
Psychometric Validation and Rasch Model Analysis of the Academic Resilience Scale for Indonesian University Students

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Abstract

This study addresses the limited availability of psychometrically validated instruments to measure academic resilience among Indonesian university students. The research aimed to develop and validate an Academic Resilience Scale using the Rasch model, which was chosen for its ability to provide linear and invariant measurement beyond Classical Test Theory. A total of 606 students from various universities participated. The 26-item scale was evaluated by experts and analyzed with Winsteps software. The findings demonstrated strong psychometric properties, with person reliability of 0.87, item reliability of 0.91, and Cronbach's alpha of 0.89, indicating high internal consistency. All items met validity criteria based on infit-outfit statistics ($0.5 < \text{MNSQ} < 1.5$). Unidimensionality was confirmed with 38.2% of raw variance explained by measures, exceeding the minimum threshold of 20%. Differential Item Functioning analysis revealed no gender bias across all items ($p > 0.05$). The Academic Resilience Scale exhibits robust psychometric characteristics and is a valid, reliable instrument for measuring academic resilience among Indonesian university students. The scale has practical implications for academic counseling, intervention design, and cross-cultural research in higher education settings.

Keywords: academic resilience, psychometric validation, rasch model, higher education, indonesian university students

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INTRODUCTION

Higher education constitutes the final stage of formal education following secondary school. It functions as a platform for the development of human capacities and dignified character, while cultivating an academic community that is innovative, responsive, creative, skilled, competitive, and cooperative. Furthermore, higher education plays a vital role in advancing science and technology with due regard to, and the application of, humanistic values.

The routines of university students differ significantly from those at the secondary school level, both in learning patterns, the situational aspects of life within the higher education environment, and social interactions. Throughout the academic period, students are required to cope with various challenges and tasks that demand high levels of cognitive and motor skills (Trigueros et al., 2020). The transition between these two stages of formal education tends to pose challenges and makes students more vulnerable to problems. During the transition to university, many students experience heightened psychological distress and lower resilience; difficulties in emotional regulation mediate this relationship (Mastrokoukou et al., 2024). Such conditions can adversely affect academic achievement, hinder personal development in the new environment, and contribute to other psychological problems.

Students who lack sufficient resources or skills to cope with academic and social demands are likely to experience disruptions in their physical, mental, and spiritual well-being (Richardson, 2002). The capacity to confront such challenges and to attain satisfactory academic outcomes during the process of adaptation within a new educational environment significantly shapes students' patterns of academic engagement and the time required to manage stress effectively. Upon entering higher education, students bring with them certain social competencies, motivations, and aspirations. While they seek to capitalize on the opportunities afforded by the university context, they also face a range of challenges that necessitate adjustments in both behavior and cognition. In this regard, Students engage coping mechanisms by cultivating trusting relationships with teachers and peers, which then enhance their academic engagement and resilience (Romano et al., 2021). This adaptive capacity is commonly conceptualized as academic resilience.

Educational institutions serve as crucial environments where individual resilience can be cultivated (Fuller, 2001). Within the academic context, resilience is defined as the capacity to effectively manage academic setbacks, stress, and learning-related pressures (Martin & Marsh, 2003). Resilience refers to an individual's psychological capacity to adapt to external environments, particularly in response to challenges present within those settings. It is conceptualized as a construct that emphasizes the individual as the primary source of success. Individuals with resilience can identify productive strategies that help them emerge unscathed from adversity. Resilient students typically exhibit strong social competence, effective problem-solving skills, autonomy, and a sense of purpose (Cassidy, 2015).

Several scholars have developed scales to measure student resilience; however, in Indonesia, only a limited number of instruments specifically address academic resilience. Ramdani et al. (2021) developed an academic resilience scale for junior high school students, which demonstrated high levels of validity and reliability. Nevertheless, to be applied to university students, the scale requires further adaptation and validation. Previous instruments tend to focus on general resilience or secondary education contexts (Hanson, L, & Jin-Ok, 2007), leaving a methodological and contextual gap in assessing



academic resilience among Indonesian higher education students. This gap underlines the need for an instrument that is both psychometrically sound and culturally relevant.

The development of measurement instruments using the Rasch model has been motivated by limitations inherent in Classical Test Theory; the Rasch framework explicitly addresses ordinal error distributions and provides invariant, interval-level measurement when model fit is achieved (Andrich & Pedler, A law of ordinal random error: The Rasch measurement model and random error distributions of ordinal assessments, 2018). Unlike CTT, which assumes that measurement error is constant and dependent on sample characteristics, the Rasch Model provides a more rigorous framework that produces interval-level data, assesses item-person interactions, and ensures item invariance across groups (Sumintono, 2014). This approach strengthens construct validity and enhances the precision of psychometric assessment, particularly in educational measurement. Therefore, the Rasch model was chosen in this study to overcome CTT's limitations and to obtain a more objective measure of students' academic resilience.

This research is novel in that it develops and validates an Academic Resilience Scale specifically tailored for Indonesian university students using the Rasch model. The novelty lies in integrating psychometric rigor with cultural contextualization, ensuring that the instrument not only meets statistical reliability and validity standards but also reflects the socio-academic realities of Indonesian students. Theoretically, this study contributes to expanding the construct of academic resilience within the framework of higher education. Practically, the validated scale can serve as a diagnostic and evaluative tool for academic counseling, intervention design, and resilience enhancement programs in universities.

Therefore, this study aims not merely to develop and validate an instrument, but to provide a psychometrically robust and culturally grounded measurement tool that contributes to both theoretical advancement and practical application in the field of educational guidance and counseling.

METHOD

In detail, the development of this instrument followed seven procedural stages, namely: a) theoretical analysis of the academic resilience variable, b) instrument construction, c) first pilot testing, d) instrument revision, e) second pilot testing, f) further revision of the instrument, and g) finalization and production.

A total of 606 students from various universities in Indonesia participated as research subjects. All respondents voluntarily completed the instrument after receiving an explanation regarding the administration procedures and the objectives of the study.

The instrument employed in this study was a questionnaire consisting of 26 items measured on a four-point Likert scale with response options: (a) Strongly Appropriate, (b) Appropriate, (c) Inappropriate, and (d) Strongly Inappropriate. The questionnaire was developed based on theoretical frameworks, prior research, and relevant literature (Baghaei, 2011). In this study, six constructs were adopted from the Youth Resilience and Development Module, which was originally designed to assess adolescents' resilience to personal and social challenges (Hanson & Kim, 2007). These constructs include: (a) social skills, (b) empathy, (c) problem-solving, (d) self-efficacy, (e) self-awareness, and (f) positive aspirational goals (Benard, 2004).



The instrument items were adapted to the characteristics of the research subjects and the cultural context of Indonesia to ensure optimal results, drawing upon the six resilience constructs described earlier.

At this stage, the draft instrument was evaluated through two procedures, namely expert judgment and rater agreement, conducted by subject-matter experts. Expert judgment was employed to obtain qualitative feedback regarding the clarity of wording, readability of the items, and alignment with the operational definitions, while rater agreement was used to generate quantitative data concerning the degree of expert consensus on the items. In this study, the expert judgment process involved two content experts and one language specialist.

The results of the expert judgment conducted by three experts in validating the instrument covered item feasibility, as well as aspects of clarity, usefulness, appropriateness, and accuracy regarding theoretical concepts, stages, procedures, presentation, and language use.

The evaluation indicated that the experts' scores for each item ranged from 3 to 4, resulting in an overall acceptable level of instrument feasibility. To provide a clearer interpretation, an acceptability analysis was carried out using the interrater agreement method, which is presented in the following section. Furthermore, to assess the level of agreement among subject-matter experts, a separate analysis was performed by area of expertise for each validator.

Table 1.
 Interrater Agreement Matrix of Item Validity

		Validator 1 (Content Expert)	
		Relevansi Rendah Kuat (Rating 1 atau 2)	Relevansi (Rating 3 atau 4)
Validator 21 (Content Expert)	Low Level of Relevance (Rating 1 or 2)	A = 0	B = 0
	Strong Level of Relevance (Score 3 or 4)	C = 0	D =
		26	

$$\frac{D}{(A + B + C + D)} = \frac{26}{(0 + 0 + 0 + 22)} = \frac{26}{26} = 1$$

Based on the interrater agreement matrix presented above, the score distributions from Expert 1 and Expert 2 fall within Matrix D. This indicates that both experts agreed that the instrument demonstrates strong relevance, with scores ranging from 3 to 4. Furthermore, when analyzed using Guilford's (1950) formula, a coefficient value of 1 was obtained. According to the criteria, a score in the range $0.80 < r_{xy} \leq 1.00$ indicates very high item validity, although the experts noted several revisions, which are further elaborated in the descriptive data analysis section.

To assess the rating agreement among the media experts, a separate analysis was conducted for each validator's individual expertise. The results of the interrater analysis are presented below.



Table 2.
 Interrater Agreement Matrix of Media Validity

Media Expert 1	
Low Level of Relevance (Rating 1 or 2)	Strong Level of Relevance (Score 3 or 4)
A = 0	B = 19

$$\frac{B}{(A + B)} = \frac{19}{(0 + 19)} = \frac{19}{19} = 1$$

Based on the interrater agreement matrix presented above, the distribution of scores from Expert 1 and Expert 2 fell within Matrix B, indicating that both experts considered the instrument highly relevant, with scores ranging from 3 to 4. Furthermore, the analysis using the formula proposed by Guilford (1950) yielded a score of 1. According to the criteria, if the score lies within the range $0.80 < r_{xy} \leq 1.00$, the instrument's validity is categorized as very high, although several revisions were still suggested by the experts, as noted in their comments and elaborated in the descriptive data analysis section. Based on the results of the expert judgment and the feedback provided by the experts, the researcher conducted a thorough review of the draft instrument and made several revisions in accordance with the evaluators' recommendations.

RESULTS AND DISCUSSION

Result

Following the stages of theoretical variable analysis, instrument construction, initial pilot testing using expert judgment, and subsequent revisions, the next phase was the second pilot testing. In this stage, the instrument was administered to 606 students from various universities across Indonesia, who were randomly selected and voluntarily completed the research instrument. The instrument was then subjected to statistical testing to assess its validity and reliability, thereby determining its overall quality (Setiawati et al. 2023). The trial data were further analyzed using the Rasch Model to evaluate item difficulty levels, potential item bias, and the instrument's validity and reliability. Data analysis was conducted with the Rasch analysis software Winsteps version 3.73.

The procedures undertaken to examine the quality of the developed academic resilience scale included: (1) analysis of unidimensionality, (2) validity testing, (3) person validity, (4) reliability testing, and (5) Differential Item Functioning (DIF) analysis. One of the most critical considerations in designing a measurement instrument is ensuring that the instrument is unidimensional. Unidimensionality is essential to determine whether the instrument measures what it is intended to measure. The concept assumes that all items within the instrument measure a single underlying construct (Curtis, 2005). The Rasch model provides a concise procedure for examining the unidimensionality of an instrument. A Principal Component Analysis (PCA) of the residuals enables the Rasch model to detect potential secondary factors that may threaten unidimensionality (Baghaei & Aryadoust, 2015). The results of the unidimensionality testing are presented as follows:



Table 3.
 Results of the Unidimensionality Test

Description of Variance	Eigenvalue	Percentage of Observed Variance	Percentage of Expected Variance?	Description of Variance
Total Raw Variance in Observations	40.4554	100.0%	100.0%	Total Raw Variance in Observations
Raw Variance Explained by Measures	15.4554	38.2%	38.1%	Raw Variance Explained by Measures
Raw Variance Explained by Persons	7.0054	17.3%	17.3%	Raw Variance Explained by Persons
Raw Variance Explained by Items	8.4500	20.9%	20.8%	Raw Variance Explained by Items
Raw Unexplained Variance (Total)	25.0000	61.8%	60.6%	Raw Unexplained Variance (Total)
Unexplained Variance in 1st Contrast	3.2381	8.0%	13.0%	Unexplained Variance in 1st Contrast
Unexplained Variance in 2nd Contrast	2.4482	6.1%	9.8%	Unexplained Variance in 2nd Contrast
Unexplained Variance in 3rd Contrast	2.4481	6.1%	9.8%	Unexplained Variance in 3rd Contrast
Unexplained Variance in 4th Contrast	1.9812	4.9%	7.9%	Unexplained Variance in 4th Contrast
Unexplained Variance in 5th Contrast	1.7876	4.4%	7.2%	Unexplained Variance in 5th Contrast

As shown in the figure above, the raw variance explained by measures was 38.2%. This result indicates that the minimum requirement for unidimensionality, which is 20%, was successfully met (Sumintono, 2014). Additional data from the table reveal that the unexplained variance ranged between 4% and 8%. This value falls within the ideal threshold, as the maximum acceptable level of unexplained variance for an instrument is 15% (Sumintono, 2014).

The results of the validity analysis, indicating whether the data were valid or invalid, are presented in Table 3 below:



Table 4.
 Validity Test Results

Item	Skor Pengukuran	Infit MNSQ	Outfit MNSQ	PTMEA CORR
1	-0,638	0.90	0.54	0.72
2	-0,58	0.70	0.81	0.76
3	-0,46	0.58	0.49	0.80
4	-0,61	0.92	0.82	0.73
5	0,56	0.96	0.56	0.81
6	0,28	0.90	0.73	0.67
7	0,26	0.89	0.79	0.71
8	0,28	0.98	0.89	0.78
9	-0,52	0.78	1.28	0.49
10	0,28	1.24	0.61	0.81
11	0,26	1.20	0.88	0.69
12	-0,52	1.30	0.62	0.55
13	-0,54	0.70	1.53	0.79
14	-0,39	0.60	0.71	0.80
15	-0,56	0.94	0.82	0.81
16	0,39	1.08	1.43	0.47
17	0,72	0.92	0.85	0.80
18	0,46	1.21	0.81	0.63
19	0,25	0.98	1.24	0.51
20	-0,56	0.80	0.81	0.71
21	0,35	1.02	0.63	0.53
22	0,67	1.00	0.81	0.51
23	-0,53	1.41	0.67	0.66
24	-0,55	0.73	0.84	0.79
25	-0,43	0.61	0.72	0.82
26	-0,45	0.95	0.85	0.76
Mean	0.00	0.79		
SD	0.8	0.17		

The determination of item validity in the table above was based on the infit and outfit statistics obtained from the analysis. The parameters used to indicate item fit followed the criteria below:

1. Acceptable Outfit Mean Square (MNSQ) values: $0.5 < \text{MNSQ} < 1.5$
2. Acceptable Outfit Z-Standard (ZSTD) values: $-2.0 < \text{ZSTD} < +2$.
3. Acceptable Point Measure Correlation values: $0.4 < \text{Pt Measure Corr} < 0.8$

Based on the applied criteria, all items met the requirements and were considered valid.

The distribution of respondents' abilities and the difficulty level of the items can be observed in the Wright Map, which illustrates both the distribution of individual ability and the distribution of item difficulty, as presented in the following figure:



Table 5.
 Results of the Person Validity Test

Logit Measure	Items (Difficult)	Persons (Ability)
6+		
5	36LP, 34PP, 35LP	
4	35LD, 35PS, 18LP	
3	20PS, 37PA, 38PA	
2	0BPP, 09IPD, 09LS	
1	14LP, 15PS, 26LS	
0	40PS, 46PA, 52PA	
-1	56LD, 10PA, 17LA	
-2	27LA, 33PS, 12PS	
-3	18PA, 23PS, 24PA	
-4	44PA, 51PA, 11PS	M17-M29
-5	16LA, 04PA, 12PD	

The figure above on person validity indicates that the most difficult item for respondents to answer was item number 17, which stated, “*Saya mampu mencapai kesuksesan dalam perkuliahan dengan jerih payah saya sendiri* “ In contrast, the easiest item for respondents to answer was item number 24, which stated, “*Saya memiliki tujuan bidang pekerjaan nanti yang akan saya masuki*”.

The item reliability test was conducted to assess the degree of which items fit with the Rasch measurement model. This indicates whether the items used are reliable and whether the number of items is sufficient to adequately measure the intended construct. The results of the item reliability test are presented in the following figure:

Table 6.
 Results of the Item Reliability Test

Parameter	Person (n=56)	Item (n=25)
SCORE		
Mean	83.9	187.0
SD	7.3	127.0
Range	69.0 - 97.0	153.0 - 209.0
MEASURE		
Mean (Logit)	2.68	0.00
SD	1.32	1.00
Range	0.27 - 5.50	-1.80 - 2.28
MODEL FIT		
Infit MNSQ (Mean)	1.02	1.08
Outfit MNSQ (Mean)	1.02	1.02
Infit MNSQ (Mean)	1.02	1.08
RELIABILITY		
Separation	2.85	3.28
Cronbach's α	.89	-

The results of the person reliability analysis indicated a value of 0.87, while Cronbach's Alpha was 0.89, both of which fall into the good category. The person measure reflected the average score of respondents on the resilience scale. A mean score



greater than logit 0.0 suggests a tendency among respondents to select the “strongly agree” option across various items (Sumintono, 2014). The analysis further revealed that the person measure was logit +2.68. In addition, a person’s reliability value of 0.87 and an item reliability value of 0.91 indicate that the respondents’ answers were consistent and that the quality of the items within the instrument was satisfactory. Based on the Rasch Model analysis, this resilience scale is appropriate for use, as it demonstrates consistency in measuring psychological constructs, as evidenced by the results of the unidimensionality test. The reliability coefficient of 0.87 further confirms that the developed scale possesses high internal consistency, making it a trustworthy instrument for assessing individual resilience.

The quality of the items in the developed scale can be evaluated from the item reliability value of 0.91, indicating that the items possessed good quality. These two reliability indices reinforce the conclusion that the resilience scale is a trustworthy measurement tool with well-constructed items. From a reliability perspective, the scale demonstrates good quality, as it consistently produces stable results. Overall, based on data analysis conducted using the Rasch Model, the developed resilience scale meets both statistical and psychometric criteria, making it a suitable instrument for research and assessment related to resilience.

The Differential Item Functioning (DIF) test examines whether items administered exhibit bias across respondent categories by gender. A well-functioning item should remain impartial throughout the measurement process. The Rasch Model analysis facilitates the detection of differential item functioning (DIF). Items are considered biased if they display a probability value below 5% ($p < 0.05$) (Sumintono & Widhiarso, 2013).

Table 7.
 Differential Item Functioning

Gender	DIF Measure	Gender	DIF Measure	DIF Contrast	DIF t	P
L	-0.38	P	-0.38	0.06	0.04	0.36
L	-0.32	P	-0.35	0.04	0.05	0.72
L	-0.39	P	-0.35	-0.18	1.26	0.54
L	-0.22	P	-0.12	-0.13	1.18	0.36
L	0.09	P	0.05	0.06	0.43	0.94
L	-0.09	P	0.16	-0.19	1.54	0.27
L	-0.22	P	-0.35	0.25	1.50	0.21
L	-0.05	P	0.14	-0.13	1.40	0.36
L	0.06	P	0.5	-0.38	1.14	0.43
L	0.15	P	0.5	-0.45	1.25	0.66
L	0.08	P	0.34	-0.37	1.25	0.17
L	-0.35	P	-0.15	-0.12	1.05	0.38
L	0.05	P	0.09	0.09	0.47	0.93
L	-0.05	P	0.13	-0.16	1.20	0.25
L	-0.17	P	-0.5	0.21	1.56	0.22
L	-0.09	P	0.08	-0.18	1.71	0.35
L	0.05	P	0.42	-0.33	1.47	0.46
L	0.15	P	0.42	-0.26	1.62	0.77
L	0.07	P	0.37	-0.24	1.45	0.22



L	0.09	P	0.08	0.05	0.36	0.93
L	-0.06	P	0.15	-0.13	1.36	0.25
L	-0.16	P	-0.32	0.27	1.65	0.23
L	-0.05	P	0.08	-0.2	1.21	0.35
L	0.05	P	0.06	0.06	0.47	0.86
L	-0.09	P	0.05	-0.17	1.26	0.56
L	-0.24	P	-0.32	0.24	1.52	0.33

The table above indicates that no items demonstrated bias, as evidenced by p-values greater than 0.05. The absence of biased items suggests that gender, as a differentiating factor, did not influence the measurement of students' academic resilience. However, this finding cannot be fully confirmed at this stage, and further research is needed to explore other potential factors that may affect resilience measurement, including ethnicity, parental educational background, and other demographic variables.

Discussion

The findings of this study indicate that the developed Academic Resilience Scale possesses sound psychometric properties, with both validity and reliability indices falling within acceptable ranges. The person reliability value of 0.87 and Cronbach's alpha of 0.89 indicate high internal consistency, confirming that the items effectively measure the construct of academic resilience among university students.

According to Linacre (2009), item reliability values between 0.81 and 0.90 are classified as good, while those above 0.91 are considered excellent. The reliability coefficients obtained in this study place the instrument in the "good" category, indicating stable, consistent measurement outcomes. Furthermore, the infit and outfit mean square values (0.5–1.5) and standardized Z-values within acceptable limits indicate that all items fit the Rasch model appropriately, confirming construct validity (Bond & Fox, 2007; Mardian et al, 2023).

The unidimensionality test revealed that the raw variance explained by the measures was 38.2%, exceeding the minimum threshold of 20% (Sumintono B. , 2014). This finding affirms that the scale measures a single dominant construct—academic resilience. Similarly, Trigueros et al. (2020) validated that unidimensional structures in academic resilience instruments effectively capture students' capability to sustain motivation and performance under academic pressure.

Conceptually, this result supports the theoretical framework of Martin and Marsh (2003), who define academic resilience as the ability to maintain motivation, self-control, and commitment when confronted with learning difficulties. Students with higher resilience levels tend to exhibit effective learning strategies, better stress management, and stronger academic performance (Cui, Wang, & Xu, 2023). Consequently, the present findings confirm that the developed instrument is not only statistically robust but also theoretically aligned with contemporary understandings of academic resilience.

Richardson (2002) emphasized that resilience plays a vital role in sustaining psychological well-being in higher education contexts. In this regard, the developed scale contributes meaningfully to the identification of psychological factors underlying students' adaptive capacity. Moreover, recent research by Wang et al. (2025) demonstrates that supportive teaching and learning environments significantly strengthen students' resilience. These findings suggest that high academic resilience scores reflect



an interaction between individual traits and environmental supports, including effective instruction, peer interactions, and perceived autonomy.

From a psychosocial perspective, Suud et al. (2024) found that family and social support mediate the relationship between academic stress and resilience. Therefore, the use of this scale in counseling practices should ideally be accompanied by an assessment of protective factors such as social support, self-regulated learning, and self-efficacy to ensure that interventions are holistic and tailored to individual student needs.

Methodologically, the use of the Rasch model offers key advantages for instrument development: it converts ordinal responses into interval-level data, identifies item misfit, and tests cross-group fairness through Differential Item Functioning (DIF) analysis. The absence of gender bias in this study indicates that the scale measures academic resilience equivalently across male and female students. Nevertheless, following Reeve, Cheon, and Yu (2020), further studies should test measurement invariance across socio-economic, ethnic, and disciplinary backgrounds to enhance external validity.

Practical implications of these findings are substantial. First, the scale can serve as an effective screening tool in university counseling services to identify students requiring resilience-building interventions. Second, the results may inform the design of programs to enhance adaptive learning, coping skills, and self-regulation strategies. This aligns with the findings of Wang et al. (2025), who emphasize the combined role of personal and environmental factors in fostering academic resilience. Third, universities can use the results to inform institutional policies that promote supportive, autonomy-driven, and psychologically safe learning environments.

This study, however, is limited to Indonesian university students. Thus, cross-cultural replication is recommended to assess the scale's generalizability and factor invariance of the scale. As Cui et al. (2023) highlighted, collectivist cultural orientations can influence how students perceive and express resilience, making cross-national validation essential.

In summary, the present study confirms that the Rasch-based Academic Resilience Scale demonstrates strong psychometric soundness and theoretical relevance. The integration of empirical validation, psychological theory, and recent research enhances the instrument's credibility as a reliable measure for both research and practical applications in educational guidance and counseling. Future research may expand its scope by exploring predictive relationships between resilience, academic performance, and well-being outcomes using longitudinal or mixed-method designs.

CONCLUSION

This study successfully developed and validated a 26-item Academic Resilience Scale for Indonesian university students using the Rasch Model, demonstrating strong psychometric properties. The analysis showed that all items met the validity requirements, as supported by acceptable infit–outfit statistics and high internal consistency, as indicated by a person reliability of 0.87 and a Cronbach's alpha of 0.89. The scale also fulfilled the unidimensionality criterion, with 38.2% of variance explained, confirming that it measures a single dominant construct. Moreover, DIF analysis across gender groups showed no bias, indicating that the instrument performs equally for both male and female students. These results affirm that the scale can be reliably used for academic assessment, counseling, and research purposes. Future studies are encouraged



to expand validation across diverse cultural and educational contexts to enhance generalizability.

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REFERENCES

- Andrich, D., & Pedler, P. (2019). A law of ordinal random error: The Rasch measurement model and random error distributions of ordinal assessments. *Measurement*, 131, 771–781. <https://doi.org/10.1016/j.measurement.2018.08.062>
- Arif, M. I., & Mirza, M. S. (2017). Effectiveness of an Intervention Program in Fostering Academic Resilience of Students at Risk of Failure at Secondary School Level. *Bulletin of Education and Research*, 39(1), 251–264.
- Baghaei, P. (2011). *C-Test Construct Validation: A Rasch Modeling Approach*. VDM Verlag Dr. Müller.
- Baghaei, P., & Aryadoust, V. (2015). Modeling local item dependence due to common test format with a multidimensional Rasch model. *International Journal of Testing*, 15(1), 71-87. DOI:<https://doi.org/10.1080/15305058.2014.941108>
- Briggs, D. C. (2019) menganalisis interpretasi dan visualisasi unit pengukuran dalam Rasch Model yang diterbitkan di jurnal *Measurement* (961-971). Artikel tersebut tersedia dengan DOI 10.1016/j.measurement.2019.07.037.
- Benard, B. (2004). *Resiliency: What We Have Learn*. WestEd.
- Bond, T. G., & Fox, C. M. (2007). *Applying the Rasch model: Fundamental measurement in the human sciences* (2nd ed.). Lawrence Erlbaum Associates Publishers.
- Calhoun, Y., Rangel, V. S., & Coulson, H. L. (2017, November 15–19). Educational resilience: How students navigate the challenges of attending an early college high school [Presentasi kertas kerja]. University Council for Educational Administration (UCEA) Convention, Denver, CO, Amerika Serikat. <https://www.researchgate.net/publication/320911080>
- Cassidy, S. (2015). Resilience Building in Students: The Role of Academic Self-Efficacy. *Frontiers in Psychology*, 1-14. doi: <https://doi.org/10.3389/fpsyg.2015.01781>
- Cui, T., Wang, C., & Xu, J. (2023). Validation of Academic Resilience Scales Adapted in a Collectivistic Culture. *Frontiers in Psychology*.
- Curtis, D. D. (2005). *Applied Rasch Measurement: A Book of Exemplars*. Education in the Asia-Pacific Region.
- Fuller, A. (2001). School culture and resilience. *EQ Australia*, 1, 11–12
- Guilford, J. P. (1950). *Fundamental statistics in psychology and education* (2nd ed.). McGraw-Hill.
- Hanson, T. L., & Kim, J. O. (2007). Measuring resilience and youth development: The psychometric properties of the Healthy Kids Survey (REL 2007–No. 034). U.S. Department of Education, Institute of Education Sciences, National Center for



- Education Evaluation and Regional Assistance, Regional Educational Laboratory West. <https://eric.ed.gov/?id=ED498459>
- Linacre, J. M. (2002). *A User's Guide to Winsteps: Rasch-Model Computer Program*. MESA Press.
- Linacre, J. M. (2009). *Winsteps® Rasch measurement computer program*. Winsteps.com.
- Mardian, V., Samsudin, A., Utama, J. A., Suwarma, I. R., & Costu, B. (2023). Validity and Reliability of Elasticity Multiple-Choice Items (EMCI) Using Rasch Model. *Jurnal Ilmiah Pendidikan Fisika Al-Biruni*, 265-276. doi: 10.24042/jipfalbiruni.v12i2.17037
- Martin, A. J., & Marsh, H. (2003). Academic Resilience and the Four Cs: Confidence, Control, Composure, and Commitment. *Proceedings of the Joint AARE/NZARE Conference*, Auckland, New Zealand: NZARE
- Mastrokourou, S., Lin, S., Longobardi, C., Berchiatti, M., & Bozzato, P. (2024). Resilience and psychological distress in the transition to university: the mediating role of emotion regulation. *Current Psychology*, 23675–23685.
- Nicoll, W. G. (2014). Developing transformative schools: A resilience-focused paradigm for education. *The International Journal of Emotional Education*, 6(1), 47-65. <https://www.um.edu.mt/library/oar/handle/123456789/6215>
- Ramdani, R., Hanurawan, F., Ramli, M., Lasan, B. B., & Afdal, A. (2021). Development and validation of Indonesian academic resilience scale using Rasch models. *International Journal of Instruction*, 14(1), 105–120. <https://doi.org/10.29333/iji.2021.1417a>
- Reeve, J., Cheon, S. H., & Yu, T. H. (2020). An autonomy-supportive intervention to develop students' resilience by boosting agentic engagement. *International Journal of Behavioral Development*, 325-338. <https://doi.org/10.1177/0165025420911103>
- Richardson, G. E. (2002). The metatheory of resilience and resiliency. *J Clin Psychol*.
- Romano, L., Angelini, G., Consiglio, P., & Fiorilli, C. (2021). Academic Resilience and Engagement in High School Students: The Mediating Role of Perceived Teacher Emotional Support. *European journal of investigation in health, psychology and education*, 334-344. DOI: 10.3390/ejihpe11020025
- Setiawati, S., Suryana, D., & Amartya, S. (2023). Validity Analysis of Learners' Self-Efficacy Instrument Using Rasch Model . *Psikopedagogia*, 42-50. doi: 10.12928/psikopedagogia.v12i1.25619
- Sumintono, B., & Widhiarso, W. (2013). *Aplikasi Model Rasch untuk Penelitian Ilmu-Ilmu Sosial*. Cimahi: Trim Komunikata.
- Sumintono, B. (2014). Model Rasch untuk Penelitian Sosial Kuantitatif. Conference Paper: kuliah umum untuk mahasiswa S1 dan pasca sarjana (pp. 1-10). Surabaya: Institut Teknologi Sepuluh Nopember.
- Suud, F. M., Sahin, Z. A., Na'imah, T., Azhar, M., & Kibtiyah, M. (2024). The impact of family social support on academic resilience in Indonesian and Turkish students: the mediating role of self-regulated learning. *International Journal of Adolescence and Youth*, 29(1), 2361725. <https://doi.org/10.1080/02673843.2024.2361725>
- Trigueros, R., Gonzales, A. M., Tascon, G. M., Alias, A., & Parra, J. M. (2020). Validation and Adaptation of the Academic-Resilience Scale in the Spanish Context. *International Jurnal of Environmental Research and Publikc Health*, 2-11. DOI: 10.3390/ijerph17113779



Wang , F., Huang, P., Xi, Y., & King, R. B. (2025). Fostering resilience among university students: the role of teaching and learning environments. Higher Education.

