Adaptation and Validation of The Achievement Emotions Questionnaire Academic Boredom Subscale in Indonesian Islamic Boarding Schools

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Abstract
Despite the growing recognition of academic boredom as a factor influencing student engagement and achievement, there is still a lack of culturally adapted and validated instruments for use in religious and highly structured educational settings such as Islamic boarding schools. Most existing tools were developed in general, non-boarding, and secular school contexts, primarily in Western countries that differ significantly from the cultural and educational characteristics of Islamic boarding schools in Indonesia. Therefore, this study aimed to adapt and test the validity and reliability of the 16-item Academic Boredom subscale of the Achievement Emotions Questionnaire (AEQ) among Islamic boarding school students in Indonesia. A total of 408 students from Islamic Boarding Schools in East Java, Indonesia participated in the study. This process adaptation involved several stages, including double translation, expert review, a readability test and construct confirmation. The data were analysed using Confirmatory Factor Analysis (CFA) with the Diagonally Weighted Least Squares (DWLS) method, as well as with reliability tests using Cronbach's Alpha and McDonald's Omega. The model fit indices (CFI = 0.919; TLI = 0.901; RMSEA = 0.071) and high internal consistency (α = 0.906; ω = 0.917) indicate that the adapted Academic Boredom subscale is valid and reliable for use in Islamic boarding school students in Indonesia. The implications of the study indicate that the adapted AEQ scale can be used as a diagnostic assessment tool for academic boredom in Islamic boarding school-based junior high school student, as well as supporting the development of affection-based learning interventions in Islamic Boarding School.

INTRODUCTION

In contemporary educational research, the role of emotions in the teaching and learning process is a growing area of interest. One of the most prevalent negative emotions that has received scant academic attention is academic boredom. The phenomenon of boredom has been demonstrated to exert a deleterious effect on a number of psychological processes, including concentration and motivation (Pekrun, 2024; Pekrun & Stephens, 2010; Tze et al., 2015). In addition to its impact on these immediate cognitive functions, the study also demonstrates that boredom can contribute to a decline in long-term educational engagement and performance.

Meta-analytic research has shown that boredom exerts a significant detrimental effect on engagement and academic performance across various levels of education (Affandi et al., 2023; Bridgeland, 2010; Jaradat, 2015; Tze et al., 2015). However, the psychological aspects of academic boredom have rarely been researched in depth in non-Western contexts, particularly faith-based educational institutions such as Islamic Boarding School (Affandi et al., 2023).

In Indonesia, Islamic boarding schools are unique institutions that combine a general curriculum with intensive religious education in a boarding setting (Abidin, 2020; Alid et al., 2022; Anshari et al., 2023). They not only function as learning institutions, but also as places where moral values, discipline and social supervision are internalized (Anshari et al., 2023; Manshuruddin et al., 2021). However, the dense learning structure, regular schedule and lack of student autonomy can potentially lead to academic boredom (Afiati, 2018; Ekatushabe et al., 2022; Hadisi et al., 2022). According to the Control-Value Theory of Achievement Emotions (CVTAE; Goetz & Hall, 2014; Pekrun, 2006; Pekrun et al., 2011), the main factors for academic boredom are low perceived control and the subjective value of learning tasks. Give one more sentence, at least, to conclude this paragraph.

The Achievement Emotions Questionnaire (AEQ) has been successfully validated in various educational contexts. These include foreign language classes (Davari et al., 2022; Xie, 2021), STEM education (Bhansali & Sharma, 2019), mathematics and physics subjects (Ekatushabe et al., 2022; Frenzel et al., 2007), physical education contexts (Fierro-Suero et al., 2020) and primary-middle schools in developed countries (Peixoto et al., 2015). Furthermore, recent studies in various countries demonstrate that boredom is associated with reduced learning persistence, particularly among students lacking effective emotion regulation strategies (Derakhshan et al., 2024; Fathi et al., 2023; Tze et al., 2015). However, the AEQ instrument has never been tested for validity in a Islamic Boarding School environment that has significantly different curriculum structures, cultural values, and learning experiences (Abidin, 2020; Anam et al., 2019; Jamilah & Affandi, 2024).

Conversely, previous studies measuring academic boredom often relied on instruments developed in the context of Western education without adequate adaptation to different cultural and religious contexts (Bhansali & Sharma, 2019; Frenzel et al., 2007; Peixoto et al., 2015). These instruments tend to reflect the emotional and pedagogical dynamics of secular and individualistic learning environments, which differ substantially from the collectivist, disciplined, and religiously structured systems found in Islamic boarding schools (Abidin, 2020; Alid et al., 2022; Anshari et al., 2023; Arafat et al., 2016). To date, applications and validations of the Academic Boredom subscale of the AEQ have mostly been conducted in Western countries, primarily within general, non-religious school settings. Their use in Islamic boarding schools, where students follow intensive religious curricula, rigid daily schedules, and experience limited autonomy, has not yet been adequately explored. This distinction reinforces the need for measurement tools that better reflect the emotional realities of learners in such environments. As a result, there remains a need for culturally and contextually relevant instruments to accurately assess academic boredom among students in religious-based educational institutions, particularly in non-Western societies (Affandi et al., 2023; Frenzel et al., 2007; Pekrun et al., 2011).

In addition, although academic boredom is increasingly recognized as a factor that negatively affects student motivation, quality of life, student engagement, and academic achievement (Abdellatif, 2022; G. R. Affandi et al., 2023; Bekker et al., 2023; Hunte et al., 2022), to date there has been no psychometrically validated instrument specifically tailored to Islamic boarding school students. Existing instruments have not been able to capture the unique affective experiences shaped by intensive memorization activities, limited autonomy, and strict daily routines characteristic of this environment (Afiati, 2018; Hadisi et al., 2022; Manshuruddin et al., 2021). Without culturally adapted measurement tools, teachers and

counselors may struggle to detect early signs of emotional issues. This gap can hinder timely intervention, despite previous research showing that unaddressed academic boredom can lead to long-term psychological disorders, including learning burnout and withdrawal (Alvarez et al., 2021; Audrin & Hascoët, 2021; Bekker et al., 2023, 2023). Therefore, the development of a reliable and context-sensitive measure of academic boredom is crucial to support affective monitoring and intervention efforts in Islamic boarding school systems.

This study represents a pioneering endeavor in seeking to adapt and validate the Academic Boredom subscale of the AEQ to the context of Islamic Boarding School. The adaptation process was conducted in accordance with two prominent international guidelines: the International Test Commission (ITC, 2017) and Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures (Beaton et al., 2000). These two guidelines ensure linguistic, cultural, and construct equivalence between the original and adapted versions. This step also addresses the literature challenge to develop affective measurement tools that are appropriate to the socio-cultural context of Islamic education (Arafat et al., 2016; Gyagenda, 2023; Mehmood et al., 2021; Monita & Hasan, 2024).

Thus, the main objective of this study was to examine the psychometric properties of the AEQ academic boredom subscale in Islamic boarding school-based junior high school student. The study tested the content, response process and construct validity (through CFA-DWLS) of the instrument, as well as its internal consistency. A more comprehensive understanding of academic boredom in faith-based educational settings is expected to be achieved with the results, as well as a useful measurement tool being offered in the practice of affect-based teaching and psychopedagogic interventions.

METHODS

Design

The present study employs a descriptive quantitative approach, utilizing an adaptation and validation instrument. The adaptation process followed standard procedures, including back-translation, content validation by experts, and field testing. This adaptation process is based on the concept of measurement instrument adaptation from the International Test Commission (ITC, 2017) guidelines and the Guidelines for the Cross-Cultural Adaptation of Self-Report Measurement Instruments (Beaton et al., 2000). This design allows for a comprehensive assessment of the factor structure, reliability, and cultural relevance of the The Achievement Emotions Questionnaire (AEQ) boredom subscale in the context of Islamic boarding schools.

Participants

The participants in this study comprised Islamic boarding school students in East Java, with a total of 416 respondents selected through purposive sampling technique. The inclusion criteria encompassed participants between the ages of 12 and 15 years, with a minimum of one semester of learning experience in an Islamic Boarding School environment. However, following the data cleaning process, only 408 of the participants' eligible for analysis.

Measures

Academic boredom was measured using an adaptation of The Achievement Emotions Questionnaire (AEQ) specifically on the emotion aspect of boredom (Pekrun et al., 2002, 2011). The AEQ that measures boredom is divided into 2 situations, namely Class-Related Emotion Scales (11 items) and Learning-Related Emotion Scales (11 items). The AEQ is based on 4 aspects, including: Affective (unpleasant sensation), Cognitive (perception of time), Motivational (desire to withdraw from activity), Physiological (decreased arousal) (Pekrun, 2006; Pekrun et al., 2002, 2011). This scale consists of 5 answers in the form of a Likert scale

consisting of points 'strongly disagree' worth 1 to 'strongly agree' worth 5 For the blue print of the AEQ from the boredom sub-scale and the original items can be downloaded at the following link: https://shorturl.at/n5hnf.
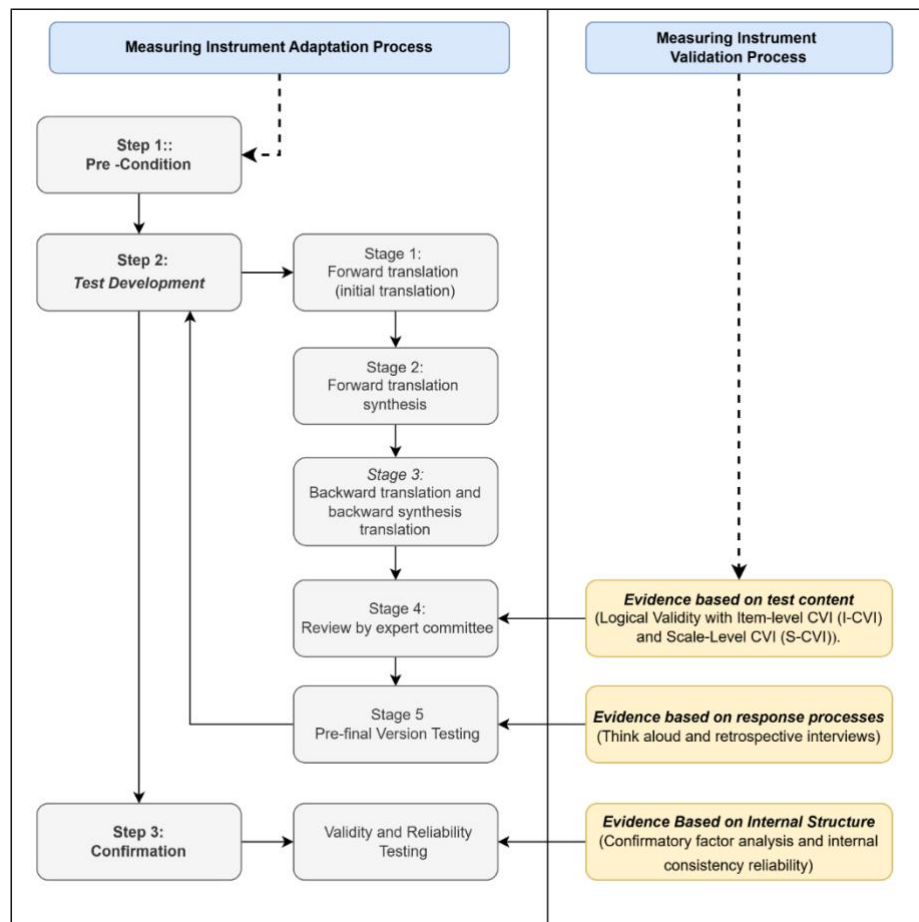

Figure 1. Flowchart of the Adaptation and Validation Guide for the Academic Boredom Scale

Procedures

The process of adapting the Academic Boredom subscale of the AEQ was conducted by referring to the synthesis of two main approaches, namely the International Test Commission (ITC, 2017) guidelines and Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures by Beaton et al. (2000). The adaptation process is comprised of three primary stages: The following three stages must be adhered to in order to ensure the effective and efficient testing process: Pre-condition, Test Development, and Confirmation. In the pre-condition stage, the instrument was selected based on literature review and conceptual relevance to the Islamic boarding school context. Permission was requested from the original authors, and use was permitted with proper citation. The AEQ can be downloaded at (Link: https://shorturl.at/PDuk6) and is available in the AEQ. The Test Development stage involved multiple steps. First, forward translation was conducted by two bilingual translators—one with expertise in educational psychology and the other a linguist unfamiliar with the instrument—to ensure both conceptual and linguistic accuracy. The two translations were synthesized into a single version (T-12) through collaborative discussion. Subsequently, backward translation was performed by two different bilingual translators to evaluate the equivalence of meaning with the original scale. An expert committee comprising professionals in psychometrics, psychology, and linguistics reviewed the pre-final version for content and cultural relevance.

Then, quantitative content validity was assessed. Finally, the pre-final version was tested on 29 Islamic boarding school students using cognitive interviews to examine clarity, interpretation, and contextual fit of the items. In the confirmation stage, the adapted scale was administered to 408 Islamic boarding school students.

Data analysis

The data analysis in this study was conducted systematically to ensure the validity and reliability of the instrument. Initially, content validity was evaluated using the Item-Level Content Validity Index (I-CVI) and the Scale-Level Content Validity Index (S-CVI), which measure expert agreement on the relevance of each item and the overall scale, respectively (Lawshe, 1975; Zamanzadeh et al., 2015). In addition, the analysis of evidence based on internal structure (construct validity) was tested through the implementation of Confirmatory Factor Analysis (CFA) with the Diagonally Weighted Least Square (DWLS) method, in accordance with the characteristics of ordinal data. The construct validity of the model is determined by the model's feasibility criteria, which are based on the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI), which indicate how well the proposed model fits the observed data (Arafat et al., 2016; Byrne, 2010; Coaley, 2010; Hair et al., 2021). The model is considered to be feasible if the CFI and TLI values are greater than 0.90, and if the the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR) values are less than 0.08 (Hair et al., 2021). The subsequent stage of the research is a reliability test conducted to measure the internal consistency of the instrument, using the Cronbach's Alpha and McDonald's Omega coefficients, with an ideal value above 0.70 (Cheung et al., 2024; Hair et al., 2021). The analysis process was conducted utilising JASP software version 16.0.

RESULTS AND DISCUSSION

Results

To evaluate the validity and reliability of the adapted Achievement Emotions Questionnaire (AEQ) Boredom subscale (Pekrun et al., 2002, 2011), we used data collected from completed questionnaires. The analysis was conducted after a thorough data cleaning process, focusing on Islamic boarding school students. Table 1 presents the demographic distribution of the 408 participants. The data include variations in gender, age, and grade level. The results of the adaptation and validation of the Indonesian version of the academic boredom scale consist of three stages, namely Pre-Condition, Test Development, and Confirmation.

Table 1. Distribution of Participants by Gender, Grade Level and Age.

Category	Subcategory	Frequency	Percentage
Gender	P	320	77.11
	L	95	22.89
Class	VIII	143	34.46
	VII	137	33.01
	IX	135	32.53
Age	12	96	23.13
	13	118	28.43
	14	115	27.71
	15	86	20.72

The adaptation of the Academic Boredom subscale of the AEQ in this study yielded a preliminary Indonesian version, referred to as T-12. This version was the outcome of a rigorous adaptation process involving forward and backward translation, expert review, and item refinement to fit the cultural and educational context Islamic boarding school-based junior high school student in Indonesia. The T-12 version consisted of 22 items that retained conceptual

equivalence with the original scale while incorporating culturally relevant language and examples (Table 2.). The adapted items were then subjected to content validation and pilot testing, which informed further revisions. The results from the T-12 version formed the basis for subsequent psychometric evaluation and item refinement, leading to a validated final model with 16 items.

Table 2. Original Version of Academic Boredom Scale Items and Initial Adaptation Results

Academic Boredom Scale Original Version	Academic Boredom Scale Adapted Version (T-12)
Aff1. I get bored.	*Aff1. Saya merasa bosan.*
Aff2. I find this class fairly dull.	*Aff2. Saya merasa kelas ini cukup membosankan.*
Cog3. The lecture bores me.	*Cog3. Pelajaran ini membosankan bagi saya.*
Cog4. Because I get bored my mind begins to wander.	*Cog4. Karena saya merasa bosan, pikiran saya kemana-mana.*
Mot5. I'm tempted to walk out of the lecture because it is so boring.	*Mot5. Saya terdorong untuk keluar dari kelas karena sangat membosankan*
Mot6. I think about what else I might be doing rather than sitting in this boring class.	*Mot6. Saya memikirkan hal lain yang mungkin saya lakukan daripada duduk di kelas yang membosankan ini.*
Mot7. Because the time drags, I frequently look at my watch.	*Mot7. Karena waktu terasa lama, saya sering melihat jam.*
Phys8. I get so bored I have problems staying alert.	*Phys8. Saya menjadi sangat bosan sehingga saya kesulitan untuk tetap waspada/ fokus.*
Phys9. I get restless because I can't wait for the class to end.	*Phys9. Saya merasa gelisah karena tidak sabar menunggu kelas berakhir.*
Phys10. During class I feel like I could sink into my chair.	*Phys10. Selama kelas berlangsung saya merasa seperti akan terlelap di kursi saya*
Phys11. I start yawning in class because I'm so bored.	*Phys11. Saya mulai menguap di kelas karena saya sangat bosan.*
Mot12. Because I'm bored I have no desire to learn.	*Mot12. Karena saya bosan saya tidak punya keinginan untuk belajar.*
Mot13. I would rather put off this boring work till tomorrow.	*Mot13. Saya lebih suka menunda tugas membosankan ini sampai besok.*
Aff14. The material bores me to death.	*Aff14. Materi pelajaran membuat saya bosan setengah mati.*
Aff15. Studying for my courses bores me.	*Aff15. Mempelajari materi pelajaran membuat saya bosan.*
Aff16. Studying is dull and monotonous.	*Aff16. Belajar itu membosankan dan itu-itu saja*
Cog17. While studying this boring material, I spend my time thinking of how time stands still.	*Cog17. Saat mempelajari materi yang membosankan ini, saya merasa waktu berjalan sangat lambat.*
Cog18. The material is so boring that I find myself daydreaming.	*Cog18. Materinya ini sangat membosankan sehingga membuat saya melamun.*
Cog19. I find my mind wandering while I study.	*Cog19. Pikiran saya kemana-mana ketika saya sedang belajar.*
Phys20. Because I'm bored I get tired sitting at my desk.	*Phys20. Karena saya bosan, saya merasa lelah duduk di bangku saya.*
Phys21. The material bores me so much that I feel depleted.	*Phys21. Materi ini sangat membosankan sehingga saya merasa kehabisan energi.*
Phys22. While studying I seem to drift off because it's so boring.	*Phys22. Ketika belajar saya sampai tertidur karena sangat membosankan.*

Note: Aff = Affective; Cog = Cognitive; Mot = Motivational; Phy = Physiological

Evidence Based on Test Content

Content validity testing (evidence based on test content) of the adaptation of the Academic Boredom scale from the AEQ subscale (Pekrun et al., 2002, 2011) was carried out by three experts in the fields of educational psychology and language. Each expert was invited to rate the relevance, importance and clarity of each item using a 4-point Likert scale. The analysis of these ratings was conducted using the Content Validity Index (CVI), incorporating

both item-level CVI (I-CVI) and scale-level CVI (S-CVI; Lawshe, 1975; Zamanzadeh et al., 2015).

The results demonstrated that the I-CVI values ranged from 0.7 to 1.0. Four items (items 3, 12, 17, 19) obtained an I-CVI score of 0.7, which is still in the maintainable category with minor revisions (Haynes et al., 1995; Zamanzadeh et al., 2015). Conversely, item 10 attained a clarity score of merely 0.3, signifying the necessity for substantial enhancement. The S-CVI values on the relevance and clarity aspects were 0.94 each, while the importance aspect reached 1.0, indicating high consistency among experts and strong content validity. As illustrated in Table 3, the results of the CVI and S-CVI analyses are presented in meticulous detail.

Table 3. Summary of Results of content validity with CVI (I-CVI and S-CVI) Academic Boredom Scale

Aspect Rating	Range I-CVI	Items Need Revision	S-CVI	Interpretation
Relevance	0.7 – 1.0	Items 3, 12, 17, 19	0.94	Valid
Importance	1.0	-	1.00	Highly valid
Clarity	0.3 – 1.0	Items 8, 9 (0.7); Items 10 (0.3)	0.94	Valid, need revision

Evidence Based on Response Processes

As part of the pre-final test, we conducted a readability assessment on 29 boarding school-based junior high school students who matched the characteristics of the target population. Think aloud and retrospective interview techniques were used to identify respondents' understanding of each item (American Educational Research Association et al., 2014; Padilla & Benítez, 2014).

In general, the outcomes demonstrated that the majority of respondents exhibited an adequate comprehension of the content encompassed within the scale. However, some issues were identified in items with specific or idiomatic diction, such as the word "*monoton*" in item Aff16, and the phrase "*pikiran ke mana-mana*" in item Cog3. Furthermore, certain items were regarded as ambiguous by respondents and did not fully capture aspects of academic boredom, such as Aff1 and Mot7. In light of these findings, it is recommended that certain items be revisited at a subsequent stage.

Confirmatory Factor Analysis

In order to ascertain the construct validity of the adapted version of the Academic Boredom Scale, a two-stage Confirmatory Factor Analysis (CFA) was conducted, with a total of 408 boarding school-based junior high school students participating. The initial model (Stage 1) comprised 22 items representing four dimensions: affective, cognitive, motivational, and physiological. The results of the first-round CFA indicated that the model did not meet the goodness-of-fit criteria, with RMSEA = 0.099, CFI = 0.787, TLI = 0.757, and SRMR = 0.071 (Figure 2). Furthermore, the Average Variance Extracted (AVE) value for all dimensions is below the minimum threshold of 0.50, indicating that convergent validity has not been achieved optimally. In light of the findings, it was determined that six items with low factor loadings and conceptual issues (Aff1, Aff2, Cog3, Cog4, Mot7, Phys11) should be eliminated. A critical evaluation of the revised model (Stage 2) via CFA analysis revealed substantial enhancement in all metrics of model feasibility, namely RMSEA = 0.071, CFI = 0.919, TLI = 0.901, and SRMR = 0.044 (Figure 3.). It is evident that all remaining items possess a loading factor greater than 0.55, accompanied by an enhancement in AVE values across all four dimensions. The detailed analysis results are described in Table 4.
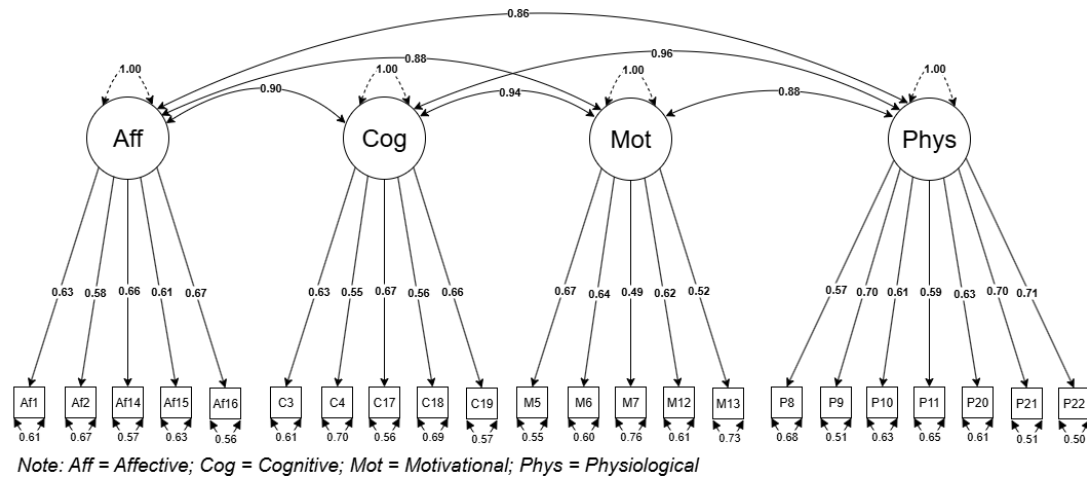
Note: Aff = Affective; Cog = Cognitive; Mot = Motivational; Phys = Physiological

Figure 2. Path diagram and loading factor index of academic boredom scale at stage 1

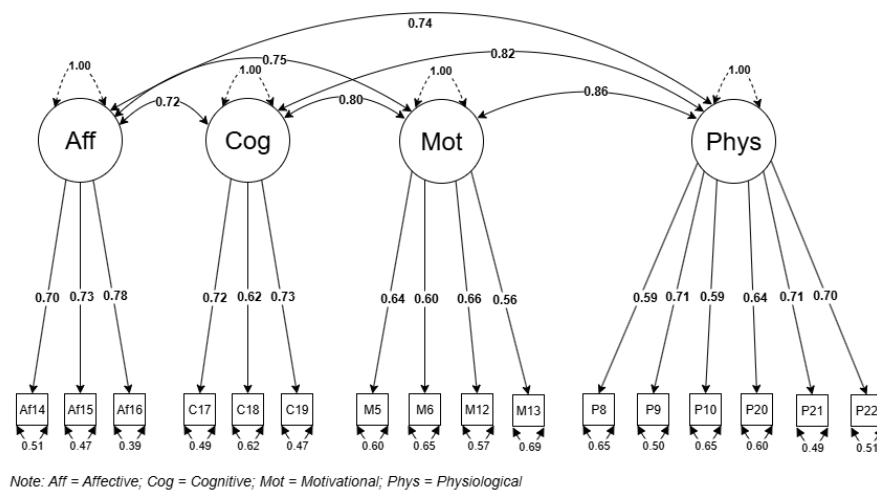Note: Aff = Affective; Cog = Cognitive; Mot = Motivational; Phys = Physiological

Figure 3. Path diagram and loading factor index of academic boredom scale at stage 2

Table 4. Summary of the Comparison of Construct Validity of the Academic Boredom Scale (Stage 1 & Stage 2)

Criteria	Stage 1	Stage 2	Interpretation
Item Discrimination Index	All items ≥ 0.30	All items ≥ 0.30	Good discrimination in both trials
Chi-Square (χ^2, df, p)	$\chi^2 = 1017.267$, df = 203, p < 0.001	$\chi^2 = 146.217$, df = 48, p < 0.001	Model 2 better fits the data despite significance
RMSEA	0.099	0.071	Better model fit in Trial 2 (≤ 0.08)
CFI / TLI	CFI = 0.787; TLI = 0.757	CFI = 0.919; TLI = 0.901	Trial 2 meets fit criteria (≥ 0.90)
SRMR	0.071	0.044	Excellent fit in Trial 2 (≤ 0.08)
Factor Loadings Range	0.49 – 0.705	0.558 – 0.781	Higher loadings in Trial 2
Average Variance Extracted (AVE)	Affective: 0.395 Cognitive: 0.373 Motivational: 0.351 Physiological: 0.415	Affective: 0.547 Cognitive: 0.480 Motivational: 0.375 Physiological: 0.434	Convergent validity improved in Trial 2 but still below optimal for some factors
Items Removed	None	Aff1, Aff2, Cog3, Cog4, Mot7, Phys11	Item reduction improved model fit
Final Model Used	Not selected	Selected	Final version based on Trial 2

As demonstrated in Table 4, the scale model in the second round has been shown to exhibit significantly enhanced feasibility and increased convergent validity, thus rendering it a more strongly recommended option for utilisation in data collection.

Internal Consistency Reliability

The process of internal consistency reliability testing was conducted by calculating Cronbach's alpha and McDonald's omega coefficients for each dimension and the total scale. The results of the analysis show that all dimensions have adequate to very good reliability values (α and $\omega \geq 0.70$), while the Total Academic Boredom Score demonstrated a remarkably high degree of reliability ($\alpha > 0.90$) subsequent to the elimination of items exhibiting low loading factors (Table 5).

Table 5. Summary of internal consistency reliability (Cronbach's α and McDonald's ω) in the second stage of analysis

Aspect	Coefficient ω	Coefficient α	Description
Affective	0.783	0.782	Adequate
Cognitive	0.728	0.733	Adequate
Motivational	0.708	0.702	Adequate
Physiological	0.821	0.818	Good
Total Academic Boredom Score	0.917	0.906	Very Good

The findings of the CFA and the reliability analysis indicated that the revised Academic Boredom Scale (16 items) exhibited enhanced internal structure, high internal consistency, and reliability for utilisation in measuring academic boredom among Islamic boarding school students in Indonesia.

Discussion

Academic boredom has been increasingly acknowledged as a significant factor affecting student motivation, engagement, and academic outcomes. However, most available instruments for measuring academic boredom have been developed in Western and secular educational contexts, with limited cultural adaptation for faith-based and highly disciplined settings such as Islamic boarding schools. This has created a gap in valid and reliable measurement tools suited to the unique emotional and structural environment of Islamic boarding schools in Indonesia. To address this gap, the present study adapted and validated the Academic Boredom subscale of the AEQ for junior high school students in Islamic boarding schools.

The findings of this study corroborate the validity and reliability of the adapted version of the Achievement Emotions Questionnaire (AEQ) Academic Boredom subscale when employed in the context of Islamic boarding school students. The CFA analysis employing the DWLS approach yielded a satisfactory model fit for the four dimensions of academic boredom: affective, cognitive, motivational, and physiological. Furthermore, the findings from the internal consistency analysis confirmed that the revised Academic Boredom Scale demonstrated strong reliability across its dimensions. This suggests that the adapted instrument consistently measures the construct of academic boredom in the context of Islamic boarding school students.

The present study provides a definitive response to the primary research question, namely whether the AEQ scale can be effectively adapted and validated within an Islamic value-based education system. This success serves to reinforce the methodological approach that uses the instrument adaptation guidelines from the International Test Commission (ITC, 2017), content validity testing (CVI), readability testing, and Confirmatory Factor Analysis sensitive to ordinal data. In this context, the present study provides a robust empirical foundation for the utilization of the AEQ in non-Western contexts, thereby addressing a significant gap in the extant literature which had been dominated by studies from Australia, Europe, and the Middle East (Affandi et al., 2023; Bhansali & Sharma, 2019; Davari et al., 2022).

Theoretically, this study is based on Pekrun's Control-Value Theory of Achievement Emotions (CVTAE; Pekrun & Stephens, 2010), which posits that academic boredom stems from students' diminished perception of autonomy in learning and negligible subjective value assigned to academic tasks. The findings that Islamic boarding school students also demonstrate multidimensional patterns of boredom—with items related to fatigue, affective discomfort, desire to withdraw, and wandering thoughts—support the CVTAE across cultures (Goetz & Hall, 2019, 2014; Pekrun et al., 2011; Pekrun & Stephens, 2010). This finding suggests that the structure of academic emotions is universal, yet its operationalization is contingent on local context.

This study shows that the four dimensions of academic boredom—affective, cognitive, motivational, and physiological—operate validly in the context of Islamic boarding schools, reinforcing the cross-cultural validity of the AEQ as found in previous studies (e.g., Bhansali & Sharma, 2019; Davari et al., 2022). This structure aligns with empirical evidence supporting the existence of boredom as a multidimensional phenomenon that can impact learning disengagement (Bekker et al., 2023; Pekrun et al., 2011; Tze et al., 2015).

Previous studies have shown that boredom is an "overlooked emotion" but is crucial because it is contagious in the learning process (Goetz & Hall, 2019; Macklem, 2015a, 2015b). This is reinforced by the results of a meta-analysis study showing that boredom is negatively associated with academic achievement (Affandi et al., 2023; Tze et al., 2015). In this study, the strong reliability and factor structure of the adapted AEQ version prove that boredom in Islamic boarding schools is not merely a common affective perception but forms a systematic psychological pattern that can be measured. Furthermore, some researchers propose that boredom acts as a mediating emotion bridging motivational variables and learning outcomes. This aligns with research findings that academic boredom mediates the relationship between self-efficacy and performance (Affandi et al., 2025; Liu & Lu, 2014; Lu & Rameli, 2023). A comparable finding was reported by Fathi et al. (2023) in their study on the role of mindfulness and coping self-efficacy in boredom. Within the context of Islamic boarding schools, the presence of authoritative structures has been demonstrated to potentially erode self-efficacy, thus rendering the validated boredom scale a crucial tool for the early detection of such imbalances.

These results are consistent with the findings of Obergriesser and Stoeger (2020), who demonstrated that positive emotions, such as enjoyment, can neutralize the effects of boredom. In this context, the evaluation of boredom assumes particular significance in the formulation of long-term pedagogical strategies, particularly within the context of bustling boarding schools, such as Islamic Boarding Schools (Jamilah & Affandi, 2024; Sharp et al., 2019). Consequently, the validation of the AEQ in Islamic education systems, characterized by distinctive curriculum structures, such as Islamic boarding schools, enhances the instrument's generalizability across cultural and religious contexts (Frenzel et al., 2007; Li, 2021; Pawlak et al., 2020; Suzuki & Tonegawa, 2022). This constitutes the primary argument of the present study, which posits that the initiation of boredom interventions should be entrusted to curriculum design, as opposed to the conventional approach of targeting individual students (Macklem, 2015b; Tze et al., 2015).

Implications

The findings of this study make an important contribution in both theoretical and practical terms. From a theoretical perspective, the successful adaptation and validation of the Academic Boredom scale from the AEQ in the context of Islamic boarding schools reinforces the postulate of the CVTAE (Pekrun & Stephens, 2010), which states that perceptions of control and task value are contextual and can be operationalized through culturally adaptive instruments. The CFA results showing the fit of the four-dimensional model with Indonesian boarding school

student data provide empirical evidence that the AEQ has cross-cultural validity (Davari et al., 2022; Goetz & Hall, 2014).

In practical terms, the present instrument has the potential to serve as a valuable diagnostic tool for identifying the risk of emotional disengagement among students in religious boarding school systems. Within the Islamic boarding school curriculum, characterized by its intensive memorization and ritualistic activities, academic boredom can serve as an early indicator of various outcomes, including burnout, dropout, or even resistance to educational values (Affandi et al., 2023; Ghensi et al., 2021; Macklem, 2015a). This scale enables educators, counsellors and policymakers to systematically access the affective dimensions of learning and to design more personalized and preventive interventions.

Limitations and Suggestions for Further Research

However, it is important to acknowledge the limitations that must be considered when interpreting these results. Firstly, the research population was confined to Islamic boarding schools in East Java only. Consequently, generalizations to other regions or types of Islamic boarding school should be made with caution. Secondly, the cross-sectional design limits the interpretation of temporal dynamics associated with boredom. Thirdly, utilizing self-report data carries the risk of incorporating perception bias. Fourthly, the two dimensions of the scale (cognitive and motivational) still have suboptimal AVE values, indicating the need for further item development to strengthen the construct.

The present study recommends the development of further longitudinal and cross-regional studies, as well as the exploration of the relationship between boredom and other affective variables such as self-efficacy, burnout, and engagement. Furthermore, the instrument has the potential to be widely applied in global Islamic education systems, supporting the non-cognitive assessment that is increasingly required in education in the present day.

CONCLUSIONS

This study addressed the lack of culturally adapted tools to measure academic boredom in faith-based education settings by adapting and validating the Academic Boredom subscale of the Achievement Emotions Questionnaire (AEQ) for Islamic boarding school students in Indonesia. The findings of this study successfully adapted and validated the Academic Boredom subscale of the Achievement Emotions Questionnaire (AEQ) in the context of Islamic boarding schools in Indonesia. The results of the analysis indicate that the adapted version of the scale has a statistically valid and internally reliable four-dimensional structure, with good model fit and very high total reliability. These findings support the CVTAE and expand the cross-cultural validity of the AEQ within the Islamic education system. Theoretically, this study enhances the field of educational psychology by providing evidence that academic boredom is multidimensional and can be systematically measured in the context of religious-based learning. In practice, this scale provides a significant evaluative instrument for educators, counsellors and policymakers to identify the risk of disengagement and formulate affect-based learning strategies.

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AUTHOR CONTRIBUTION STATEMENT

All authors contributed significantly to the preparation of this article. GRA was responsible for conceptualizing the research, supervising, and preparing and editing the final manuscript. CH played a role in designing the methodology and writing the initial manuscript, while NAF adapted the measurement tools and collected the data. MNAR validated the measurement tools and analyzed the data. The review and editing of the manuscript were conducted jointly by GRA, CH, NAF, and MNAR. All authors have read and approved the final manuscript for submission to the journal.

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