



Adaptation and Preliminary Psychometric Evaluation of the Indonesian Academic Anxiety Scale for Boarding School High School Students

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Abstract. Academic anxiety poses a critical challenge within school counseling frameworks due to its detrimental effects on cognitive focus, academic drive, performance outcomes, and overall psychological well-being. These vulnerabilities are often exacerbated in residential educational settings, where rigorous academic obligations intersect with boarding school responsibilities. To address the need for validated assessment tools in this context, this study adapted the Academic Anxiety Scale (AAS) into Indonesian and evaluated its psychometric integrity among Islamic senior high school students in boarding environments. A cross-sectional psychometric design was conducted with a sample of 342 students aged 15–19 years. The adaptation protocol encompassed forward-back translation, expert appraisal, cross-cultural adaptation, pilot readability testing, and content validity quantification via the Content Validity Index (CVI). Confirmatory Factor Analysis (CFA) was performed to test structural validity, while Cronbach's Alpha and McDonald's Omega evaluated internal consistency reliability. Expert review yielded robust content validity (S-CVI = 1.00), and CFA confirmed the instrument's original unidimensional structure with favorable goodness-of-fit parameters (CFI = .924, TLI = .905, IFI = .925, GFI = .977, RMSEA = .089, SRMR = .044). Internal reliability was exceptionally strong (Cronbach's α = .894; McDonald's ω = .898). These psychometric outcomes demonstrate that the Indonesian AAS is a valid, reliable, and culturally sound tool for measuring academic anxiety in boarding school populations, offering educational counselors and researchers a robust diagnostic instrument to support targeted mental health interventions.

Keywords: academic anxiety scale, academic anxiety, boarding school, psychometric evaluation, cross-cultural adaptation, school counseling.

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Introduction

Academic anxiety has received increasing attention in educational and counseling research because of its substantial impact on adolescents' academic achievement, psychological well-being, and school adjustment. Growing academic demands, competitive educational environments, and heightened expectations from teachers, parents, and peers have contributed to increasing levels of academic anxiety among secondary school students worldwide. Recent systematic reviews have shown that excessive academic pressure is consistently associated with anxiety, depression, psychological distress, and self-harm among adolescents, highlighting the need for early identification and preventive intervention within schools (Stearse et al., 2023; Wuthrich et al., 2020). In Indonesia, similar concerns have emerged as students face increasingly demanding academic environments while simultaneously coping with developmental and social challenges. These conditions underscore the importance of providing school counselors with culturally appropriate instruments capable of accurately identifying students experiencing academic anxiety before more severe psychological problems develop.

Academic anxiety differs from general anxiety because it specifically refers to emotional, cognitive, and behavioral responses elicited by academic situations, such as examinations, classroom participation, academic performance, and concerns about meeting educational expectations. One of the instruments specifically developed to measure this construct is the Academic Anxiety Scale proposed by Cassady et al. (2019). The original Academic Anxiety Scale consists of 11 items designed to measure academic anxiety as a unidimensional construct reflecting students' worries, tension, and negative emotional responses toward academic demands. Initial psychometric evaluation demonstrated satisfactory construct validity and excellent internal consistency, suggesting that the scale provides a concise yet effective measure of academic anxiety. Its brief format and specific focus on academic anxiety make the Academic Anxiety Scale particularly suitable for school-based screening and guidance and counseling services. Nevertheless, psychological instruments cannot simply be translated into another language without systematic cross-cultural adaptation because differences in language, educational systems, and cultural values may influence how respondents interpret questionnaire items. Therefore, rigorous adaptation procedures involving translation, cultural review, and psychometric evaluation are necessary before an instrument can be appropriately applied in another population (Cruchinho et al., 2024).

The need for culturally appropriate assessment is particularly important within boarding school settings. Unlike conventional day schools, boarding schools combine formal education with residential life, requiring students to manage academic responsibilities alongside institutional routines, communal living, peer relationships, and disciplinary regulations throughout the day. In Indonesia, this educational context commonly includes Islamic boarding schools (*pesantren*), which are residential educational institutions integrating general education with Islamic instruction, character development, and daily communal life (Hanafi et al., 2021; Thoyibah et al., 2025). Although this environment may strengthen students' discipline, social support, and character formation, it may also intensify academic anxiety because students must simultaneously adapt to academic expectations and residential responsibilities. Previous studies in Indonesian boarding school settings have reported that

academic workload, peer relationships, communal living, and limited interaction with family contribute to students' academic stress and psychological adjustment (Irawan et al., 2025; Khoirudin et al., 2023; Triyuliasari et al., 2025).

Previous Indonesian studies consistently indicate that academic anxiety is associated with various educational and psychological outcomes. Several studies have focused on its antecedents, showing that academic anxiety is influenced by pressure to achieve, fear of failure, family expectations, peer comparison, and institutional factors (Kartika & Aviani, 2020; Prasetyaningtyas et al., 2022). Although these studies have contributed substantially to understanding the antecedents and consequences of academic anxiety, most have focused on examining academic anxiety as an independent or dependent variable rather than evaluating the psychometric quality of the instruments used. Consequently, empirical evidence regarding culturally adapted and psychometrically validated measures of academic anxiety for Indonesian students remains limited. Other studies have examined its manifestations, demonstrating that academic anxiety is expressed through cognitive, emotional, motoric, and physiological symptoms, including excessive worry, confusion during examinations, trembling, and physical tension (Putri et al., 2025). Furthermore, research investigating its consequences has shown that academic anxiety negatively affects self-adjustment, academic achievement, and students' psychological well-being (Nabila et al., 2025; Shandy & Khoirunnisa, 2022), while studies conducted in Malang have highlighted the importance of cultural and religious contexts in understanding students' anxiety experiences (Najich et al., 2024). Despite these valuable findings, previous Indonesian research has primarily treated academic anxiety as an independent or dependent variable, whereas limited attention has been given to the adaptation and psychometric validation of instruments specifically designed to measure academic anxiety.

This limitation has important implications for school counseling practice. In many Indonesian schools, counselors continue to rely on informal observations, interviews, teacher reports, or general anxiety measures that do not specifically assess anxiety arising from academic demands. Consequently, counselors may experience difficulty distinguishing between temporary academic stress and more persistent academic anxiety that requires preventive or therapeutic intervention. The absence of a culturally adapted and psychometrically supported Academic Anxiety Scale also limits the implementation of evidence-based screening programs within boarding schools, where students experience continuous academic and residential pressures. Therefore, developing an Indonesian version of the Academic Anxiety Scale is essential for supporting more accurate assessment, early identification, and appropriate counseling interventions among boarding school students.

Based on these considerations, this study aimed to adapt the Academic Anxiety Scale into Indonesian and evaluate its psychometric properties among high school students living in boarding school settings. Specifically, the study examined the construct validity using Confirmatory Factor Analysis (CFA), as well as the reliability of the adapted instrument. The novelty of this study lies in being the first cross-cultural adaptation and psychometric validation of the Academic Anxiety Scale for Indonesian Islamic senior high school students living in boarding school settings. The study provides empirical evidence that the Indonesian version retains the original unidimensional structure while demonstrating satisfactory

content validity, construct validity, and internal consistency reliability. These findings contribute to the development of culturally appropriate psychological assessment instruments and support evidence-based guidance and counseling practices in Indonesia.

Method

Research Design

This study employed a quantitative psychometric design to adapt and evaluate the Indonesian version of the Academic Anxiety Scale (AAS). The adaptation process followed the International Test Commission (ITC) Guidelines for Translating and Adapting Tests (2017), which provide internationally recognized standards for cross-cultural test adaptation. The procedure consisted of the following stages: (1) obtaining the original Academic Anxiety Scale, (2) forward translation into Indonesian, (3) expert review to evaluate semantic, conceptual, and cultural equivalence, (4) back translation, (5) cultural adaptation, (6) readability testing with the target population, (7) data collection from 342 senior high school students living in boarding school settings, (8) item analysis, (9) Confirmatory Factor Analysis (CFA), (10) reliability analysis using Cronbach's alpha and McDonald's omega, and (11) development of the final Indonesian version of the Academic Anxiety Scale.

The psychometric evaluation was conducted using a cross-sectional survey because this design is appropriate for examining the measurement properties of an adapted instrument within a specific population. Construct validity was evaluated through CFA, while internal consistency reliability was assessed using Cronbach's alpha and McDonald's omega. The complete research procedure is presented in Figure 1.

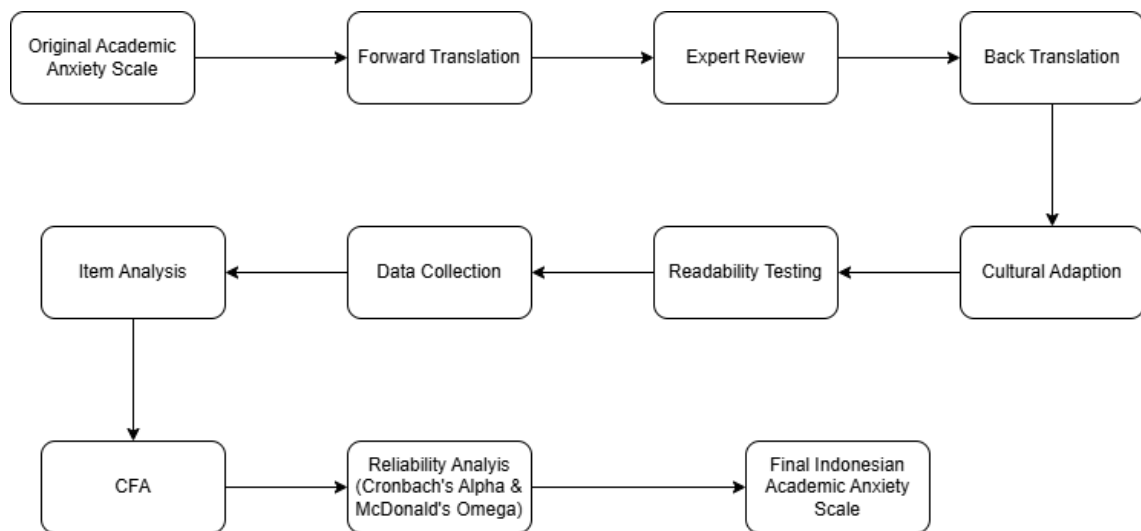


Figure 1. Research Procedure

Participants

The participants were high school students living in boarding school settings. The population of this study consisted of students in grades X, XI, and XII at boarding schools in Malang City, Indonesia. A total of 342 students participated in the study, with an age range of 15-19 years. The demographic characteristics of the respondents, including gender, age,

grade level, and length of stay in the boarding school, are presented in Table 1. The inclusion criteria were: (1) active high school students, (2) living in a boarding school environment, (3) having stayed in the boarding school for at least one semester, and (4) willing to participate voluntarily. Students who did not complete the questionnaire or provided duplicate responses were excluded from the analysis.

The participants in this study are presented in Table 1 and Table 2.

Table 1. Participants

Stage	Number of Participants	Inclusion Criteria
Expert Review	4	Doctoral degree, Expert Psychometrics and Language
Readability Testing	6	Islamic Senior High School Students in grades 10 to 12
Data Collection	342	Islamic Senior High School Students in grades 10 to 12

Table 2. Demographic Characteristics of Respondents (n= 342)

Demographic Variable	Category	n	%
Gender	Male	119	34.8
	Female	223	65.2
Age	15 years	33	9.6
	16 years	211	61.7
	17 years	94	27.5
	18 years	3	0.9
	19 years	1	0.3
Grade Level	Grade X	261	76.3
	Grade XI	77	22.5
	Grade XII	4	1.2
Length of Stay in Boarding School	6–12 months	141	41.2
	1–2 years	77	22.5
	More than 2 years	124	36.3
Type of Boarding School	General boarding school	187	54.7
	Islamic boarding school	155	45.3

Note. n = frequency; % = percentage.

The participants varied across the stages of the instrument adaptation process. As presented in Table 1, the expert review involved four doctoral-level experts in psychometrics and language, followed by readability testing with six Islamic senior high school students. The psychometric evaluation was conducted with 342 Islamic senior high school students living in boarding school settings. Their demographic characteristics are presented in Table 2.

For the psychometric evaluation, participants were required to be active Islamic senior high school students (Grades X–XII), reside in either a general or Islamic boarding school for at least one semester, and provide informed consent. The minimum residence requirement ensured that participants had sufficient experience with the boarding school environment. Questionnaires with incomplete responses or duplicate submissions were excluded from the analysis.

Participant Recruitment Procedure

Participants were recruited using purposive sampling to ensure that each stage of the instrument adaptation involved individuals who met the predefined eligibility criteria and were relevant to the study objectives. This sampling approach was considered appropriate because the adaptation process required different groups of participants across the expert review, readability testing, and psychometric evaluation stages. To minimize potential selection bias associated with purposive sampling, explicit inclusion criteria were established for each stage of the study (Stratton, 2024).

The expert review involved four doctoral-level experts with expertise in psychometrics and language. Readability testing was conducted with six Islamic senior high school students from Grades X to XII to evaluate the clarity and comprehensibility of the translated items. The psychometric evaluation involved 342 Islamic senior high school students from Grades X to XII who met the study's inclusion criteria. Data collection for the psychometric evaluation was conducted through both face-to-face administration and an online questionnaire using Google Forms. All participants voluntarily agreed to participate after receiving information about the study, and the research was conducted in accordance with established ethical principles to protect the rights, dignity, confidentiality, and well-being of all participants.

Research Instruments

The instrument used in this study was the Academic Anxiety Scale (AAS) developed by Cassady et al. (2019). The original scale consists of 11 items measuring students' academic anxiety as a unidimensional construct and uses a 4-point Likert scale, ranging from 1 (Not at all typical of me) to 4 (Very typical of me). Higher scores indicate higher levels of academic anxiety. The original instrument demonstrated good psychometric properties, including strong internal consistency (Cronbach's $\alpha = .90$) and satisfactory construct validity.

The Academic Anxiety Scale was adapted into Indonesian following cross-cultural adaptation guidelines (Cruchinho et al., 2024). The adaptation process included forward translation, expert review, back translation, reconciliation of the translated versions, and revision to ensure semantic equivalence, cultural relevance, and clarity. The forward and back translations were conducted independently by bilingual translators, while the translated version was reviewed by experts in counseling and educational psychology. Several items were revised to improve readability and to better reflect the context of Indonesian boarding school students without changing the original meaning.

The pre-final Indonesian version was evaluated through a readability assessment involving boarding school students to ensure that the items were easily understood. Minor revisions were made based on participants' feedback before the instrument was administered in the main study. The psychometric properties of the adapted scale were subsequently evaluated using exploratory factor analysis, confirmatory factor analysis, and internal consistency reliability.

Table 3. Academic Anxiety Scale Blueprint

Variable	Dimension	Indicator	Item Number(s)	Number of Items
Academic Anxiety	Academic Anxiety (Unidimensional)	Concerns about Academic Competence	1,4	2
		Stress Related to Academic Tasks	2,3	2
		Anxiety During the Learning Process	5	1
		Anxiety in the Academic Environment	6	1
		Concerns about Academic Demands	7, 11	2
		Fear of Academic Situations	8	1
		Concerns about Social and Academic Evaluation	9, 10	2
		Total		11

Data Analysis

Data were analyzed using JASP. Descriptive statistics were computed to summarize the demographic characteristics of the participants, including frequencies, percentages, means, and standard deviations. Content validity was evaluated using the Content Validity Index (CVI) based on expert judgments to assess the relevance and representativeness of each translated item.

$$\text{CVI for Item (I-CVI)} = \frac{\text{Agreed item}}{\text{Number of expert}}$$

$$\text{CVI for Scale (S-CVI)} = \frac{\text{Sum of I-CVI scores}}{\text{Number of item}}$$

Figure 2. CVI Formula

Construct validity was examined using Confirmatory Factor Analysis (CFA) to verify the factor structure of the Indonesian version of the Academic Anxiety Scale and evaluate the overall model fit. Internal consistency reliability was assessed using Cronbach's alpha coefficient, with values of .70 or higher considered acceptable for research purposes. All statistical analyses were conducted using JASP.

Results

Expert Review

At this stage, the original Academic Anxiety Scale was translated into Indonesian using a forward-backward translation procedure. The forward translation was conducted by bilingual translators proficient in both English and Indonesian and experienced in psychological and educational terminology. The translated version was then reviewed by four doctoral-level experts with expertise in psychometrics and language to evaluate the semantic, conceptual, and cultural equivalence of the translated items. Based on the experts' feedback, revisions were made before the instrument underwent back translation into English by an independent bilingual translator. The back-translated version was subsequently compared

with the original instrument to ensure conceptual equivalence. Finally, the experts evaluated the translated instrument using the Content Validity Index (CVI) to assess the relevance, clarity, and representativeness of each item prior to the readability testing stage.

Table 4. Similarity and Comparability Score

	Similarity		Comparability	
	Expert 1	Expert 2	Expert 1	Expert 2
Total Score	23	31	23	31
Mean	2,09	2,81	2,09	2,81
Mean Total	2,45		2,45	

According to the results of the semantic review presented in Table 3, the mean score for the similarity aspect was 2.45, while the mean score for the comparability aspect was also 2.45. According to Sperber (2004), mean scores below 3 indicate acceptable semantic equivalence, suggesting that the Indonesian version adequately preserves the meaning and language of the original instrument. Therefore, the translated items were considered acceptable, requiring only minor revisions based on the experts' recommendations before proceeding to the next stage of the adaptation process.

Following the semantic review, the experts conducted a content review of the translated instrument. Using a four-point Likert scale, they evaluated each item in terms of relevance, importance, and clarity to determine its consistency with the original construct. The experts also provided qualitative comments and suggestions to improve the wording and cultural appropriateness of several items before the instrument was finalized.

Table 5. CVI Content Review Results

Evaluation Aspect	Mean I-CVI	
	Expert 1	Expert 2
Relevancy Item	1,00	1,00
Importance Item	1,00	1,00
Clarity Item	1,00	1,00
S-CVI	1,00	

According to the content validity results presented in Table 5, all items of the Indonesian version of the Academic Anxiety Scale demonstrated excellent content validity. The Item Content Validity Index (I-CVI) for the relevancy, importance, and clarity aspects was 1.00 for both experts, indicating complete agreement that each item was relevant, important, and clearly represented the intended construct. Furthermore, the Scale Content Validity Index (S-CVI) was 1.00, demonstrating perfect agreement across all items. According to Yusoff (2019), an S-CVI value of 0.90 or higher indicates excellent content validity. Therefore, the findings suggest that the Indonesian version of the Academic Anxiety Scale possesses excellent content validity and is appropriate for subsequent psychometric evaluation.

Readability Testing

Following the expert review of the translated instrument, the researcher conducted a cultural adaptation through a readability test involving six Islamic senior high school students from Grades X to XII. The readability test was carried out to evaluate the clarity, comprehensibility, and appropriateness of the translated items for the target population, as well as to identify any potential difficulties in understanding the instrument. Based on the

results of the readability test, several items were revised to improve their clarity and cultural suitability before the psychometric evaluation.

Data Collection

At this stage, the Indonesian version of the Academic Anxiety Scale was administered to 342 Islamic senior high school students from Grades X to XII to evaluate its psychometric properties. Construct validity was examined through followed by Confirmatory Factor Analysis (CFA) to verify the factor structure of the adapted instrument. Internal consistency reliability was subsequently assessed using Cronbach's alpha. CFA is widely recognized as a robust method for evaluating construct validity because it determines the extent to which the proposed measurement model fits the observed data and whether each item adequately represents the intended construct.

Confirmatory Factor Analysis and Reliability

Confirmatory Factor Analysis (CFA) was conducted to verify the one-factor structure of the Indonesian version of the Academic Anxiety Scale (AAS) identified in the exploratory factor analysis.

Table 6. Chi Squared Test

Model	X ²	df	p
Baseline model	1625.405	55	
Factor model	163.450	44	< .001

As presented in Table 6, the factor model yielded a chi-square value of $\chi^2 (44) = 163.450$, $p < .001$. Although the chi-square test was statistically significant, this result is common in studies with relatively large sample sizes and therefore should be interpreted together with other model fit indices.

Table 7. CFA Model Fit Results for the Academic Anxiety Scale (AAS)

Index	Value
Comparative Fit Index (CFI)	0.9239
Tucker-Lewis Index (TLI)	0.9049
Bentler-Bonett Non-normed Fit Index (NNFI)	0.9049
Bentler-Bonett Normed Fit Index (NFI)	0.8994
Parsimony Normed Fit Index (PNFI)	0.7196
Bollen's Relative Fit Index (RFI)	0.8743
Bollen's Incremental Fit Index (IFI)	0.9245
Relative Noncentrality Index (RNI)	0.9239

Table 8. CFA Other Model Fit Results for the Academic Anxiety Scale (AAS)

Metric	Value
Root mean square error of approximation (RMSEA)	0.08910
RMSEA 90% CI lower bound	0.07474
RMSEA 90% CI upper bound	0.1039
RMSEA p-value	8.607×10^{-6}
Standardized root means square residual (SRMR)	0.04435
Hoelter's critical N ($\alpha = .05$)	127.5
Hoelter's critical N ($\alpha = .01$)	144.8
Goodness of fit index (GFI)	0.9768
McDonald fit index (MFI)	0.8398
Expected cross validation index (ECVI)	0.6709

The model fit indices are presented in Tables 7 and 8. The results indicated acceptable model fit, with Comparative Fit Index (CFI = .924), Tucker–Lewis Index (TLI = .905), Bentler–Bonett Non-Normed Fit Index (NNFI = .905), Incremental Fit Index (IFI = .925), and Relative Noncentrality Index (RNI = .924), all exceeding the recommended threshold of .90. The Goodness of Fit Index (GFI = .977) also indicated a good model fit. In addition, the Standardized Root Mean Square Residual (SRMR = .044) was below the recommended cutoff of .08, suggesting a satisfactory fit between the proposed model and the observed data. The Root Mean Square Error of Approximation (RMSEA = .089; 90% CI = .075–.104) indicated a marginal but still acceptable model fit.

Table 9. Second Order Factor Loading Values for the Academic Anxiety Scale (AAS)

Factor	Indicator	Estimate	Std. Error	z-value	p	95% Confidence Interval	
						Lower	Upper
Factor 1	Item 1	1.000	0.000			1.000	1.000
	Item 2	0.9451	0.09232	10.24	< .001	0.7642	1.126
	Item 3	0.7929	0.09475	8.368	< .001	0.6071	0.9786
	Item 4	1.270	0.1060	11.99	< .001	1.062	1.478
	Item 5	0.8187	0.08330	9.828	< .001	0.6554	0.9820
	Item 6	0.8530	0.08973	9.506	< .001	0.6771	1.029
	Item 7	1.333	0.1089	12.25	< .001	1.120	1.547
	Item 8	1.236	0.1064	11.61	< .001	1.027	1.444
	Item 9	1.285	0.1122	11.45	< .001	1.065	1.504
	Item 10	0.8761	0.09081	9.649	< .001	0.6982	1.054
	Item 11	1.228	0.1154	10.64	< .001	1.002	1.454

The standardized factor loading estimates for the 11 items are presented in Table 9. All items loaded significantly on the single latent factor ($p < .001$), with factor loadings ranging from 0.793 to 1.333. These findings indicate that each item contributes significantly to measuring the construct of academic anxiety, supporting the unidimensional structure of the Indonesian version of the Academic Anxiety Scale.

Table 10. Reliability Test Result

	Coefficient ω	Coefficient α
Factor 1	0.8981	0.8939

The reliability analysis demonstrated high internal consistency for the scale. As shown in Table 10, McDonald's omega was .898 and Cronbach's alpha was .894, both exceeding the recommended minimum value of .70. These results indicate that the Indonesian version of the Academic Anxiety Scale has good reliability and is suitable for assessing academic anxiety among Islamic senior high school students.

Discussion

This study aimed to adapt the Academic Anxiety Scale (AAS) into Indonesian and evaluate its psychometric properties among Islamic senior high school students living in boarding school settings. The findings demonstrated that the Indonesian version possesses satisfactory psychometric properties, including adequate content validity, acceptable

construct validity, and good internal consistency reliability. Consistent with the original Academic Anxiety Scale developed by Cassady et al. (2019), the present study supported a unidimensional structure of academic anxiety. Confirmatory Factor Analysis (CFA) confirmed that the Indonesian version adequately fit the proposed one-factor model. Furthermore, the reliability analysis demonstrated high internal consistency, with both Cronbach's Alpha and McDonald's Omega exceeding the recommended threshold. These findings indicate that the Indonesian adaptation successfully retained the conceptual structure of the original instrument following the cross-cultural adaptation process.

The evidence for construct validity extends beyond the translation process itself. Cross-cultural adaptation requires not only linguistic equivalence but also empirical evidence that the translated items adequately represent the intended latent construct within the target population. Clark and Watson (2019), Flake and Fried (2020), and Kalkbrenner (2021) emphasized that construct validity should be evaluated through factor analytic approaches because they provide direct evidence regarding the dimensionality of psychological instruments. In the present study Confirmatory Factor Analysis further supported this solution. Although the chi-square test was statistically significant, this finding is common in studies involving relatively large samples because the chi-square statistic is highly sensitive to sample size. Therefore, the overall model fit should be interpreted using multiple goodness-of-fit indices. The acceptable values of the CFI, TLI, IFI, RNI, GFI, and SRMR indicate that the one-factor model adequately represents the latent structure of the Indonesian version of the Academic Anxiety Scale. Although the RMSEA value was slightly above the ideal criterion, previous psychometric literature recommends interpreting RMSEA together with other fit indices rather than in isolation. Collectively, these findings provide strong evidence that the adapted instrument maintains the original measurement structure proposed by Cassady et al. (2019).

The reliability findings further support the quality of the adapted instrument. Cronbach's Alpha (.894) and McDonald's Omega (.898) indicate that the Indonesian version possesses high internal consistency. These coefficients are comparable to those reported in the original study by Cassady et al. (2019) and are consistent with the Persian adaptation reported by Peimanpak et al. (2025), which also demonstrated satisfactory reliability among secondary school students. Nevertheless, Hayes and Coutts (2020) emphasized that Cronbach's Alpha should not be interpreted as evidence of construct validity because reliability only reflects the consistency of item responses. Consequently, the present study complemented reliability analysis with both Exploratory Factor Analysis and Confirmatory Factor Analysis, thereby providing stronger psychometric evidence that the Indonesian version consistently measures the construct of academic anxiety.

From a theoretical perspective, the present findings are consistent with Achievement Emotion Theory proposed by Pekrun et al. (2017), which conceptualizes academic anxiety as an achievement-related emotion arising from students' cognitive appraisal of academic demands, anticipated failure, and evaluative situations. The one-factor structure identified in this study suggests that worries about academic performance, fear of failure, tension during learning activities, concerns regarding teachers' evaluations, and anxiety related to academic expectations collectively represent a single underlying construct of academic anxiety. This

finding indicates that these manifestations are not independent psychological dimensions but rather interconnected expressions of the same emotional experience.

The boarding school environment provides an important context for interpreting these findings. Unlike students in conventional day schools, boarding school students spend most of their daily lives within a structured educational environment where academic activities, residential responsibilities, institutional regulations, religious practices, and peer interactions occur simultaneously. Such conditions expose students to continuous academic demands and evaluative situations that may intensify feelings of academic anxiety. Previous Indonesian studies have reported that academic resilience, optimism, boarding school demands, and academic workload are associated with academic stress among boarding school students (Jalal, 2025; Takril & Herdi, 2022). Likewise, international studies have demonstrated that academic stress is associated with psychological well-being, sleep quality, school belonging, mental health, and academic adjustment among adolescents (Haritay et al., 2025; Hosseinkhani et al., 2020; Liu & Rashid, 2025; Zhu et al., 2021). The present findings extend this literature by demonstrating that these diverse academic experiences are adequately represented within a single latent construct of academic anxiety among Indonesian boarding school students.

The present study also contributes to the growing body of Indonesian research on academic anxiety. Previous studies have consistently demonstrated that academic anxiety is associated with lower academic achievement, emotional distress, and learning difficulties among Indonesian students (Nabila et al., 2025; Septyandini et al., 2025; Sukmaputra et al., 2025). However, most previous studies employed existing instruments without evaluating their psychometric quality within the Indonesian cultural context. In contrast, the present study focused on the adaptation and validation of the Academic Anxiety Scale itself. By demonstrating satisfactory content validity, acceptable construct validity, and high reliability, this study provides stronger empirical support for using the Indonesian version of the Academic Anxiety Scale in future educational and psychological research.

From a measurement perspective, this study contributes to the development of psychological assessment in Indonesia by providing empirical evidence for the cross-cultural adaptation of the Academic Anxiety Scale. Syaddiyah et al. (2025) emphasized that valid and reliable instruments are fundamental to evidence-based guidance and counseling practice. Similarly, Clark and Watson (2019), Flake and Fried (2020), and Kalkbrenner (2021) argued that psychological assessment requires evidence of content validity, construct validity, and reliability to ensure accurate measurement of psychological constructs. The present study addressed these recommendations by employing expert review, Content Validity Index (CVI), readability testing, Exploratory Factor Analysis, Confirmatory Factor Analysis, and reliability estimation using both Cronbach's Alpha and McDonald's Omega. The findings demonstrate that the Indonesian adaptation retains the original one-factor structure while exhibiting satisfactory psychometric properties. Consequently, this study provides methodological evidence that may guide future cross-cultural adaptation and validation studies of psychological instruments within Indonesian educational settings.

Overall, the findings indicate that the Indonesian version of the Academic Anxiety Scale possesses satisfactory psychometric properties for assessing academic anxiety among Islamic

senior high school students living in boarding school settings. The combination of content validity evaluation, Exploratory Factor Analysis, Confirmatory Factor Analysis, and reliability analysis supports the use of the instrument as a valid and reliable measure of academic anxiety. By confirming the original unidimensional structure of the Academic Anxiety Scale within the Indonesian cultural context, this study extends previous psychometric research while providing researchers, school counselors, and educational practitioners with an appropriate instrument for identifying academic anxiety and supporting evidence-based intervention programs among boarding school students.

Novelty of the Research

The novelty of this study lies in the cross-cultural adaptation and comprehensive psychometric evaluation of the Academic Anxiety Scale (AAS) for Indonesian Islamic senior high school students living in boarding school settings. Unlike previous Indonesian studies that primarily used existing academic anxiety instruments without evaluating their psychometric properties, this study systematically adapted the Academic Anxiety Scale through forward translation, expert review, back translation, cultural adaptation, readability testing, and psychometric evaluation. The findings confirmed that the Indonesian version retained the original unidimensional structure proposed by Cassady et al. (2019), with satisfactory construct validity and high internal consistency reliability. These results indicate that the conceptual meaning of academic anxiety was successfully preserved following the cross-cultural adaptation process.

Furthermore, this study extends the existing literature by providing empirical evidence that the Academic Anxiety Scale is valid and reliable for use among Indonesian students living in boarding school environments. The availability of a culturally adapted instrument supported by evidence of content validity, construct validity, and reliability provides researchers, school counselors, and educational practitioners with an appropriate tool for assessing academic anxiety while contributing to the development of culturally relevant psychological assessment instruments in Indonesia.

Implications and Contributions

The findings of this study have both theoretical and practical implications. Theoretically, this study contributes to the psychometric literature by demonstrating that the Indonesian adaptation of the Academic Anxiety Scale retains the original unidimensional structure proposed by Cassady et al. (2019). The findings provide evidence that the construct of academic anxiety remains conceptually stable following cross-cultural adaptation and can be validly measured among Indonesian Islamic senior high school students living in boarding school settings. Furthermore, the study strengthens the application of Achievement Emotion Theory (Pekrun et al., 2017), which conceptualizes academic anxiety as an achievement-related emotion arising from students' cognitive appraisal of academic demands and evaluative situations. By providing evidence of content validity, construct validity, and reliability, this study also enriches the literature on psychological assessment and supports the use of culturally adapted instruments in Indonesian educational settings (Poudel et al., 2026).

Practically, the Indonesian version of the Academic Anxiety Scale can be used by school counselors as an initial screening instrument to identify students who may be experiencing

academic anxiety. The scale may be administered at the beginning of the academic year, before examinations, or during periods of increased academic demands to facilitate early identification and intervention. The assessment results can assist counselors in planning appropriate guidance and counseling services, including individual counseling, group guidance, psychoeducation, and academic stress management programs. At the institutional level, the instrument may support schools in implementing systematic mental health screening and developing evidence-based prevention programs for boarding school students. Nevertheless, the Academic Anxiety Scale should be used as a screening instrument rather than a diagnostic tool, and its results should be interpreted together with professional judgment, interviews, behavioral observations, and other relevant educational or psychological information.

Research Limitations

This study has several limitations that should be considered when interpreting the findings. First, the participants were limited to Islamic senior high school students living in boarding school settings; therefore, the findings cannot be generalized to students in non-boarding schools or other educational levels without further validation. Second, although the study provided evidence of content validity, construct validity through Confirmatory Factor Analysis (CFA) and internal consistency reliability, it did not examine other important psychometric properties such as convergent validity, discriminant validity, measurement invariance, or test–retest reliability. Third, the cross-sectional design did not allow the stability of the instrument over time to be evaluated. Finally, the use of self-report questionnaires may have introduced response bias or social desirability bias, particularly because students may have been reluctant to disclose their actual levels of academic anxiety.

Future studies are recommended to evaluate the Indonesian version of the Academic Anxiety Scale using more diverse samples from different educational settings and regions of Indonesia. Further psychometric evaluation should include measurement invariance across gender, grade level, and boarding school type, as well as test–retest reliability, convergent and discriminant validity, and more advanced psychometric approaches such as Item Response Theory (IRT) or Rasch analysis to strengthen the evidence supporting the instrument's measurement properties.

Conclusion

This study successfully adapted the Academic Anxiety Scale (AAS) into Indonesian and demonstrated that the instrument possesses satisfactory psychometric properties among Islamic senior high school students living in boarding school settings. The findings provide evidence of excellent content validity, acceptable construct validity, and high internal consistency reliability while confirming the original unidimensional structure of the scale. These results indicate that the Indonesian version of the Academic Anxiety Scale is a valid, reliable, and culturally appropriate instrument for assessing academic anxiety in boarding school contexts. The adapted instrument offers researchers, school counselors, and educational practitioners an evidence-based tool for early identification of students experiencing academic anxiety and for supporting the development of appropriate guidance, counseling, and mental health intervention programs. Future studies are encouraged to

further examine additional psychometric properties, including measurement invariance, convergent and discriminant validity, test–retest reliability, and the applicability of the scale across broader educational settings and more diverse student populations in Indonesia.

Author Contributions

M.F. conceived the study, formulated the research problem, coordinated the data collection process, and drafted the initial manuscript. N.H. contributed to the research design, methodology, instrument adaptation procedure, and academic supervision. D.H.R. contributed to the conceptual framework, psychometric analysis plan, and critical revision of the manuscript. A.M.N. contributed to the cross-cultural adaptation review, literature refinement, and critical review of the manuscript for academic clarity. A.F.P. contributed to the literature review, manuscript organization, reference management, and final formatting according to the journal template. All authors reviewed, revised, and approved the final version of the manuscript.

Declaration of Conflicting Interests

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

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