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Academic Buoyancy in the Context of *Tahfidz* Students: Modification and Validation of a Measuring Instrument

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Abstract: *Tahfidz* students face complex academic demands because they must pursue formal education while meeting Qur'an memorization targets, yet research on measuring their academic buoyancy remains limited. This study aims to modify the Academic Buoyancy Scale (ABS) for *tahfidz* students and to examine its psychometric properties. Through convenience sampling, 40 female *tahfidz* students aged 13–18 years from Islamic junior and senior secondary schools (MTs and MA) participated: five in a readability test and 35 in the instrument trial. The four items were contextualized to reflect the demands of formal schooling and memorization, while the original unidimensional structure was retained. Content validity was evaluated by three expert judges using Aiken's *V*, followed by analyses of item discrimination, reliability, convergent validity, and confirmatory factor analysis (CFA) with the diagonally weighted least squares (DWLS) estimator. All items met the content validity criterion (*V* = .92–1.00) and were clearly understood by respondents. Item–rest correlations ranged from .498 to .626, and internal consistency was acceptable (Cronbach's α = .758; composite reliability = .870). Convergent validity was supported (average variance extracted = .632), with standardized factor loadings of .652–.949. The one-factor model showed excellent fit (CFI = 1.000; TLI = 1.004; SRMR = .070; RMSEA = .000). These findings provide preliminary evidence that the modified ABS has adequate psychometric quality and a unidimensional structure among *tahfidz* students. However, given the small sample size (*n* = 35), the scale should be used only for exploratory or screening purposes until it is validated with larger, more diverse samples.

Kata Kunci:
Academic Buoyancy; Santri tahfidz; Modifikasi instrumen; Validitas; Reliabilitas.

Abstrak: Santri tahfidz menghadapi tuntutan akademik yang kompleks karena harus menjalani pendidikan formal sekaligus memenuhi target hafalan Al-Qur'an, tetapi penelitian tentang pengukuran *academic buoyancy* pada kelompok ini masih terbatas. Penelitian ini bertujuan memodifikasi *Academic Buoyancy Scale* (ABS) untuk santri tahfidz dan menguji kualitas psikometriknya. Melalui teknik *convenience sampling*, sebanyak 40 santri tahfidz perempuan berusia 13–18 tahun pada jenjang MTs dan MA berpartisipasi: lima orang dalam uji keterbacaan dan 35 orang dalam uji coba instrumen. Keempat butir disesuaikan dengan konteks pendidikan formal dan kegiatan menghafal Al-Qur'an tanpa mengubah struktur unidimensional aslinya. Validitas isi dinilai oleh tiga ahli menggunakan koefisien Aiken's *V*, dilanjutkan dengan analisis daya beda butir, reliabilitas, validitas konvergen, dan analisis faktor konfirmatori (CFA) dengan estimator *diagonally weighted least squares* (DWLS). Seluruh butir memenuhi kriteria validitas isi (*V* = 0,92–1,00) dan dipahami dengan baik oleh responden. Korelasi *item-rest* berkisar antara 0,498 dan 0,626, dan konsistensi internal tergolong memadai (α Cronbach = 0,758; reliabilitas komposit = 0,870). Validitas konvergen terpenuhi (*average variance extracted* = 0,632) dengan muatan faktor terstandar sebesar 0,652–0,949. Model satu faktor menunjukkan kecocokan yang sangat baik (CFI = 1,000; TLI = 1,004; SRMR = 0,070; RMSEA = 0,000). Temuan ini memberikan bukti awal bahwa ABS hasil modifikasi memiliki kualitas psikometrik yang memadai dan struktur unidimensional pada santri tahfidz. Namun, karena ukuran sampel kecil (*n* = 35), skala ini hanya disarankan untuk tujuan eksploratif atau skrining awal hingga divalidasi dengan sampel yang lebih besar dan beragam.

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INTRODUCTION

Tahfidz Islamic boarding schools combine formal education with Qur'an memorization, imposing dual demands on students to meet both academic and memorization targets, including *muroja'ah* and deposits (Lukianto et al., 2025). These compounded demands can cause psychological stress, academic fatigue, and time management challenges (Lusiana et al., 2026). In a sample of 119 *tahfidz* students, 43.7% reported moderate academic stress, 35.3% high stress, 17.6% very high stress, and 3.4% low stress. Qur'anic memorization requires consistent self-discipline and overcoming obstacles like missed targets, forgotten verses, errors during deposits, and limited review time, indicating that success depends on intellectual and psychological adaptability. This adaptability corresponds to the concept of academic buoyancy, defined as the individual's capacity to handle setbacks, pressures, poor grades, deadlines, exam anxiety, and learning difficulties common in academic life (Athiyaturrofi et al. 2025) (Fadhil et al., 2025) (Martin & Marsh, 2008a).

Academic buoyancy emphasizes individuals' ability to survive and function optimally when facing normative academic difficulties. This ability is also relevant to *tahfidz* students, who often face delayed memorization targets, errors during deposits, accumulated schoolwork, and examination pressure (Asmardi & Setiawan, 2026; Sintia & Sumiati, 2025). Students with high academic buoyancy tend to have good self-regulation skills, high self-efficacy, positive academic engagement, and lower academic anxiety. They view failure as a learning experience rather than as a threat to their self-esteem (Martin & Marsh, 2008b). These findings indicate that academic buoyancy is an important psychological factor supporting students' academic success in meeting various daily learning demands.

Conceptually, academic buoyancy is a unidimensional construct that represents the general ability of individuals to deal with a variety of everyday academic challenges. Martin and Marsh view academic buoyancy as a unified psychological capacity; hence, it is measured through a latent factor that reflects the ability to adapt to normative academic barriers (Putwain et al., 2024).

The unidimensional model has shown good construct validity and reliability, and this structure has been replicated in various cross-cultural studies, reinforcing the argument that academic buoyancy is a stable single construct (Alkaramneh et al., 2026; Datu & Yang, 2016; Khalaf & Abulela, 2021; Sitompul, 2021). To measure this construct, Martin and Marsh developed the Academic Buoyancy Scale (ABS), which consists of four items measuring the ability to cope with learning pressure, low grades, difficult assignments, and temporary academic failure (Martin & Marsh, 2008b).

In Indonesia, Sitompul (2021), adapted the Academic Buoyancy Scale (ABS) and validated it with 1,352 junior and senior high school students in Bandung. The scale demonstrated strong psychometric properties, with standardized loadings ranging from .647 to .843, a composite reliability of .823, and an average variance extracted of .54. These results confirm the ABS as a valid and reliable measure in the Indonesian

educational context. However, research on the ABS among students remains limited. Unlike public school students, *tahfidz* students face more complex academic demands, balancing formal education and Qur'an memorization requirements such as targets, muroja'ah, and deposits. This complexity necessitates assessing and modifying the ABS to suit *tahfidz* students' experiences. Addressing this gap, the present study offers a methodological contribution by adapting the ABS for students in Islamic boarding schools. While preserving the original unidimensional construct of academic buoyancy, this study contextualizes the items to reflect the dual demands inherent to students.

Thus, the contribution of this study lies in testing whether the academic buoyancy indicators developed in the context of general education can still be represented through the more specific academic experiences of *tahfidz* students. Methodologically, this study provides preliminary evidence regarding the readability, internal consistency, item discrimination, convergent validity, and factorial structure of the ABS after contextual modification. Therefore, this study is not intended to develop a new academic buoyancy construct but rather to broaden the evidence for its application and to provide an initial basis for the use of the ABS in the *tahfidz* student population. The results are expected to serve as a basis for further validation research with a larger and more diverse sample before the instrument is used for assessment or intervention development.

METHOD

The participants in this study were *tahfidz* students aged 13–18 years studying at the Madrasah Tsanawiyah (MTs) and Madrasah Aliyah (MA) levels at Islamic boarding schools. Convenience sampling was used; that is, participants were selected on the basis of the researchers' ease of access to individuals who met the research criteria (Rahman, 2023). A total of 40 *tahfidz* students participated in the research: five in the readability test and 35 in the main data collection (Table 1). The data collection sample was used to obtain preliminary evidence regarding the psychometric characteristics of the instrument and an initial test of its factor structure. Given the limited sample size, the confirmatory factor analysis (CFA) results in this study are not intended as final validation but rather as preliminary evidence that needs to be confirmed through research with a larger sample.

Table 1. Participant characteristics (N = 40)

Characteristic	Category	*n*	%
Sex	Female	40	100.00
Age (years)	13	4	10.00
	14	6	15.00
	15	3	7.50
	16	8	20.00
	17	17	42.50
	18	2	5.00

Education level	MTs, grade 1	6	15.00
	MTs, grade 2	6	15.00
	MA, grade 1	9	22.50
	MA, grade 2	19	47.50
Total		40	100.00

The research procedure involved four stages: first, identifying the academic buoyancy construct based on Martin and Marsh (2008a) and its adaptation by Sitompul (2021), accompanied by a literature review to clarify definitions, indicators, factor structure, and psychometric properties, as well as an exploration of *tahfidz* students' academic challenges, following the guidance of Morgado et al. (2017). Second, the items were modified to contextualize the scale for *tahfidz* students while preserving the essence of the construct, consistent with Boateng et al.'s (2018) emphasis on population-specific item adaptation. Third, content validity was assessed through expert judgment by psychology practitioners and an Islamic boarding school caregiver, with results analyzed using Aiken's *V* coefficient (Saputra et al., 2025). Fourth, a readability test was conducted with *tahfidz* students of similar characteristics to ensure clarity, as recommended by Boateng et al. (2018). This systematic approach was intended to ensure both the conceptual fidelity and the contextual relevance of the modified instrument.

The next stage was data collection, in which questionnaires were administered in person at an Islamic boarding school that met the participant criteria. Once the data were collected, psychometric testing was conducted, including reliability, validity, and CFA (Hair et al., 2019). This study used the ABS developed by Martin and Marsh (2008b) as the basis for modification. Academic buoyancy is an individual's ability to deal adaptively with a variety of everyday academic challenges, such as study pressure, unsatisfactory grades, difficulties in academic assignments, and other academic demands. Conceptually, academic buoyancy is viewed as a unidimensional construct that represents the general capacity of individuals to face normative academic barriers (Putwain et al., 2024).

The original ABS consists of four items that measure an individual's ability to cope with everyday academic difficulties. All items are rated on a Likert scale (Martin & Marsh, 2008b). The ABS has demonstrated good psychometric characteristics in a variety of cultural contexts, including Australia (Martin & Marsh, 2008b), the Philippines (Datu & Yang, 2016), Egypt and Oman (Khalaf & Abulela, 2021), Jordan (Alkaramneh et al., 2026), and Indonesia (Sitompul, 2021).

This study adapted the ABS to suit *tahfidz* students, who face dual academic demands from formal schooling and Qur'an memorization activities. While the original unidimensional structure and the conceptual definition of Martin and Marsh (2008b) were maintained, the item wording was modified to reflect specific experiences such as memorization targets, *muroja'ah*, and academic obligations in Islamic boarding schools.

The instrument measures academic buoyancy through indicators such as coping with academic pressure and setbacks, using a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), where higher scores indicate greater resilience.

The ABS data were analyzed for item discrimination, reliability, and convergent validity, and a CFA was performed using JASP software. The minimum criterion for item discrimination was an item–rest correlation of .30. A Cronbach's alpha of .70 or higher was considered acceptable. Because the items produce 4-point ordinal responses, the CFA was performed using the diagonally weighted least squares (DWLS) estimator with a polychoric correlation matrix, rather than the default maximum likelihood (ML) estimator, to avoid estimation bias with noncontinuous data (Li, 2016). The convergent validity criteria were factor loadings ≥ .50 and average variance extracted (AVE) ≥ .50. The model fit criteria used in the CFA were comparative fit index (CFI) > .90, Tucker–Lewis index (TLI) ≥ .90, standardized root mean square residual (SRMR) < .08, and root mean square error of approximation (RMSEA) < .08 (Hair et al., 2019).

RESULTS AND DISCUSSION

This study adapted the ABS for *tahfidz* students and obtained preliminary evidence of its psychometric soundness, preserving the original unidimensional structure (Martin & Marsh, 2008b). The findings suggest that academic buoyancy applies beyond general education, capturing *tahfidz* students' capacity to manage dual demands from formal schooling and Qur'an memorization programs. These concurrent demands—such as school assignments, exams, and memorization targets—interact and complicate students' ability to allocate time and sustain academic resilience, illustrating the complexity of their educational environment.

Content Validity Test Results

Table 2. Results of the content validity test

Item	Aiken's *V* coefficient	Category
AB1	1.00	Passed
AB2	.92	Passed
AB3	.92	Passed
AB4	.92	Passed

The content validity analysis using Aiken's *V* coefficient showed that all items obtained *V* values between .92 and 1.00 (Table 2). The test was based on assessments by three expert judges using five rating categories (a 1–5 Likert scale). Based on Aiken's table of critical values for three raters and five rating categories, the critical value was .92 (p = .032). Thus, all items met the critical value and were judged to have adequate content validity at the 5% significance level (Aiken, 1985). These results indicate agreement among the expert judges regarding the relevance and representativeness of

the items in measuring the academic buoyancy construct. Therefore, all items were retained for the next stage.

Readability Test Results

The readability test was conducted with five *tahfidz* students. The results showed that all respondents could understand the intent and content of each item well and had no difficulty interpreting the statements. In addition, no feedback indicated ambiguity, unclear meaning, or terms that were difficult for the respondents to understand. Therefore, all modified items were considered appropriate for the characteristics of the target population and could be used in the instrument trial stage without further revision. These results indicate that the instrument had adequate face validity; that is, the items appeared relevant, easy to understand, and consistent with the construct being measured from the respondents' perspective. Clear item wording is an important aspect of instrument development because it can minimize respondent misinterpretation and improve the quality of the data obtained in the subsequent psychometric testing stage (Boateng et al., 2018).

In addition, at the instrument development stage, the readability test showed that all items were well understood by *tahfidz* students without further revision. These findings show that the contextual modification process succeeded in producing item wording that matched the characteristics and academic experience of the students. According to Boateng et al. (2018), language clarity and ease of understanding are important aspects of instrument development because they can reduce respondent misinterpretation and improve the quality of the data obtained. These results show that the academic context of *pesantren* (Islamic boarding schools) can be incorporated into an instrument without changing the basic meaning of the academic buoyancy construct.

Descriptive Analysis Results

Table 3. Results of the descriptive analysis

Variable	*n*	Empirical Score		Theoretical Score		Mean	*SD*
		Min	Max	Min	Max		
AB	35	9	15	4	16	11.63	1.88

The descriptive analysis of academic buoyancy scores for the 35 respondents (Table 3) showed a minimum empirical score of 9 and a maximum of 15, with a mean of 11.63 (*SD* = 1.88). The theoretical score range was 4–16. The empirical mean of 11.63 was above the theoretical midpoint of 10, indicating that the respondents' academic buoyancy scores tended to lie in the upper half of the theoretical range. The *SD* of 1.88 and the empirical range of 9–15 indicate variation in academic buoyancy scores among respondents.

Categorization Results

Table 4. Results of the categorization

Level	Formula	Criteria	Frequency	%
Low	$X < M - 1SD$	$X < 9.75$	6	17.1%
Medium	$M - 1SD \leq X < M + 1SD$	$9.75 \leq X < 13.51$	22	62.9%
High	$M + 1SD \leq X$	$13.51 \leq X$	7	20.0%

As shown in Table 4, most *tahfidz* students had a medium level of academic buoyancy (n = 22; 62.9%), followed by the high category (n = 7; 20.0%) and the low category (n = 6; 17.1%). These findings suggest that, in general, the students had fairly good abilities in facing various daily academic challenges, although some students still need support to improve their academic adaptability.

Reliability Test Results

Table 5. Results of the reliability test

Coefficient α	Estimate
Academic buoyancy	.758

The reliability analysis showed that the modified ABS had a Cronbach's alpha of .758 (Table 5). This value indicates that the instrument has good internal consistency because it exceeds the minimum threshold recommended for research in the social and behavioral sciences. According to Hair et al. (2019), a Cronbach's alpha of .70 or higher indicates acceptable reliability, meaning that the items in the instrument consistently measure the same construct. Thus, the four items of the *tahfidz* student version of the ABS are considered to have adequate internal consistency and are suitable for construct validity testing at the next stage.

This finding is in line with Martin and Marsh (2008b), who reported that the ABS has sufficient reliability despite consisting of only a few items. The results of this study are also consistent with Sitompul (2021), who adapted the ABS for junior and senior high school students in Indonesia and found that the instrument has good reliability. The similarity of these findings suggests that shifting the context from the public school environment to the *pesantren* environment did not reduce the measurement consistency of the academic buoyancy construct. Nonetheless, the pattern of factor loadings in this study differs somewhat from that reported by Martin and Marsh (2008b) and Sitompul (2021). In this study, AB3 had the highest loading, whereas in Sitompul (2021), the highest loading was found for AB2. Sitompul (2021) reported item loadings ranging from .647 to .843. Meanwhile, the study by Martin and Marsh (2008b)

was conducted with a much larger sample in the context of mathematics learning in secondary school. These differences may reflect methodological factors, particularly the very different sample characteristics. This study used a relatively small number of respondents, making the factor loading estimates more susceptible to sampling variation than those of previous studies with a much larger number of respondents.

The differences may also relate to the characteristics of the context and the response format. The original instrument of Martin and Marsh (2008b) used seven response categories, whereas this study used four response categories to suit the respondents' characteristics, following Sitompul (2021). Changes in the number of response categories can alter the response distribution and inter-item correlations, so the loading values obtained need not be identical to those of the original instrument. In addition, the measurement context differs. Martin and Marsh (2008b) measured academic buoyancy in the context of school academic life, whereas this study situates the items in the experience of *tahfidz* students, who must face the demands of formal education and *tahfidz* activities simultaneously. These contextual differences may make certain forms of academic barriers more prominent for *tahfidz* students than for public school students.

Item Discrimination Test Results

Table 6. Results of the item discrimination test

Item	Item–rest correlation
AB1	.626
AB2	.498
AB3	.602
AB4	.552

The item discrimination test was conducted using item–rest correlations to determine the extent to which each item could distinguish between respondents with high and low levels of academic buoyancy. The analysis showed that all items had item–rest correlations above the minimum threshold of .30, ranging from .498 to .626 (Table 6): AB1 = .626, AB2 = .498, AB3 = .602, and AB4 = .552.

Based on these results, all items met the criterion for good discrimination and were retained. Item–rest correlations exceeding .30 indicate that each item has an adequate relationship with the total scale score and represents the academic buoyancy construct being measured; such items can be retained because they demonstrate adequate item quality (Azwar, 2012). Moreover, all item–rest correlations were above .40; thus, the items can be categorized as having good discriminating power. Therefore, no items needed to be eliminated at the item analysis stage, and all items proceeded to validity testing through CFA.

Evidence of convergent validity shows that the indicators in the instrument have a strong relationship with the academic buoyancy construct. These findings suggest that the modified items are still able to represent an individual's ability to cope with everyday academic challenges. These results are in line with Sitompul (2021), who

found that all ABS items made a significant contribution to the construct measured among Indonesian students. This similarity suggests that the academic buoyancy concept can still be maintained even when the indicators are adjusted to the academic context of *tahfidz* students.

Convergent Validity Test Results

Table 7. Results of the convergent validity test (AVE and CR)

Factor	AVE	CR
Academic buoyancy	.632	.870

The AVE for the academic buoyancy construct was .632 (Table 7). This value exceeds the recommended minimum of .50 for adequate convergent validity (Fornell & Larcker, 1981). This indicates that the construct explained 63.2% of the variance in its indicators, with the remainder attributable to measurement error or other factors outside the construct. Furthermore, the CR value was .870. This value exceeds the minimum threshold of .70, indicating that the indicators of the academic buoyancy construct have good internal consistency (Hair et al., 2019).

Table 8. Original items, modified items, and factor loadings

Item	Original Item	Modified Item	Factor loading	*p*
AB1	Cara yang saya gunakan efektif dalam mengatasi hal-hal yang mengganggu aktivitas akademik di sekolah	Saya bisa menggunakan cara yang tepat untuk mengatasi hal-hal yang mengganggu kegiatan belajar di sekolah	.802	< .001
AB2	Saya tidak membiarkan tekanan dari sekolah mempengaruhi diri saya	Saya tetap tenang meskipun ada tekanan tugas atau kegiatan sekolah	.652	< .001
AB3	Saya mampu mengatasi tekanan dari tugas-tugas sekolah	Walaupun tugas sekolah banyak, saya tetap bisa menghadapinya dengan baik	.949	< .001
AB4	Saya tidak akan membiarkan nilai yang buruk, mempengaruhi kepercayaan diri saya	Meskipun mendapatkan nilai yang kurang baik, saya tetap percaya dengan kemampuan saya	.748	< .001

The factor loadings ranged from .652 to .949 (Table 8). The highest loading was found for item AB3 (λ = .949), while the lowest was found for item AB2 (λ = .652). All items had factor loadings above the recommended minimum of .50 and can therefore be considered to adequately represent the academic buoyancy construct (Hair et al., 2019). In addition, all loadings were statistically significant (p < .001), suggesting that each indicator contributes significantly to the latent construct.

The strength of contribution differed across items. Item AB3, which describes students' ability to keep coping well with many school assignments, had the highest factor loading, while AB2 had the lowest. This suggests that the ability to handle the assignment workload is a manifestation closely aligned with academic buoyancy in the experience of *tahfidz* students. This is understandable because school assignment demands are a concrete form of academic obstacle that students experience directly amid their obligation to participate in *tahfidz* activities. When schoolwork increases, students must not only complete this work but also continue their memorization activities. The ability to keep coping well with many tasks may be an important indicator of students' academic adaptability.

In contrast, AB2 had the lowest factor loading, although it remained adequate. This item focuses on the ability to remain calm when facing pressure from assignments or school activities. Its lower loading compared with the other items may indicate that the emotional response of "staying calm" does not fully represent the overall academic buoyancy capacity of *tahfidz* students. Students' ability to deal with academic obstacles may not always be demonstrated through emotional calm but rather through the ability to keep completing demands, overcome difficulties, and maintain confidence in their own abilities. In other words, a student may still have academic buoyancy even when experiencing pressure or tension in the face of academic demands. However, this interpretation remains theoretical and needs to be further tested through research with a larger sample or a qualitative approach.

The AVE and factor loading results indicate that the modified instrument has a good degree of convergence between the indicators and the construct being measured. According to Fornell and Larcker (1981), convergent validity is essentially evaluated through the amount of variance in the indicators explained by the construct, as represented by the AVE value. Meanwhile, Hair et al. (2019) explain that convergent validity is supported if the indicators have sufficient factor loadings and the AVE value reaches or exceeds .50.

CFA Results

Table 9. Results of the confirmatory factor analysis

Fit Index	Results	Criteria	Conclusion
CFI	1.000	> .90	Fit

TLI	1.004	≥ .90	Fit
SRMR	.070	< .08	Fit
RMSEA	.000	< .08	Fit

As shown in Table 9, the CFA results indicate that the one-factor academic buoyancy model had excellent fit. To avoid estimation bias with noncontinuous data, given that the item responses are 4-point ordinal, the CFA was performed using the DWLS estimator based on a polychoric correlation matrix instead of the ML estimator (Li, 2016). The CFI of 1.000 and TLI of 1.004 exceeded the established criteria, while the SRMR of .070 was below the .08 limit. The RMSEA of .000 also indicates no approximation error in the model based on this index. A TLI value slightly exceeding 1.00 does not indicate an error; under certain conditions, the TLI can be slightly above 1 owing to estimation characteristics and is generally interpreted as an excellent model fit. Thus, all indices used support the unidimensional academic buoyancy model. However, given that the CFA in this study was conducted with a relatively small sample, these results should still be viewed as preliminary evidence and need to be confirmed through research with a larger and more diverse sample.

The CFA results support the unidimensional structure of academic buoyancy. These findings are consistent with the theoretical model proposed by Martin and Marsh (2008a), which views academic buoyancy as a unified psychological capacity to deal with a variety of everyday academic challenges. The one-factor structure found in this study is also in line with various cross-cultural studies. Sitompul (2021) found that academic buoyancy in Indonesian students can be explained by a single latent factor. Similar findings were reported by Khalaf and Abulela (2021) among students in Egypt and Oman, showing that academic buoyancy maintains a consistent factor structure in Arab cultural contexts. In addition, research on Filipino students has shown that academic buoyancy operates as a single construct related to academic motivation, learning engagement, and academic adaptability (Datu & Yang, 2016). The consistency of results across these countries reinforces the argument that academic buoyancy is a relatively stable construct across cultures.

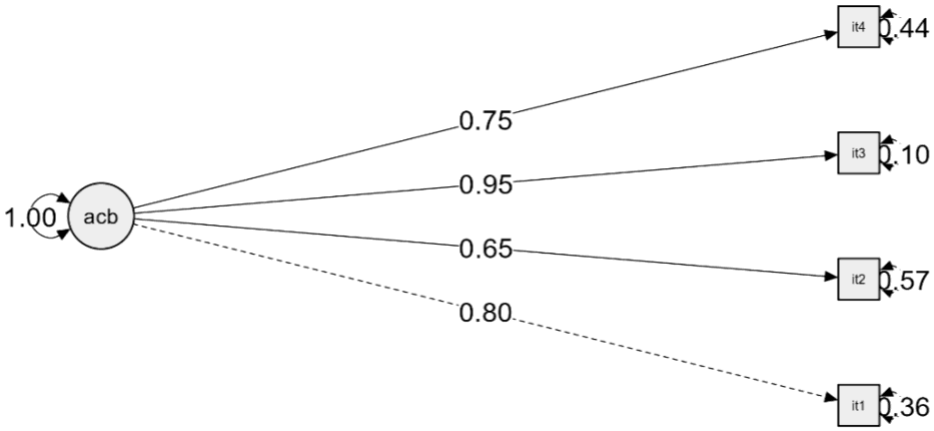


Figure 1. CFA path diagram

Figure 1 presents the standardized one-factor measurement model for academic buoyancy. The estimation results show that all four indicators have high standardized factor loadings, ranging from .65 to .95. Factor loadings exceeding the .50 threshold indicate that each item significantly represents the academic buoyancy construct. The residual variances of the items ranged from .10 to .57. Overall, this path diagram supports the unidimensional conceptualization of the ABS.

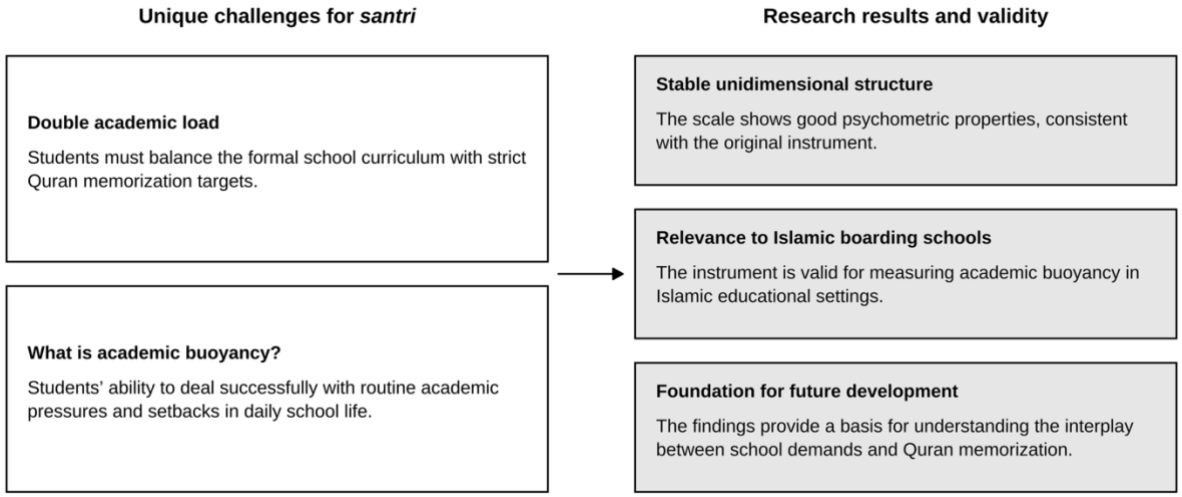


Figure 2. Novelty of the study

Figure 2 shows the measurement of academic buoyancy in Islamic education, focusing on *tahfidz* students who manage both formal schooling and Qur'an memorization, and extends previous work by Sitompul (2021). While the established unidimensional construct was maintained, the scale was adapted to reflect the students' unique academic demands. The modified instrument exhibits adequate psychometric quality but should be interpreted cautiously due to a small sample size and less-than-optimal model fit. Consequently, it is recommended for limited use as preliminary screening alongside qualitative observations rather than as the sole evaluative tool. Further research with larger and more diverse samples

and longitudinal designs is needed to validate the scale and investigate the interaction of formal and memorization demands in shaping academic buoyancy. Thus, this work lays the groundwork for more contextualized measurement in *pesantren* education.

CONCLUSION

This study modified the Academic Buoyancy Scale (ABS) for *tahfidz* students, who must meet formal schooling demands while also meeting Qur'an memorization targets, and obtained preliminary evidence that the four-item instrument has adequate psychometric quality. All items met the content validity criterion (Aiken's V = .92–1.00), and the *tahfidz* students who reviewed them understood them without revision. All items also discriminated adequately (item–rest correlations = .498–.626). Internal consistency was acceptable (Cronbach's α = .758; CR = .870), and convergent validity was supported (AVE = .632; factor loadings = .652–.949). Confirmatory factor analysis using the DWLS estimator supported the original unidimensional structure (CFI = 1.000, TLI = 1.004, SRMR = .070, RMSEA = .000), suggesting that the academic buoyancy construct can be represented through the specific academic experiences of *tahfidz* students without changing its basic meaning. However, because the trial involved a small sample (n = 35), the modified scale cannot yet be considered fully valid and reliable for broader populations. It is therefore recommended only as an exploratory or preliminary screening tool, not as the sole basis for diagnosis or program evaluation. Future research should validate the scale using larger, more diverse samples of *tahfidz* students and examine how academic buoyancy relates to variables such as self-efficacy and academic fatigue.

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Conflict of Interest: The authors declare no conflict of interest.

Data Availability Statement: The anonymized questionnaire data and the JASP analysis files supporting the findings of this study are available from the corresponding author upon reasonable request.

Informed Consent Statement: Informed consent was obtained from the parents or guardians of all participants and assent from the participants themselves before data collection, with institutional permission granted.

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