problems among adolescents, including anxiety, depression, severe emotional disturbance, attention deficit hyperactivity disorder (ADHD), and behaviors that indicate a tendency to self-harm (Hartanto et al., 2023). To provide appropriate interventions, a proper instrument is needed to measure the level of mental health in adolescents, as emphasized by the World Health Organization's comprehensive mental health action plan (WHO, 2020).

However, it should be noted that in identifying mental health, accuracy and caution are required, as the results of this identification will form the basis for providing interventions as a follow-up. In other words, the mental health identification process must use an instrument that is declared valid or can describe mental health conditions that correspond to the individual's current state (Yusuf, et al., 2021; Kessler et al., 2017). The accuracy of the instrument's construct can provide an accurate picture of an individual's mental health, thus enabling appropriate interventions regarding their mental health needs (Stansfeld, et al., 2016; Corrigan, 2000; Yusuf, et al., 2021).

The adaptation of the ASMH to the Indonesian context contributes to the growing number of culturally adapted mental health instruments, addressing the need for culturally sensitive assessment tools (Rathod et al., 2018). This adaptation process is also in line with He et al.'s (2017) recommendation for cross-cultural adaptation of instruments in health research.

5. Conclusion

This research has produced an adolescent mental health measurement tool adapted from the Arabic Scale of Mental Health (ASMH) and tested for its feasibility using the RASCH model. The instrument's suitability has been verified by language experts, instrument experts, and experts in mental health studies. The adapted instrument has also been pilot-tested on students and analyzed using the RASCH model. This mental health instrument, which has been adapted into Indonesian, can be utilized for research in the field of guidance and counseling with a focus on mental health studies to conduct further research as a measurement tool for adolescent mental health.

Author Contributions

All authors have equal contributions to the paper. All the authors have read and approved the final manuscript.

Funding

This research is funded by Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), the Directorate of Research, Technology and Community Service (DRTPM), and the Institute for Research and Community Service (LPPM) of Universitas Ahmad.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Acknowledgment

Gratitude is extended to the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), the Directorate of Research, Technology and Community Service (DRTPM), and the Institute for Research and Community Service (LPPM) of Universitas Ahmad Dahlan for the funding and support to carry out this research.

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