

Cross cultural adaptation of psychological well-being scale for Muhammadiyah and 'Aisyiyah university students: a validity and reliability study

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Abstract. Psychological well-being (PWB) plays a crucial role in supporting student mental health and academic success. Ryff's multidimensional model of PWB has been widely applied, but its psychometric validity remains inconsistent across cultures, with limited evidence from Indonesian higher education. This study validated the Psychological Well-Being Scale (PWBS) among Muhammadiyah and 'Aisyiyah Higher Education Institutions (PTMA) students. Using a cross-cultural adaptation procedure, the 42-item PWBS was administered to 341 students (aged 18–24). Construct validity was examined through confirmatory factor analysis (CFA). The initial CFA model showed poor fit ($\chi^2 = 3737.218$, RMSEA = 0.104, CFI = 0.841). After respecification, the final model demonstrated excellent fit ($\chi^2 = 236.793$, RMSEA = 0.035, CFI = 0.996, NNFI = 0.994). Of the 42 items, only 22 reached the validity criterion (factor loading ≥ 0.50). Reliability analysis confirmed strong internal consistency (AVE ≥ 0.50 , CR ≥ 0.70). The adapted 22-item PWBS is a valid and reliable instrument for assessing student psychological well-being in Indonesian higher education and can inform research, policy, and mental health interventions.

1 Introduction

Psychological well-being (PWB) is a key framework for understanding students' mental health and academic outcomes. During their university years, students encounter numerous developmental demands, such as rigorous coursework, social adjustment, and identity development that can contribute to stress and emotional fluctuations [1]. High levels of PWB help students regulate these challenges by enhancing responsibility, resilience, and potential maximization [2]. Conversely, low levels of PWB are associated with poor academic performance, impaired interpersonal relationships, and greater vulnerability to psychological disorders. This condition may further prevent students from becoming fully functioning individuals and hinder the fulfillment of their educational goals [3].

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Assessing student well-being in a structured manner requires the use of psychometrically sound instruments. Although Ryff's model of psychological well-being continues to be widely referenced, recent research highlights its multidimensional nature, which encompasses self-acceptance, purpose in life, positive interpersonal relationships, autonomy, environmental mastery, and personal growth [3]. The eudaimonic perspective highlights human functioning that goes beyond mere hedonic pleasure, emphasizing meaningful involvement and personal growth [4]. The Psychological Well-Being Scale (PWBS), derived from this framework, has been widely applied, with three versions available: long (84 items), medium (54 items), and short (18 items). Each version has been adapted into various cultural and linguistic contexts, yielding diverse psychometric results.

Cross-cultural adaptations of the PWBS highlight both its robustness and complexity. In Southeast Asia, the 18-item version across Thailand and Singapore demonstrated adequate reliability with α ranging from 0.87 to 0.93 [5]. A 23-item Thai version also showed strong psychometric properties when tested using partial least squares structural equation modelling. In the Indonesian context, findings have varied; one study reported that the 42-item scale demonstrated adequate reliability [6]. Yet, later research has consistently confirmed the validity of the revised 42-item versions [7, 8]. These variations illustrate the challenge that there is still no consensus on the most appropriate version of the PWBS or the contexts in which it is best applied.

The lack of consensus is particularly relevant for Indonesian higher education. Although several adaptations have been conducted in Indonesia, there remains no specific validation of the PWBS among students at Muhammadiyah and 'Aisyiyah Higher Education Institutions (Perguruan Tinggi Muhammadiyah dan 'Aisyiyah, PTMA). This absence is significant because student well-being is closely tied to institutional values, learning environments, and socio-religious contexts. Without a validated measurement tool for PTMA students, institutions risk implementing interventions that are misaligned with their students' actual psychological needs. Thus, a context-specific validation of the PWBS is both urgent and rational, serving not only scholarly purposes but also practical ones for policy and student support systems.

This study examines the construct validity of the PWBS among PTMA students using confirmatory factor analysis (CFA). Validating the scale in this context is important to test the fit of Ryff's six-dimensional model, provide evidence of its suitability as an assessment tool in Indonesian higher education, and support interventions to enhance student well-being. It is hypothesized that the PWBS will demonstrate acceptable validity and reliability, confirming its applicability for measuring psychological well-being among PTMA students.

2 Methods

2.1 Instrument adaptation procedure

Permission to adapt the PWBS was obtained directly from Carol D. Ryff via email. The adaptation process followed the five stages of cross-cultural instrument translation and validation proposed. First, two bilingual experts in psychology and education conducted forward translations, coordinated by the Language Development Center of Universitas 'Aisyiyah Yogyakarta. Second, the translations were synthesized into a single version through reconciliation of differences. Third, the draft was back-translated into the original language by independent experts to ensure semantic and conceptual equivalence. Fourth, an expert panel of seven doctoral-level faculty members specializing in psychology, methodology, and cultural studies reviewed the instrument. They assessed content validity and cultural appropriateness, with results quantified through Aiken's V index ranging from

0.821 to 1.000, surpassing the 0.75 threshold. Finally, pilot testing with 10 students confirmed clarity and comprehension of the items, after which the scale was administered to 341 Muhammadiyah and ‘Aisyiyah university students in Yogyakarta (165 male, 176 female, aged 18–24 years) during July–August 2025.

2.2 Participants

The final instrument was administered to 341 Muhammadiyah and ‘Aisyiyah university students in Yogyakarta during July to August 2025. The sample consisted of 165 male and 176 female students, aged 18–24 years.

2.3 Instruments

The scale employed to measure Muhammadiyah and ‘Aisyiyah university students psychological well-being was adapted from the Psychological Well-Being Scale developed by Ryff. PWBS consist of six dimensions are self-acceptance, purpose in life, positive relationships with others, autonomy, environmental mastery, and personal growth. PWBS comprises 42 items, with each dimension consisting of 7 items. The psychological well-being scale has 7 answer options; a score of 1 (if the respondent strongly disagrees) to a score of 7 (if the respondent strongly agrees).

2.4 Confirmatory factor analysis procedure

Confirmatory factor analysis (CFA) was then conducted to examine construct validity based on internal structure evidence. CFA was chosen over exploratory factor analysis (EFA) because the PWBS has been theoretically and empirically established. The CFA procedure followed recommendations that model fit testing (χ^2 , RMSEA, GFI, AGFI, CFI), model modification where necessary, and construct validity testing using factor loadings (≥ 0.50). Reliability was assessed through Average Variance Extracted ($AVE \geq 0.50$) and Composite Reliability ($CR \geq 0.60$), ensuring that the adapted instrument met both validity and reliability standards for use with Muhammadiyah and ‘Aisyiyah students.

3 Results and discussion

3.1 Result

The initial CFA model of the Psychological Well-Being Scale for Muhammadiyah–‘Aisyiyah students showed poor fit, with indices falling below recommended standards (e.g., RMSEA = 0.104, CFI = 0.841, GFI = 0.632). After modification, the model demonstrated excellent fit (RMSEA = 0.035, CFI = 0.996, GFI = 0.940), meeting all criteria. Thus, the modified model provides a valid representation of psychological well-being in this PTMA student’s population. The comparison of the CFA model fit between the initial and the modified psychological well-being scale for students is presented in the following table 1.

Table 1. Comparison of the first and final CFA model fit of muhammadiyah - ‘aisyiyah students’ psychological well-being

<i>Goodness of Fit Index</i>	<i>Cut-of Value</i>	First Model	Final Model	Conclusion
Chi Square (λ^2)	$< (\lambda^2) (\alpha;df)$	3737,218	236,793	Not Fit
CMIN/DF	$< 2,0$	4,648	1,417	Fit
Sig. Probability	$p \geq 0,05$	0,000	0,000	Not Fit
RMSEA	$\leq 0,08$	0,104	0,0351	Fit
GFI	$\geq 0,90$	0,632	0,940	Fit
AGFI	$\geq 0,90$	0,587	0,909	Fit
CFI	$\geq 0,90$	0,841	0,996	Fit
NNFI	$\geq 0,90$	0,830	0,994	Fit

Furthermore, the validity test of Muhammadiyah-‘Aisyiyah students’ psychological well-being scale was carried out by comparing the factor loading values with the minimum criterion of 0.5. If the factor loading value exceeds 0.5, the item is declared valid. The complete results of the factor loading analysis are presented in the following table 2.

Table 2. Validity of muhammadiyah and ‘aisyiyah students’ psychological well-being

No	Dimension	Item	Factor Loading	Conclusion
1	Autonomy	A1	0,94	Valid
		A2	0,96	Valid
		A3	0,33	Not Valid
		A4	0,19	Not Valid
		A5	0,22	Not Valid
		A6	0,77	Valid
		A7	0,41	Not Valid
2	Environmental Aastery	EM1	0,14	Not Valid
		EM2	0,96	Valid
		EM3	0,90	Valid
		EM4	0,27	Not Valid
		EM5	0,96	Valid
		EM6	0,92	Valid
		EM7	0,39	Not Valid
3	Personal Growth	PG1	0,96	Valid
		PG2	0,24	Not Valid
		PG3	0,99	Valid
		PG4	0,91	Valid
		PG5	0,28	Not Valid
		PG6	0,86	Valid
		PG7	0,28	Not Valid
4	Positive Relationships with Others	PR1	0,04	Not Valid
		PR2	0,11	Not Valid
		PR3	0,99	Valid
		PR4	0,94	Valid
		PR5	0,06	Not Valid
		PR6	0,89	Valid
		PR7	0,21	Not Valid
5	Purpose in Life	PL1	0,93	Valid
		PL2	0,95	Valid
		PL3	0,28	Not Valid
		PL4	0,20	Not Valid
		PL5	0,98	Valid

No	Dimension	Item	Factor Loading	Conclusion
6	Self-acceptance	PL6	0,09	Not Valid
		PL7	0,96	Valid
		SA1	0,99	Valid
		SA2	0,35	Not Valid
		SA3	0,32	Not Valid
		SA4	0,98	Valid
		SA5	0,03	Not Valid
		SA6	0,93	Valid
		SA7	0,91	Valid

Based on Table 2, the results of the validity test using the CFA method showed that the factor loading values of each item on the modified student psychological well-being scale ranged from 0.77 to 0.99. Thus, it can be concluded that the items on the modified psychological well-being scale are valid, as the factor loading values are above 0.5. From the total of 42 items tested, only 22 items met the validity criteria and were retained for further analysis.

Furthermore, The results of the reliability test of Muhammadiyah-‘Aisiyah students’ psychological well-being scale using the Average Variance Extracted (AVE) and Composite Reliability (CR) values can be seen in Table 3.

Table 3. Reliability of muhammadiyah and ‘aisiyah students’ psychological well being

Dimension	Average Variance Extracted (AVE)	Composite Reliability (CR)	Conclusion
Autonomy	0,799	0,922	Reliabel
Environmental Mastery	0,875	0,965	Reliabel
Personal Growth	0,867	0,963	Reliabel
Positive Relationships with Others	0,879	0,717	Reliabel
Purpose in Life	0,912	0,977	Reliabel
Self-acceptance	0,908	0,975	Reliabel

Based on the calculation results of CR and AVE in Table 3.16 above, it is known that all dimensions of the student psychological well-being scale have values greater than 0.7 for CR and 0.5 for AVE. Furthermore, the construct of the student psychological well-being scale has an AVE value of 0.88 and a CR value of 0.99, which means that the psychological well-being scale for students is composed of reliable dimensions and valid question items.

3.2 Discussion

The findings of this study provide strong evidence for the validity and reliability of the Psychological Well-Being Scale adapted for Muhammadiyah-‘Aisiyah university students. The comparison between the first and final CFA models demonstrates a substantial improvement in model fit. In the initial model, several indices failed to meet the acceptable cut-off criteria, such as a very high chi-square value ($\chi^2 = 3737.218$), CMIN/DF = 4.648, RMSEA = 0.104, and weak fit indices (GFI = 0.632; AGFI = 0.587; CFI = 0.841; NNFI = 0.830), indicating that the measurement model did not adequately represent the data (Hair et al., 2019). After respecification, the final CFA model showed significant improvement with $\chi^2 = 236.793$, CMIN/DF = 1.417, RMSEA = 0.035, and fit indices (GFI = 0.940; AGFI = 0.909; CFI = 0.996; NNFI = 0.994) that all exceeded recommended thresholds. These results

confirm that the final model achieved both statistical and practical adequacy in representing psychological well-being among students.

The validity test further showed that only 22 out of the initial items reached the minimum factor loading criterion of 0.50, while the rest were excluded. This refinement improved the psychometric quality of the instrument and ensured cultural appropriateness [9]. The retained items consistently represented the six theoretical dimensions of Ryff's psychological well-being model. Autonomy retained three valid items (A1, A2, A6), Environmental Mastery retained four (EM2, EM3, EM5, EM6), Personal Growth retained four (PG1, PG3, PG4, PG6), Positive Relationships with Others retained three (PR3, PR4, PR6), Purpose in Life retained four (PL1, PL2, PL5, PL7), and Self-Acceptance retained four (SA1, SA4, SA6, SA7). Notably, items with the highest loadings, such as PG3 (0.99), PR3 (0.99), and SA1 (0.99), demonstrated the strongest indicators of student well-being.

A closer look at the dimensions reveals that self-acceptance, personal growth, and environmental mastery emerged as the strongest aspects of psychological well-being, with most items demonstrating very high loadings (≥ 0.90). These findings indicate that students' well-being is largely anchored in their positive self-views, ability to adapt, and willingness to learn factors widely recognized for promoting resilience and psychological health [10, 11]. The strong performance of the purpose in life dimension further highlights how cultural and religious values contribute to students' sense of meaning and direction [12]. Although the positive-relations dimension showed high factor loadings, it contained fewer valid items, implying that social connectedness remains relevant but is experienced in a more selective manner. Autonomy emerged as the weakest domain, with only three items functioning well, which aligns with the Indonesian cultural context where interdependence and social cohesion often take precedence over personal independence [13-14].

The reliability analysis using AVE and CR further confirmed the robustness of the final 22-item scale. All dimensions exceeded the minimum AVE of 0.50 and CR of 0.70, indicating good internal consistency. Purpose in life showed the highest reliability (AVE = 0.912; CR = 0.977), followed by self-acceptance (AVE = 0.908; CR = 0.975) and environmental mastery (AVE = 0.875; CR = 0.965), reinforcing the role of these constructs as the most consistent pillars of student well-being [15]. Personal growth also exhibited high reliability (AVE = 0.867; CR = 0.963), while autonomy (AVE = 0.799; CR = 0.922) remained slightly lower but still strong. Interestingly, positive relationships with others (AVE = 0.879; CR = 0.717) showed strong convergence but weaker internal consistency, possibly reflecting the diverse ways students experience and value interpersonal relationships.

Overall, the final 22-item Psychological Well-Being Scale demonstrates strong construct validity and reliability across six dimensions, making it a robust and culturally relevant tool for assessing psychological well-being in Indonesian higher education. The findings suggest that while Ryff's universal model remains applicable, its expression among Muhammadiyah–'Aisiyiah students is shaped by cultural values, with greater emphasis on self-acceptance, personal growth, and purpose in life, rather than autonomy. This highlights the importance of adapting psychological measures to local contexts to ensure both theoretical relevance and practical utility.

Despite its strong psychometric performance, this study has several limitations that should be acknowledged. First, the validation was conducted exclusively with Muhammadiyah–'Aisiyiah university students, limiting the generalizability of the findings to broader or more diverse student populations. The refinement of the instrument to 22 items, while improving model fit, may also have narrowed the coverage of certain dimensions—especially autonomy and positive relationships—which retained fewer indicators. The factor structure appears influenced by the collectivistic cultural context, reducing comparability with Ryff's original model. Additionally, the use of self-report questionnaires introduces potential biases such as social desirability and subjective interpretation. The cross-sectional

design prevents conclusions about the scale's stability over time, and the substantial model respecification raises the possibility of overfitting to the current sample. Finally, the study did not assess measurement invariance across gender, faculties, or academic levels, nor did it include external validity indicators, which limits the ability to evaluate the broader applicability and predictive usefulness of the scale

4 Conclusion

The adapted Psychological Well-Being Scale for Muhammadiyah- 'Aisyiyah students proved valid and reliable after respecification, with 22 final items representing the construct in the Indonesian cultural context. Self-acceptance, purpose in life, and environmental mastery were the strongest indicators, while autonomy was the weakest, reflecting collectivist values. Overall, Ryff's six-dimensional model remains applicable, though influenced by cultural factors, and the scale can serve as a culturally sensitive tool for research, student development, and mental health interventions. Future research should test the scale across different universities, cultural groups, and demographic subpopulations to strengthen generalizability and assess measurement invariance. Longitudinal and mixed-methods designs are recommended to evaluate temporal stability, reduce self-report bias, and capture richer aspects of well-being. Additional work linking psychological well-being to academic, behavioral, and mental health outcomes will enhance the instrument's predictive utility. Overall, this study provides a culturally grounded and psychometrically sound tool for assessing well-being, offering a foundation for future investigations into student mental health in Indonesian higher education.

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