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Adapting the Psychological Well-Being Scale For Indonesian College Students: a Rasch-Based Validation

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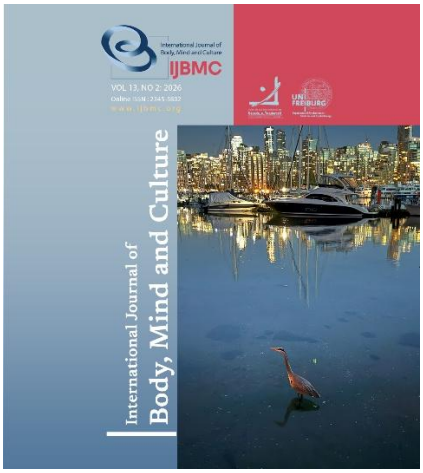

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ABSTRACT

Objective: This study aimed to adapt and validate Ryff's Psychological Well-Being Scale (PWBS) for Indonesian university students in the stage of emerging adulthood across diverse higher education contexts.

Methods and Materials: The original Ryff PWBS consists of 42 items. Following translation and contextual adaptation, Rasch analysis was conducted on all 42 items to evaluate item fit, reliability, unidimensionality, and potential group-related bias. Three items demonstrating consistent misfit were removed, resulting in a final Indonesian version comprising 39 items. The sample included 1.215 university students aged 18–25 years (63.4% female) from public and private higher education institutions across Java, Sumatra, Kalimantan, and Bali.

Findings: Most items demonstrated acceptable Infit and Outfit MNSQ values, with both person and item reliability reaching high levels. Three items were excluded due to persistent misfit. Unidimensionality analysis indicated that the raw variance explained by measures was 38.4%, slightly below the commonly cited 40% criterion, while residual eigenvalues remained below 15%. These results provide adequate support for a unidimensional structure for Rasch measurement purposes.

Conclusion: The study yields a 39 item Indonesian version of the PWBS adapted for use in the Indonesian higher education context, demonstrating reliable psychometric properties. This instrument is suitable for assessing psychological well-being among Indonesian university students, while acknowledging the theoretical multidimensional nature of the original scale.

Keywords: Adaptation, psychological well-being, Indonesian university students, Rasch analysis.

Introduction

College students face various new sources of stress that can affect their mental health, and campus life represents a significant developmental transition (Chao, 2012). In Indonesia, this transition is particularly salient, as students are navigating early adulthood while simultaneously confronting challenges such as relationship issues, financial instability, and academic pressure (Atmoko et al., 2025; Banfatin & Lao, 2024; Roslan et al., 2017; Zamroni et al., 2018). The pressure to achieve academic goals and the uncertainty of the future add to these stress factors. This can lead to psychological distress, which is often associated with a lack of psychological well-being (Bowman, 2010; Corey & Corey, 2016; Indreswari et al., 2024). Academic success and overall functioning depend on psychological well-being. A study conducted by (Bordbar et al., 2011) found that an increase in psychological well-being can result in positive emotions. This is relevant for achieving personal goals and overcoming life challenges.

According to (Ryff, 1989; Ryff & Keyes, 1995), psychological well-being is when a person is free from negative feelings, feels happy, has a positive attitude towards themselves and their past experiences, and strives to fully develop their potential. In general, the components of psychological well-being encourage autonomous individuals to achieve their life goals, to wisely choose or create environments that suit them, and to continuously develop their potential and self-improvement (Bali-Mahomed et al.). The Psychological Well-Being Scale examines six important aspects: self-acceptance, purpose in life, positive relationships, autonomy, environmental mastery, and personal growth (Ryff, 1989). The PWB scale shows strong psychometric properties in various populations (Alias et al., 2020). However, existing studies on the application of the PWB scale among Indonesian college students remain methodologically diverse, particularly in terms of item composition, analytical approaches, and sample characteristics.

Efforts to adapt the PWBS for specific populations become crucial, considering the influence of social and cultural contexts on the meaning of psychological well-being. One fundamental difference lies in how individualist cultures (such as in Western countries) and collectivist cultures (as in many Asian countries) understand the concept of psychological well-being (Christopher, 1999). Therefore, contextual adaptation of the scale is important to enhance its relevance for Indonesian college students, particularly in capturing challenges commonly encountered during early adulthood. This is expected to enhance the relevance of psychological well-being assessment (Roslan et al., 2017). In addition, the focus on adapting the PWBS instrument for students, specifically those in early adulthood, is due to the fact that this age range (18 to 25 years) represents a transitional phase for individuals (Arnett, 2000). This transition process is critical, as failure in this phase can lead to problems. If this process is unsuccessful, it can result in a loss of purpose and meaning in life, feelings of helplessness, and even the inability or failure to form positive intimate relationships.

Improving student mental health has not yet become a primary focus in Indonesia, especially in the context of education (Arisanti et al., 2024; Widodo et al., 2024). Nonetheless, mental health issues, particularly psychological well-being, have a significant impact on student learning success and development. Therefore, examining psychological well-being within educational contexts is essential, and such efforts require measurement instruments that are both valid and reliable to accurately assess students' mental health conditions.

Although the PWBS has demonstrated strong psychometric properties across diverse populations, existing Indonesian adaptations vary in terms of item composition, analytical approaches, and sample characteristics. These variations highlight the need for further methodological refinement, particularly at the item level, to ensure measurement precision within the Indonesian higher education context. In other countries, the PWBS has been widely used and usually validated using Confirmatory Factor Analysis and Exploratory Factor Analysis (Sirigatti et al.) (Borualogo & Casas, 2022; Calderon Jr et al., 2020; Peng, 2024; Sirigatti et al., 2009). These approaches remain essential for examining latent factor structures and testing theoretical models. However, factor-analytic methods primarily operate at the scale level and offer relatively limited insight into individual item functioning, response consistency, and measurement precision across respondents. In this context, Rasch analysis, as

part of the item response theory framework, provides a complementary item-level perspective by estimating item difficulty, person ability, and model fit on a common measurement scale (Linacre, 2022). Through this approach, researchers can more rigorously evaluate measurement quality and ensure that items function consistently across varying levels of respondent ability (Sumintono & Widhiarso, 2014).

Ryff's psychological well-being model is theoretically conceptualized as a multidimensional construct comprising six correlated dimensions. Nevertheless, empirical studies have reported mixed findings regarding its dimensional structure, including support for higher-order or dominant general factors. In the present study, Rasch analysis was applied using a unidimensional measurement framework to evaluate item functioning and scale performance, while the six theoretical dimensions were retained conceptually. This approach allows for rigorous measurement evaluation without negating the underlying theoretical multidimensionality of the construct.

The present study aimed to adapt and evaluate the Psychological Well-Being Scale for use among Indonesian college students in the stage of emerging adulthood. Rasch analysis was employed as a complementary measurement approach to examine item functioning, scale reliability, and measurement precision at the item level. By focusing on the psychometric performance of individual items, this study seeks to provide a more robust understanding of the measurement properties of the PWBS in the Indonesian higher education context. The findings are expected to support future research and assessment efforts related to psychological well-being among university students.

Methods and Materials

Study Design

The present study adapted the PWBS, developed by (Ryff & Keyes, 1995), for use in the Indonesian university context. The original PWBS consists of 42 items representing six theoretical dimensions: self-acceptance, personal growth, environmental mastery, purpose in life, positive relations with others, and autonomy, with seven items for each dimension. Following the translation and adaptation process, all 42 items were retained and subjected to Rasch analysis. Based on item fit evaluation, three items that demonstrated consistent misfit were removed, resulting in a final validated Indonesian version consisting of 39 items. This quality makes it suitable for assessing students' well-being in different contexts (Linacre et al., 1994; Sumintono & Widhiarso, 2014).

Table 1

*Mapping of PWBS Items to Theoritical Dimensions Ryff Model (*Ryff & Keyes, 1995*)*

Item Numbers	Theoritical Dimension
Autonomy	Q1, Q10, Q13, Q21, Q24, Q35, Q41
Environmental Mastery	Q3, Q12, Q15, Q23, Q26, Q36, Q42
Personal Growth	Q2, Q5, Q14, Q17, Q25, Q28, Q37
Positive Relations with Others	Q4, Q7, Q16, Q18, Q27, Q30, Q38
Purpose in Life	Q6, Q9, Q20, Q29, Q32, Q33, Q39

Each item was mapped to its corresponding theoretical dimension based on Ryff's original six-dimensional model. This item–dimension mapping was used to support transparent interpretation of item functioning across dimensions, while Rasch analysis was conducted using a unidimensional measurement framework.

This study involved 1,215 Indonesian university students aged between 18 and 25 years. Data were collected online using Google Forms, and participants were recruited through convenience sampling via lecturers' networks, student groups, and social media platforms. The sample size meets commonly recommended criteria for stable Rasch estimation and item calibration (Linacre et al., 1994; Sumintono & Widhiarso, 2014). Participants were drawn from various public and private higher education institutions across major regions in Indonesia, including Java, Sumatra, Bali, and Kalimantan. Based on demographic data, 63.4% of the respondents were female and 36.6% were

male, and participants represented diverse fields of study such as social sciences, education, engineering, health sciences, and natural sciences. Prior to analysis, responses were screened for eligibility. Only complete questionnaires from participants aged 18–25 years were included. Incomplete responses, duplicate entries, and cases not meeting the age criteria were excluded, yielding a final analyzable sample of 1,215 respondents.

The adaptation process followed procedures proposed by (Beaton et al., 2000), which consist of translation, synthesis, back-translation, expert evaluation, and data collection. These steps aimed to ensure linguistic accuracy and cultural validity of the instrument (Akhtar & Sumintono, 2023; Matud et al., 2022; Utari & Lestari, 2023). Prior to Rasch analysis, the adapted instrument retained the original 42-item format recommended for measuring psychological well-being (Ryff & Singer, 2008). Rasch analysis provides linear measurement by transforming ordinal responses into equal-interval estimates, thereby enhancing measurement precision(Aminah et al., 2024).

The next stage involved cognitive debriefing with six university students from diverse backgrounds in terms of gender, academic semester, and field of study. Participants were asked to read each item and explain its meaning in their own words. The cognitive debriefing results indicated that several expressions, such as *"controlling my environment"* and *"fully developing my personal potential,"* were interpreted inconsistently across participants. Based on this feedback, the expert committee made minor wording adjustments to improve clarity and reduce ambiguity, while preserving the theoretical meaning of the items.

The revised version resulting from the cognitive debriefing process was subsequently evaluated through a pilot test involving 30 university students to assess linguistic clarity, readability, and potential interpretive bias. The pilot test results showed that three items required minor editorial revisions due to lengthy or confusing sentence structures. For example, several respondents indicated that an item related to *"continuous personal development"* had an ineffective sentence structure and was therefore revised to be more concise. Two additional items underwent phrase simplification to better align with respondents' linguistic habits. No items were deleted at this stage.

Using WINSTEPS software, the Rasch model was employed to validate the psychometric properties of the scale (Linacre et al., 2002). All Rasch analyses were initially conducted on the complete 42-item scale, and item deletion decisions were made solely based on empirical fit statistics derived from the Rasch model. In this study, the Rasch model was used to evaluate item fit, unidimensionality, and differential item functioning to ensure measurement reliability and validity across groups (Ardi et al., 2019; Saputra et al., 2023; Setiyowati et al., 2022). Differential item functioning (DIF) analysis was conducted as an exploratory procedure to examine potential item bias across gender and type of institution (public vs. private). DIF was evaluated using differences in item difficulty estimates between groups, following commonly used Rasch-based criteria. Items were considered to display meaningful DIF only if differences exceeded recommended thresholds. No items met the criteria for substantial DIF.

The present study adheres to the ethical standards and ensures the confidentiality of all participants. This study was approved by the Research and Community Service Institute of Universitas Negeri Malang (Institution Review Board number: 8.1.7/UN32.14/PB/2026). All participants provided informed consent and agreed to the use of their data for research purposes in accordance with ethical guidelines.

Findings and Results

Translation of the PWBS

The adaptation stage in this study followed the steps recommended by (Beaton et al., 2000) to ensure conceptual equivalence and cultural validity. Before initiating the adaptation process, the researchers obtained permission by sending an email to the developer of the PWBS, Carrol D. Ryff (cryff@wisc.edu). After receiving permission, the first step carried out was the translation of the PWBS into Indonesian by professional translators working independently (forward translation). Next, a synthesis process was conducted to integrate the perspectives of both translators. Following this, a back-translation process was conducted, in which the Indonesian version of the text was translated back into English by different translators to ensure that the original meaning and

nuances of the instrument were preserved (Klarare et al., 2021; Matud et al., 2022).

Once the back-translation process was completed, a panel discussion was held to review the translated version. This panel consisted of translators, linguists, and experts in guidance and counseling who understood the cultural context of the target population. The purpose of this discussion was to align interpretations and adjust terminology so that it would be culturally acceptable to Indonesian society. The final stage in this adaptation process was a field trial using the translated instrument on a small sample representative of the target population. In this case, the sample consisted of 30 respondents drawn from the relevant population. This initial testing aimed to evaluate whether each item in the translated instrument could be easily understood by respondents and whether the overall instrument functioned as intended in measuring the construct. Thus, the data obtained helped ensure that the Indonesian version of the PWBS functioned effectively and maintained its reliability and validity (Anwar et al., 2023).

Summary Statistics of the Rasch Measurement Model

Evaluation of the instrument using the Rasch measurement model was conducted by examining item fit, person fit, and measurement reliability as distinct components. Item fit and person fit statistics were used to assess the extent to which observed response patterns conformed to the expectations of the Rasch model. Item fit indicates how well individual items functioned within the measurement model, whereas person fit reflects the consistency of respondents' response patterns relative to their estimated ability levels.

Measurement reliability in the Rasch model was not inferred from fit indices, but from separation indices and variance estimates. Person reliability and item reliability were evaluated using person separation and item separation indices, which indicate the instrument's ability to distinguish between different levels of respondent ability and item difficulty. Higher separation values reflect greater measurement precision and reliability (Linacre et al., 2002).

Although the dataset comprised responses from 1,215 participants, Rasch estimation using WINSTEPS resulted in 1,199 measurable persons. Sixteen respondents were automatically excluded by the software due to extreme response patterns that prevented stable person measure estimation. This exclusion reflects a standard Rasch procedure and did not affect item calibration or overall measurement reliability.

Table 2

Summary Statistics Of Persons And Items (I = 42, N = 1199)

	Reliability	Separation Index	Mean	Cronbach's Alpha	Variance explained by measure **)
Person	0.86	2.52	0.91	0.85	38.4%
Item	1.00	20.73	0.00		

Based on Table 1, it was found that the consistency of respondent answers was categorized as "good," with a person reliability value of 0.86. Meanwhile, the item reliability of the PWBS was 1.00, which indicates a "very good" level (Sumintono & Widhiarso, 2014). This suggests a strong alignment between respondents, who provided consistent answers, and items of high quality within the instrument. The interaction between person and item overall can be seen from the Cronbach's alpha for person raw scores, which was 0.85, indicating a good level. Thus, the PWBS has been proven to be valid and reliable for measuring psychological well-being.

Unidimensionality and Local Dependence

Unidimensionality was examined using Principal Component Analysis (PCA) of Rasch residuals to evaluate the extent to which the variance in the instrument was explained by the primary Rasch dimension (Rangka et al., 2018). The results showed that the Raw Variance Explained by Measures was 38.4%, which is slightly below the commonly cited 40% criterion. However, this value remains interpretable when Rasch analysis is applied to evaluate a general construct underlying a theoretically multidimensional instrument.

Further examination of the residual structure indicated that the first residual contrast accounted for 11.4% of unexplained variance, while subsequent contrasts each explained substantially smaller proportions of variance (ranging from 2.1% to 2.6%). None of the residual contrasts exceeded the 15% threshold, suggesting the absence of a dominant secondary dimension beyond the primary Rasch dimension (Rangka et al., 2018). These findings support the use of a unidimensional Rasch model for evaluating item functioning within the general construct of psychological well-being.

Item Functioning, Fit Indexes, and Measurement Precision

The performance of the PWBS rating scale based on threshold category analysis is another important aspect emphasized in this study. This evaluation aimed to determine whether the response options provided in the PWBS functioned appropriately.

Table 3

Item Thresholds and Fit Indices for Response Format (I = 42, N = 1199)

Category	Andrich Threshold	Observed Average	Observed Count (%)	Infit MNSQ	Outfit MNSQ
Strongly Disagree	NONE	-.25	5	1.00	1.26
Disagree	-.34	.14	7	1.19	1.41
Neutral	-.88	.28	19	.82	.80
Agree	.00	.88	35	.91	.98
Strongly Agree	1.22	1.64	34	1.03	1.02

Table 3 shows that the response options used in the PWBS were appropriate. In other words, each respondent was able to recognize and accurately understand the response alternatives offered. The observed average values and Andrich Threshold values, which increase monotonically from the lowest logit value to the highest logit value, support this finding.

Respondents and Item Validity

Table 5 shows the statistical measures for the PWBS, including item measures, item fit indices (infit and outfit MNSQ), measurement precision (Standard Error Model), and the item's ability to discriminate (Point Measure Correlation).

Table 4

Summary Of Item Measures (I = 42, N = 1199)

Item	Total Score	Measure	Model S.E.	Infit MNSQ	Infit ZSTD	Outfit MNSQ	Outfit ZSTD	Point Measure Correction	Interpretation
9	3248	1.27	.03	.99	-.30	1.03	.83	.42	Valid Item
14	3496	1.09	.03	1.01	.45	1.04	1.14	.45	Valid Item
26	3524	1.07	.03	.70	-9.90	.71	-8.89	.50	Valid Item
39	3560	1.05	.03	.86	-4.18	.87	-3.68	.45	Valid Item
32	3827	.86	.03	.79	-6.44	.80	-5.77	.49	Valid Item
42	3894	.81	.03	.83	-4.99	.92	-2.25	.42	Valid Item
24	3939	.77	.03	.83	-4.78	.83	-4/47	.44	Valid Item
28	3953	.76	.03	.81	-5.50	.81	-5.27	.46	Valid Item
16	3959	.76	.03	.98	-.67	1.00	.03	.48	Valid Item
33	3995	.73	.03	.81	-5.56	.80	-5.34	.45	Valid Item
15	4006	.72	.03	.94	-1.67	.95	-1.34	.47	Valid Item
18	4010	.72	.03	.87	-3.75	.86	-3.73	.52	Valid Item
30	4015	.72	.03	1.06	1.56	1.05	1.34	.49	Valid Item
12	4183	.58	.03	.79	-5.82	.82	-4.55	.46	Valid Item
25	4269	.51	.03	.96	-.89	.94	-1.39	.44	Valid Item
8	4281	.50	.03	.97	-.72	.99	-.17	.40	Valid Item

31	4504	.30	.03	1.10	2.23	1.08	1.68	.32	Valid Item
41	4510	.30	.03	1.01	.13	1.06	1.32	.36	Valid Item
35	4511	.29	.03	.95	-1.28	.93	-1.53	.36	Valid Item
10	4570	.24	.03	1.18	3.87	1.14	3.00	.39	Valid Item
19	4589	.22	.03	.88	-2.73	.83	-3.91	.46	Valid Item
13	4744	.06	.03	1.22	4.62	1.17	3.45	.32	Valid Item
34	4750	.05	.03	.96	-.91	.92	-1.63	.40	Valid Item
4	4782	.02	.03	.89	-2.53	.91	-2.02	.28	Valid Item
11	4937	-.17	.04	1.00	-.02	.97	-.50	.29	Valid Item
27	4959	-.20	.04	1.16	3.30	1.19	3.59	.24	Valid Item
7	5028	-.29	.04	.99	-.11	.97	-.67	.31	Valid Item
36	5035	-.30	.04	1.05	1.05	1.10	1.87	.24	Valid Item
29	5076	-.35	.04	1.56	9.84	1.52	8.93	.24	Invalid item
37	5081	-.36	.04	1.15	2.89	1.12	2.29	.23	Valid Item
1	5103	-.39	.04	1.41	7.53	1.65	9.90	.11	Invalid item
40	5173	-.50	.04	1.15	2.95	1.10	1.82	.27	Valid Item
22	5183	-.51	.04	1.21	3.95	1.16	3.00	.23	Valid Item
21	5242	-.61	.04	1.34	6.20	1.24	4.24	.31	Valid Item
23	5256	-.63	.04	1.13	2.51	1.07	1.23	.27	Valid Item
38	5352	-.81	.04	1.34	6.04	1.27	4.50	.21	Valid Item
3	5466	-1.05	.05	1.11	2.00	1.07	1.15	.24	Valid Item
20	5523	-1.18	.05	1.43	7.13	1.33	4.87	.21	Valid Item
17	5569	-1.30	.05	1.22	3.73	1.11	1.69	.24	Valid Item
5	5634	-1.49	.06	1.21	3.34	1.23	3.14	.15	Valid Item
6	5647	-1.53	.06	1.18	2.93	1.92	9.90	.15	Invalid item
2	5878	-2.72	.09	1.15	1.51	1.24	2.07	.08	Valid Item

Table 4 shows that out of a total of 42 items, three items were found to be misfitting because they had Outfit MNSQ values greater than 1.5 (Sumintono & Widhiarso, 2014). Specifically, item 1, item 6, and item 29 showed Outfit MNSQ values of 1.65, 1.92, and 1.52 respectively, and were therefore considered invalid. In addition to the three misfitting items, several items exhibited marginal fit indices that remained within acceptable thresholds. These items were reviewed at the conceptual level and were considered to reflect culturally normative expressions of psychological well-being among Indonesian university students, particularly in domains related to social responsibility, goal orientation, and relational harmony. Given their theoretical relevance and absence of consistent empirical misfit, these items were retained to preserve content coverage and construct representation.

In addition to item fit evaluation, PWBS item measures were examined to identify items with the highest and lowest levels of difficulty. The identification of the most difficult and easiest items was based on the total measure values. The item measure values ranged from the lowest to the highest level of difficulty. The distribution and ordering of the items are shown in Table 4, from the easiest to the most difficult. Based on Table 4, it was found that Item 9 was the most difficult for all respondents to agree with (total measure 1.29). On the other hand, Item 2 was the item most agreed upon by all respondents (total measure -2.72).

Furthermore, point–measure correlations (PTMEA Corr) were examined to assess the consistency of each item with the Rasch model expectations. Overall item fit evaluation indicated that misfitting items were not concentrated within a single theoretical dimension. Instead, the three misfitting items originated from different subscales (autonomy and purpose in life), suggesting that item misfit was not attributable to systematic weaknesses within a specific theoretical dimension. Exploratory DIF analysis across gender and type of institution did not indicate substantial item bias; therefore, detailed DIF tables are not presented.

Person-level Measurement and Wright Map

Person-level measurement was conducted to assess psychological well-being among the measurable respondents. The following table displays the five highest and five lowest person measures based on 1,195 measurable persons in the final 39-item Rasch model. Although the final dataset consisted of responses from 1,215 participants, Rasch estimation for the 39-item model yielded 1,195 measurable persons. Twenty respondents were excluded due to extreme response patterns that prevented stable person measure estimation, which is a standard procedure in Rasch analysis and did not affect item calibration or overall measurement quality.

Table 5

Summary of Person Measures (I = 39, N = 1195)

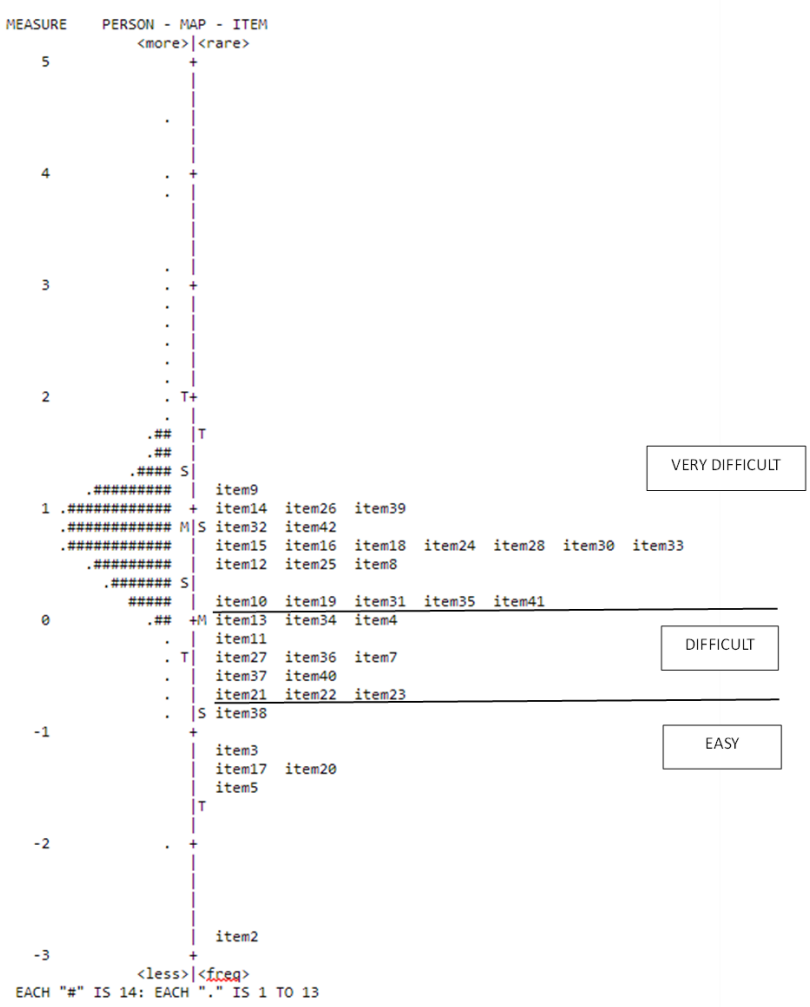
Person Entry No.	Total Score	Measure
296	193	4.49
1118	193	4.49
423	192	4.07
965	191	3.77
1097	191	3.77
- - -		
- - -		
- - -		
- - -		
- - -		
266	106	-.33
494	98	-.54
365	95	-.61
80	90	-.74
1019	56	-2.78

Table 5 presents the five highest and five lowest person measures. Respondents 296 and 1118 demonstrated the highest levels of psychological well-being (4.49 logits), whereas respondent 1019 showed the lowest person measure (–2.78 logits). Several respondents at the lower end of the continuum exhibited elevated Outfit MNSQ values, indicating atypical response patterns. These cases were reviewed as part of Rasch quality control; however, no respondents were excluded, as the primary focus of this study was instrument validation rather than person screening, and item calibration remained stable.

To further examine the relationship between respondent ability and item difficulty, a Wright Map was employed. In the Wright Map generated by WINSTEPS, person abilities and item difficulties are displayed along the same logit scale, allowing direct assessment of measurement targeting. As shown in Figure 1, item difficulties largely overlap with the central range of respondent abilities, indicating adequate targeting for most participants. A higher concentration of items is observed in the moderate to higher difficulty range, while fewer items are located at the extreme lower and upper ends of the continuum. This pattern suggests reduced precision for respondents with very low or very high levels of psychological well-being. Nevertheless, no substantial measurement gaps were observed, and the overall distribution supports the adequacy of the 39-item PWBS for assessing general psychological well-being among Indonesian university students.

Figure 1

Wright Map for PWBS (I = 39, N = 1195). This figure was generated using Winsteps software version 5.1.5.1. based on the Rasch model, and has been adjusted to align with the objectives of this study.



The Wright Map illustrates the joint distribution of person abilities and item difficulties along a common logit scale. Most respondents were concentrated in the mid-range of the latent psychological well-being continuum, indicating moderate to moderately high well-being levels among Indonesian university students. Item difficulties were primarily distributed within the central range of person abilities, demonstrating adequate measurement targeting. A higher concentration of items was observed at the moderate to higher difficulty levels, while fewer items were located at the lower end of the continuum. Overall, the alignment between item difficulty and respondent ability suggests that the scale adequately captures variation in psychological well-being within the sampled population.

Discussion and Conclusion

The statistical results provide psychometric evidence supporting the reliability and measurement quality of the Indonesian version of the Psychological Well-Being Scale (PWBS). The Cronbach's alpha value of 0.85 indicates good internal consistency, suggesting that the PWBS can effectively measure psychological well-being among Indonesian university students. This high internal consistency implies that the items in the PWBS are substantially related to one another, thus ensuring measurement reliability. Additionally, the item reliability value of 1.00 shows that the quality of the scale's items is

excellent, further reinforcing the PWBS as a valid tool in assessing psychological well-being. However, the results of the item validity test showed that three items did not meet the expected criteria. These three items had MNSQ Outfit values greater than 1.5, indicating that they did not align with the expected measurement model. These items were then removed, leaving 39 items that reflect the six dimensions of psychological well-being: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth.

The removal of these three items improves the focus and accuracy of the scale in measuring dimensions of psychological well-being relevant to Indonesian university students without compromising the theoretical integrity of the scale as defined by (Ryff & Keyes, 1995) The three invalid items were item 1 from the autonomy indicator, item 6 and item 29 from the purpose in life indicator. Based on these statements, the mismatch between respondent data and the Rasch model could stem from ambiguous phrasing, lack of cultural relevance, or differences in interpretation among respondents (Arisanti et al., 2024). Item 1 ("I am not afraid to express my opinion, even if it contradicts the opinion of most people") may be subject to interpretive ambiguity, particularly regarding the phrase "not afraid," which can be understood in multiple ways. In the absence of qualitative data or cognitive interview evidence in the present study, it is not possible to determine how respondents actually interpreted this item. However, based on previous literature, the phrase may be interpreted either as assertiveness in expressing personal views or as resistance to social conformity. Such interpretive variability could contribute to inconsistent response patterns and misalignment with the Rasch measurement model. From a theoretical perspective, prior studies have noted that collectivist cultural contexts, including Indonesia, tend to emphasize social harmony and conflict avoidance (Puspitasari & MAS'UD, 2018). Within this context, expressing opinions that contradict the majority may be perceived as socially inappropriate rather than as an indicator of autonomy. As a result, responses to this item may reflect culturally shaped norms rather than the intended psychological construct, potentially contributing to its misfit in the Rasch analysis.

Meanwhile, Item 6 ("I enjoy making plans for the future and working to make them a reality") may also be subject to interpretive variability. In the absence of qualitative evidence or cognitive interview data in the present study, it cannot be determined how respondents actually understood the phrase "making plans for the future." Based on prior literature, this phrase may be interpreted in different ways, such as referring to long-term goal commitment, professional or personal planning, or more immediate and short-term intentions. Such variability in interpretation may contribute to heterogeneous response patterns and reduced conformity with the expectations of the Rasch measurement model. From a theoretical perspective, previous studies have suggested that cultural contexts emphasizing spiritual orientation or fatalistic beliefs may influence how individuals perceive future planning and personal agency (Christopher, 1999; Christopher et al., 2000; Maercker et al., 2019). Within this framework, responses to this item may reflect broader belief systems rather than a uniform construct of purpose in life as intended in the original PWBS, which could partially explain its misfit in the Rasch analysis.

In addition to items 1 and 6, Item 29 ("Some people wander aimlessly through life, but I am not one of them") also demonstrated consistent misfit, with an Outfit MNSQ exceeding the pre-specified threshold (> 1.50). Therefore, this item was classified as misfitting and removed from the final scale. This item involves a strong evaluative and comparative judgment regarding life direction and purpose. In the absence of qualitative data or cognitive interview findings, it is not possible to determine how respondents interpreted this statement. However, based on its wording, the item may elicit socially comparative or normative responses rather than a purely self-reflective assessment of purpose in life. Such interpretive variability could lead to heterogeneous response patterns that are not well aligned with the expectations of the Rasch measurement model, thereby contributing to the observed item misfit.

Furthermore, this study shows the validity of Likert scale use in PWBS. In social science, Likert scale is deemed effective because it provides easy response structure for participants (Boateng et al., 2018). The result shows that respondents can distinguish their responses, indicating the effectiveness of the Likert scale in depicting students' perception of well-being. This

scale allows participants to explore various aspects of their perceived well-being and yields more accurate data. Psychological well-being is defined as individuals' positive functional capacity in daily life that encourages self-actualization and maturity (Ryff & Singer, 2008).

Higher psychological well-being has been reported to correlate with higher academic achievement. Previous studies show that students with higher psychological well-being are more resilient in facing academic challenges, exhibit higher motivation, and shows lower dropout rates when compared to those with lower level of psychological well-being (Lomboan et al., 2025; Wells, 2010). Students with lower psychological well-being level are at risk of developing dysfunctional beliefs that adversely affects their health and, in turn, their academic performance.

Cultural aspects should be taken into account when evaluating one's psychological well-being because it can be defined differently in each culture (Christopher et al., 2000; Diener, 2009). Regarding this aspect, Indonesian version of PWBS is relevant and applicable in Indonesian educational context where culture plays significant roles in shaping students' perception of well-being. Previous works on the adaptation of PWBS in certain cultural contexts have been reported (Matud et al., 2022; Roslan et al., 2017; Sirigatti et al., 2009). A study by (Sirigatti et al., 2009) evaluated the factor validity of PWBS by involving Italian adolescents. Meanwhile, (Matud et al., 2022) adapted this scale into 38-item scale for Spanish population. Further, (Roslan et al., 2017) used 42-item version in Malaysian context. Previous studies highlight the importance of the cultural and linguistic adaptation when exploring psychological well-being of certain population (Christopher et al., 2000).

Overall, the application of the Rasch model in this study provides evidence regarding item-level functioning and the measurement quality of the adapted PWBS in the Indonesian higher education context. After the removal of three misfitting items (Items 1, 6, and 29), the remaining 39 items demonstrated acceptable fit statistics and stable calibration, indicating that the scale functions adequately for assessing a general construct of psychological well-being at the measurement level.

The unidimensional Rasch analysis yielded borderline support, with the raw variance explained by measures reaching 38.4%. Although this value is slightly below the commonly cited criterion, residual analyses did not indicate the presence of a dominant secondary dimension. It is important to note that the unidimensional Rasch model was applied in this study for measurement purposes rather than for testing the theoretical six-factor structure of the PWBS. The multidimensional nature of psychological well-being, as originally proposed by Ryff, remains theoretically relevant and was not the primary focus of the present analysis.

From a theoretical perspective, Ryff conceptualizes psychological well-being as a multidimensional yet integrated construct reflecting optimal psychological functioning and self-realization across life domains (Ryff & Singer, 2008). Although its dimensions are theoretically distinguishable, they are inherently interrelated and jointly represent overall psychological functioning. From a measurement perspective, this conceptual interconnectedness allows the construct to be examined at a general level when the analytic focus is on item functioning and scale precision rather than on testing factorial structure. Accordingly, borderline support for unidimensionality in the present Rasch analysis does not contradict the theoretical multidimensionality of the PWBS.

The findings should be interpreted with caution. This study did not include qualitative methods to explore item interpretation, nor did it examine subgroup differences or external outcome variables such as academic performance. Consequently, cultural interpretations of item misfit and broader implications for academic or developmental outcomes remain exploratory. Future research is encouraged to employ multidimensional Rasch modeling, conduct cognitive interviews, and examine differential item functioning across demographic and cultural subgroups to further refine the Indonesian version of the PWBS.

Implication

The validated Indonesian version of the Psychological Well-Being Scale (PWBS) provides a standardized measurement tool that can support assessment and evaluation efforts in higher education settings. Accurate measurement of students' psychological well-being is essential for informing institutional policies, student support services, and preventive initiatives aimed at fostering students' emotional and social development. Previous studies have emphasized the importance of addressing psychosocial functioning within the cultural

and institutional context of Indonesian universities (Hanurawan et al., 2018). In addition, emerging challenges in contemporary learning environments highlight the growing need for reliable assessment instruments to identify students' psychological well-being before any preventive or supportive strategies are designed (Muslihati et al., 2024). In this regard, the adapted PWBS may serve as a valuable tool for needs assessment, program evaluation, and future research on student well-being in Indonesian higher education.

Limitations and Suggestions for Future Research

Several limitations of this study should be acknowledged. First, data were collected through online convenience sampling, which may introduce self-selection bias and limit the generalizability of the findings to the broader population of Indonesian university students. Second, although the sample size was large, the study did not conduct subgroup analyses (e.g., by gender, region, or type of institution), which may mask differential item functioning across specific groups. Third, the present study focused on Rasch-based item-level measurement and did not employ qualitative methods such as cognitive interviews to directly explore how respondents interpreted the items. As a result, interpretations regarding item misfit remain exploratory. Finally, while the PWBS is theoretically multidimensional, the use of a unidimensional Rasch model in this study was intended for measurement purposes rather than for testing the underlying factor structure. Future studies are encouraged to apply multidimensional modeling approaches to further examine subscale functioning.

Conclusion

This study examined the psychometric properties of the Indonesian adaptation of Ryff's Psychological Well-Being Scale using the Rasch measurement model. Following empirical evaluation, three misfitting items were removed, resulting in a final 39-item version. The remaining items demonstrated acceptable fit statistics and reliability, supporting their use for measuring a general construct of psychological well-being at the item level.

Support for unidimensionality was borderline, with the raw variance explained by measures slightly below conventional criteria, although residual analyses did not indicate a dominant secondary dimension. The application of a unidimensional Rasch model was intended for measurement purposes and does not negate the theoretical multidimensional structure of the PWBS. Additionally, differential item functioning was examined in an exploratory manner and did not reveal substantial item bias, though further subgroup analyses are recommended. Overall, the 39-item Indonesian PWBS provides a psychometrically sound measurement tool for assessing psychological well-being among Indonesian university students, while acknowledging the methodological and theoretical limitations of the present study.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Ethical considerations in this study were that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contribute to this study.

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