

Research Article

Psychometric Evaluation of the Elementary School Student's Perceived Teacher Trust Behavior Scale

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Abstract: Students' perceptions of trust behaviors are associated with learning engagement, academic motivation, and positive classroom behavior. The availability of evidence on psychometric quality and structural stability of this scale in a wide range of samples is limited. This study aims to evaluate the psychometric properties of PTTBS in elementary school students. A quantitative cross-sectional design was employed involving 340 participants. Data were collected using PTTBS, which comprises four dimensions: emotional support, moral recognition, academic support, and competence recognition. Psychometric evaluation was carried out by Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) using SmartPLS 4. The findings supported the four-dimensional structure of this instrument. In addition, the results show satisfactory reliability, convergent validity, discriminant validity, as well as model fit, indicating that the items maintained adequately represent each construct. These results suggest that PTTBS is a valid and reliable instrument for measuring elementary school students' perceptions of teacher trust behavior. This research strengthens the construction of PTTBS in the context of elementary schools in Indonesia and makes an empirical contribution to the use of PTTBS in educational research.

Keywords: academic support, competence recognition, emotional support, moral recognition, teacher trust behavior.

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INTRODUCTION

Students' perceptions of the level of trust that teachers inspire can vary throughout the learning process (Holzer et al., 2023). This difference is evident in the extent to which students are given opportunities to express their opinions, take responsibility, and demonstrate their abilities. These opportunities aren't always distributed evenly among the students in the class (Longobardi et al., 2022). This situation leads to differences in students' learning experiences, which can potentially affect their level of engagement in the educational process (Robert Thornberg et al., 2022). Relationships that are based on students' trust in their teachers are related to students' participation in class, their positive behavior, and their sense of belonging to the school environment (Engels et al., 2021). To understand how students perceive the level of trust demonstrated by teachers during the learning process, it is necessary to have tools that can effectively and comprehensively measure students' perceptions.

Perceived Teacher Trust Behavior Scale (PTTBS) It's a scale designed to measure how students perceived teachers' behavior in the context of learning (Wang et al., 2026). This structure consists of four main dimensions: Academic support, emotional support, competence recognition, moral recognition. Academic support refers to the assistance and guidance provided to help students achieve academic success. Emotional support, on the other hand, refers to teachers' attention to students' emotional needs (Victor & Hyland, 2022). Moral recognition relates to teachers' acknowledgment of students' positive behaviors. Competence Recognition show recognition of students' abilities and potential (Gini et al., 2022). These four dimensions illustrate various ways in which teachers can help students develop confidence in their learning environment (Zailani et al., 2022).

Previous research has shown that PTTBS has adequate psychometric qualities at the early developmental study stage (Wang et al., 2026). Until now, findings regarding the structural stability of instrument factors in various samples and educational contexts are still lacking (Schweizer et al., 2024). The initial development study of PTTBS was carried out on elementary school students in China, so the performance of the instrument in different educational and cultural contexts still requires further verification. In psychometric studies, a stable and replicable construct structure must be proven through retesting in different populations (Cheug et al., 2024). Evaluation of construct reability, convergent validity, discriminant validity, and model fit are essential parts in determining the quality of a measurement instrument (Sarstedt et al., 2022). Retesting on independent samples is also needed to ensure the stability of the instrument and at the same time reinforce the generalization of measurement results in different populations (Kim et al., 2024). Thus, the need for additional psychometric evidence is an important foundation for the implementation of this study.

This study makes three major contributions. First, it extends the use of the Perceived Teacher Trust Behavior Scale (PTTBS) to a cultural context different from that of the instrument's initial validation study. Second, it provides psychometric evidence regarding the use of the PTTBS with elementary school students in Indonesia, for whom such evidence was previously limited. Third, this study reexamines the four-factor structure of the PTTBS using an independent sample to assess the stability and reproducibility of the measurement model developed by (Wang et al., 2026). These three contributions are expected to strengthen the empirical evidence regarding the validity, reliability, and consistency of the PTTBS factor structure and at the same time support their use in educational research. This study aims to

validate the psychometric characteristics of PTTBS. Based on the research objectives that have been set, the research questions are formulated as follows:

RQ1. Does the PTTBS instrument meet the convergent validity criteria?

RQ2. Does the PTTBS instrument meet the criteria for discriminant validity?

RQ3. Does the PTTBS instrument show an adequate fit model?

THEORETICAL FRAMEWORK

Perceived Teacher Trust Behavior Scale (PTTBS)

The Perceived Teacher Trust Behavior Scale (PTTBS) is an instrument developed by (Wang et al., 2026) based on a multidimensional conceptual model that consists of four dimensions, namely emotional support, moral recognition, academic support, and competence recognition. These four dimensions represent various forms of teacher behavior that students perceive as of manifestations of teacher trust in the learning process. Emotional support and academic support describe teachers' support for students' emotional and academic needs. Moral recognition and competence recognition reflect teachers' recognition of positive behavior and abilities possessed by students. Each dimension represents a different aspect of behavior, but they all contribute to the same construct, which is perceived teacher trust behavior. This conceptual model serves as the basis for the development of PTTBS and explained the relationship between the main construct and its constituent dimensions. The four dimensions in PTTBS come from a single conceptual model, while other references are used to reinforce the conceptual definition of each dimension.

Emotional Support

Emotional support reflects the teacher's attention to the emotional needs of students through a sense of empathy, attention, and positive responses during the teaching and learning process (Zhou, 2021). Emotional support from teacher provides a sense of acceptance and appreciation for students in a learning environment (Engels et al., 2021). Students' views of the emotional support provided by teachers are related to a better learning experience in the classroom. Attention and concern from teachers is one of the benchmarks for the quality of interpersonal relationships in the context of education (Shiri Lavy, 2020).

Moral Recognition

Moral recognition is the recognition given by educators of students' good attitudes, such as honesty, sense of responsibility, and concern for others (Wang et al., 2026). Recognition of moral actions is related to the development of one's ethics and constructive social interactions within the school (Gini et al., 2022). Moral values instilled in the context of education are closely related to the emergence of prosocial behavior among students (Zailani et al., 2022). The moral attitudes of the students are also connected with the drive to help and support other students in the school's social environment.

Academic Support

Academic support denotes the facilitation and mentorship offered by teacher to enhance learners' scholarly accomplishments. One can get academic support by providing direction for study, assistance in understanding the material, feedback on assignments, and learning resources that help students achieve their academic goals. Teachers who consistently provide academic support help students grow confidence in their abilities and increase their participation in learning activities (Pan & Yao, 2023). According to research, students' perceptions of teacher support are positively correlated with their engagement and

motivation to learn, academic achievement, and academic self-efficacy (Huang, L.; Wang, 2023). Academic support is one of the important metrics to measure teachers' trust behavior (Liu et al., 2023). Academic support is one of the important indicators in measuring teacher trust behavior.

Recognition of Competence

Competency recognition is the teacher's recognition of students' abilities and potential. Recognition of competencies is related to students' perceptions of their own ability to learn (Fitriyani, E., Gusripanto, 2021). One of the main psychological needs, according to the theory of self-determination, is the need for competence, which supports the involvement of learning and the development of the individual. When teachers recognize students' abilities, students tend to become more active and believe in their abilities. Ability recognition is an important component of teacher trust behavior (Miao, 2023a).

METHODS

Research Design

In evaluating psychometric characteristics Perceived Teacher Trust Behavior scale (PTTBS) elementary school students, this study uses a quantitative approach that uses a cross-sectional survey design. This design was chosen because it allowed data collection from students in a single study period to obtain an overview of the characteristics of the instrument at a given moment without making repeated measurements of the same students (Setia, 2016).

Sample

The number of students involved in the study amounted to 340 students from four public elementary schools in Cirebon, West Java, Indonesia. With 150 male students (44.1%) and 190 female students (55.9%). Based on class characteristics, 123 students came from class IV (36.2%), 128 students from class V (37.6%), and 89 students from class VI (26.2%). Based on age characteristics, 13 students (3.82%) were 9 years old, 96 students (28.24%) were 10 years old, 137 students (40.29%) were 11 years old, 78 students (22.94%) were 12 years old, and 16 students (4.71%) were 13 years old. Participants were selected using a convenience sampling technique because respondents were readily available and easily accessible during the data collection process, allowing efficient data collection for instrument validation purposes (Andrade C, 2021). However, because the sample was drawn from only four public elementary schools in Cirebon Regency, the findings should be interpreted with caution. Therefore, the results cannot be generalized directly to all elementary school students in Indonesia and are limited to the characteristics of the population represented in this study.

Data Collection

Data were collected using the Perceived Teacher Trust Behavior Scale (PTTBS) developed by (Wang et al., 2026). The instrument consists of 16 items that measure perceived teacher trust behavior in four dimensions: three-item emotional support, four-item academic support, four-item moral recognition, and five-item Competence Recognition. Before being used in this study, the Perceived Teacher Trust Behavior Scale (PTTBS) was adapted into Indonesian because the original instrument was developed in English (Wang et al., 2026). The adaptation involved translating the instrument, reviewing the translation to ensure equivalence of meaning and comprehensibility for elementary school students, and adjusting certain words deemed difficult to understand without altering the conceptual meaning of the items. The instrument was reviewed by the supervising instructor to assess linguistic clarity and content

appropriateness before being used in data collection. Each item was assessed on a four-level Likert scale, namely 1 (strongly disagree), 2 (disagree), 3 (agree), and 4 (strongly agree). Higher scores indicate a more positive perception of teachers' trust behavior. To ensure consistency in score interpretation, negative items are first subjected to reverse scoring before data analysis. Reverse scoring is done by converting a score of 1 to 4, a score of 2 to 3, a score of 3 to 2, and a score of 4 to a 1. (Tavakol & Dennick, 2011).

Table 1. Research Instrument Grid (PTTBS)

Yes	Dimensions	Description
1	Emotional Support	Teacher behavior that shows care, empathy, and emotional support for students through a mindful, accepting, and positive response to students' psychological needs throughout the educational process, thereby creating a safe and conducive learning environment (Pakarinen et al., 2020).
2	Moral Recognition	Teachers' behavior in recognizing and praising students' moral behaviors of honesty, responsibility, and other positive attitudes, aims to foster character development and prosocial behavior in the educational environment.
3	Academic Support	Teachers' behaviors in providing constructive support, guidance, and criticism throughout students' educational journeys are essential to improve their understanding of the material, encourage academic success, and foster active participation in the learning process (Pan & Yao, 2023).
4	Competence Recognition	Teacher behavior in recognizing students' abilities, fostering confidence, and providing responsibility to students serves as a means to appreciate students' potential as well as students' academic and non-academic competencies (Miao, 2023b).

Data Analysis

This study used SmartPLS 4 software to evaluate the psychometric characteristics of the Perceived Teacher Trust Behavior Scale (PTTBS) in elementary school students. The analysis was carried out through Exploratory Factor Analysis (EFA) to test the structure of factors with data feasibility based on Kaiser-Meyer-Olkin (KMO ≥ 0.60) and Bartlett's Test ($p < 0.05$). Furthermore, Confirmatory Factor Analysis (CFA) is used to confirm the structure of the EFA's outcome factors. Convergent validity was assessed through outer loading (≥ 0.70) and Average Variance Extracted (AVE ≥ 0.50) (Henseler et al., 2015). Instrument reliability tested using Cronbach's Alpha and Composite Reliability CR ≥ 0.70 (Taber, 2018). Discriminant validity was evaluated using HTMT with a criterion of < 0.90 (Rahmatpour et al., 2026). Model feasibility was tested through the χ^2 , df, χ^2/df (≤ 3), RMSEA (≤ 0.08), SRMR (≤ 0.08), TLI (≥ 0.90), and CFI ≥ 0.90 (Mansouri, 2025). The results of the analysis were used to assess the fit model, convergent validity, and discriminant validity of PTTBS instruments.

RESULT

Descriptive data

The results of the descriptive analysis revealed that the comprehensive dimension of the Perceived Teacher Trust Behavior Scale (PTTBS) lies in a relatively high range of values. These results show that students' perceptions of teachers' trust behaviors fall into the moderate to high category in all aspects measured, which include emotional support, academic

support, moral recognition, and competency recognition. These findings imply that respondents gave positive scores to all dimensions of PTTBS.

Table 2. Descriptive Statistics of Research Variables (PTTBS)

Dimensions	N	Minimum	Maximum	Mean	Std. Deviation
Emotional support	340	4	12	9.86	2.018
Moral recognition	340	6	16	13.21	2.534
Academic support	340	6	16	13.32	2.477
Competence recognition	340	7	20	16.46	3.196

Note: N = total number of Respondents; Minimum = smallest score; Maximum = largest score; mean= average; Std. Deviation = a measure of variability.

Exploratory Factor Analysis

The Kaiser-Meyer-Olkin (KMO) value and Bartlett's Test of Sphericity are used to evaluate the feasibility of the data for factor analysis. The SME value of 0.789 indicates adequate sample adequacy ($\chi^2 = 1802.890$, $df = 105$, $p < 0.001$). The data is worth analyzing using EFA. The EFA results support a four-dimensional structure: competence recognition, emotional support, academic support, and moral recognition. Each aspect has a loading factor above the minimum recommended limit and is arranged according to the recommended theoretical dimensions.

Table 3. Results of Exploratory Factor Analysis After Item Removal

Items	Competence recognition	Emotional support	Academic support	Moral recognition	Communality
PT16: Teachers give me the opportunity to express myself	0.778	0.021	0.007	0.044	0.608
PT15: Teacher acknowledges my progress and achievements	0.759	0.033	0.029	0.027	0.585
PT14: Teachers give me responsibility	0.728	0.014	0.021	-0.059	0.532
PT13: Teachers give me an important role in the classroom	0.721	0.006	-0.012	0.017	0.520
PT12: The teacher didn't believe that I was able to complete the assignment well	0.717	0.035	-0.068	-0.036	0.517
PT6: The teacher involved me in making the class rules	0.017	0.762	-0.034	-0.024	0.584
PT4: The teacher doesn't pay attention to the good behavior I do	-0.103	0.740	0.006	-0.068	0.548
PT5: The teacher said that I was a well-behaved student	-0.156	0.720	-0.013	0.036	0.526

PT7: Teacher encourages my friends to emulate my good behavior	-0.036	0.704	0.041	-0.050	0.502
PT11: Teachers encouraged me to have learning goals	0.028	-0.041	0.740	-0.001	0.550
PT8: Teachers don't help me when I'm having trouble learning	0.005	0.080	0.740	0.057	0.557
PT9: Teachers helped me when I had learning difficulties	0.027	0.019	0.732	0.014	0.536
PT10: The teacher supported me in the learning activities	0.032	-0.013	0.708	0.017	0.503
PT2: The teacher guided me patiently when I made a mistake	0.800	-0.156	0.028	0.035	0.640
PT1: The teacher still believed that I could succeed even if my grades were not good	0.781	-0.117	0.021	0.070	0.611
Eigenvalue	3.205	2.683	2.599	1.574	-
Var. Explained %	21.363	17.887	17.323	10.495	-
Cumulative Var. %	21.363	39.251	56.574	67.069	-

Note: The values highlighted in bold within the table signify the maximum factor loading value for each item corresponding to its respective factor.

Confirmatory Factor Analysis

Based on the results of exploratory factor analysis (EFA) that one item (PT3) did not meet the set criteria so that it was eliminated before the CFA analysis was carried out, the confirmatory factor analysis (CFA) model used 15 final items with the aim of testing the validity of the four aspects used. The Emotional Support dimension retains two items (PT1 and PT2), the Moral Recognition dimension retains four items (PT4, PT5, PT6, and PT7), the Academic Support dimension retains four items (PT8, PT9, PT10, and PT11), the Competence Recognition dimension retains five items (PT12, PT13, PT14, PT15, and PT16). The results of the Confirmatory Factor Analysis (CFA) show that all aspects have a loading factor value above the minimum limit of 0.70. The loading value for the Emotional support dimension varies from 0.743 to 0.840, while for the Moral Recognition dimension, it spans from 0.700 to 0.761. Furthermore, the range for the academic support dimension extends from 0.709 to 0.740, and for the competence recognition dimension, it is observed to range from 0.718 to 0.7775. These findings show that all indicators can effectively show the dimensions being measured.

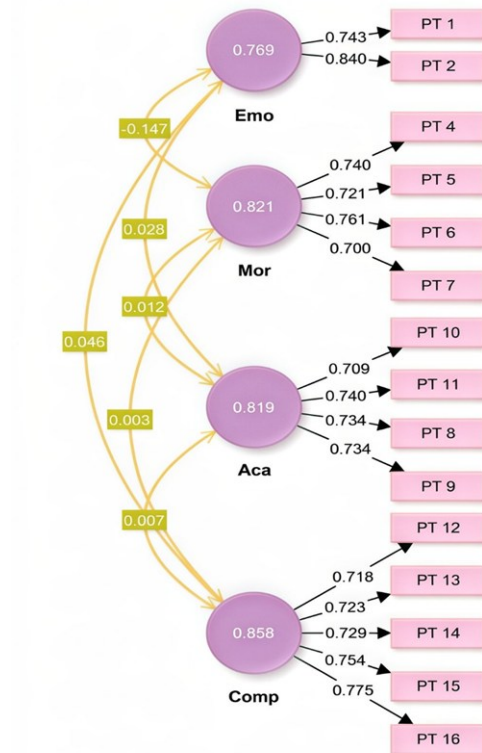


Figure 1. Results Pertaining to Factor Loading and The Correlation Among Latent Variables within Confirmatory Factor Analysis (CFA). Note: comp = Competence Recognition, emo = Emotional Support, aca = Academic support, mor = Moral Recognition.

Reliability and Convergent Validity

In this section, the results of Reliability and Convergent Validity for all aspects of the measurement model are presented, which include Cronbach's Alpha values, Composite Reliability, Average Variance Extracted (AVE), and loading factors for each item

Table 4. The Result for Reliability and Convergent Validity

Aspects	Item	Loading	Cronbach's Alpha	Composite Reliability	AVE
Emotional Support	PT 1	0.743	0.769	0.772	0.629
	PT 2	0.840			
	PT 3	0.673			
Moral Recognition	PT 4	0.740	0.821	0.821	0.534
	PT 5	0.721			
	PT 6	0.761			
	PT 7	0.700			
Academic Support	PT 8	0.734	0.819	0.819	0.532
	PT 9	0.734			
	PT 10	0.709			
	PT 11	0.740			
Competence Recognition	PT 12	0.718	0.858	0.859	0.548
	PT 13	0.723			
	PT 14	0.729			

PT 15	0.754
PT 16	0.775

All items meet the reliability criteria, as evidenced by Cronbach's Alpha and Composite Reliability values ≥ 0.70 . The Average Variance Extracted (AVE) value of all aspects exceeds 0.50, thus confirming the achievement of Convergent Validity. Item PT 3 shows a loading value of 0.673, which does not meet the requirement of a loading factor value ≥ 0.70 , which causes the item to be removed from the measurement model. After such removal, all remaining items show loading values that meet the set minimum thresholds, can be declared more stable and meet the overall Convergent Validity assumptions.

Table 5. Discriminant Validity Based on HTMT

Aspects	Academic Support	Competence Recognition	Emotional Support	Moral Recognition
Academic Support	-	-	-	-
Competence Recognition	0.062	-	-	-
Emotional Support	0.037	0.054	-	-
Moral Recognition	0.076	0.065	0.146	-

The overall HTMT value ≤ 0.85 . Therefore, each item in the Trust Behavior Scale against teachers shows adequate empirical consistency. These results show that the scale has good discriminant validity.

Model Fit Evaluation

Model suitability was evaluated using several fit model indices. The results of the analysis showed that the four-aspect model had a very high degree of conformity with empirical data. The four-aspect PTTBS model was declared to have adequate suitability because the χ^2/df value was 0.887, RMSEA was 0.000, SRMR was 0.032, TLI was 1.007, and CFI was 1.000. so that the PTTBS four-factor model is declared to have adequate suitability.

Table 6. Confirmatory Factor Analysis Fit Indices

Models	χ^2	df	χ^2/df	RMSEA	SRMR	TLI	CFI
Model 1: 4 dimensions (emo+mor+aca+competance)	74.524	84	0.887	0.000	0.032	1.007	1.000
Model 2: 3 dimensions (emo+mor,aca,competance)	248.030	87	2.851	0.074	0.070	0.888	0.907
Model 3: 2 dimensions (emo + aca + mor, competence)	702.403	89	7.892	0.142	0.138	0.583	0.646
Model 4: Single dimensions (emo,aca, mor,competance)	1149.646	90	12.774	0.186	0.182	0.287	0.389
Recommended Thresholds	-	-	≤ 5.00	≤ 0.08	≤ 0.08	≥ 0.90	≥ 0.90

Note: The threshold value indicates a good fit model fit.

DISCUSSION

This study adds to psychometric evidence related to the use of the Perceived Teacher Trust Behavior Scale (PTTBS) in elementary school students in Indonesia. The findings show that four-dimensional measurement models provide a more accurate representation than models with fewer dimensions. These findings indicate that teachers' trust behavior is not viewed by students as a single construct, but rather as a multidimensional construct that includes emotional support, academic support, moral recognition, and competence recognition (Wang et al., 2026). These four dimensions describe a variety of different teacher behaviors, but they complement each other in shaping students' experiences of trust in teachers. With a multidimensional approach, the instrument can capture the complexity of psychological constructs that have several different theoretical aspects than the one-dimensional approach that has the potential to degrade the measured construct information (Goretzko et al., 2024). Maintaining the four dimensions of PTTBS provides a more comprehensive representation of how students understand teachers' trust behavior in the elementary school environment.

The instrument from 16 to 13 items, while the study retained 15 items after eliminating PT3 due to inadequate performance. These differences suggest that the quality of the indicators can change when applied to different educational contexts and characteristics of respondents (Wu et al., 2024). The instrument validation process needs to pay attention to the suitability of dimension, because the characteristics of the respondents, learning experience, and interpretation of item statements can affect the responses given (Swan et al., 2023). Conceptually, the findings of this study support the view that teacher trust behavior is formed through the experience of direct interaction between students and teachers. Student perceptions are not only influenced by general impressions of teachers, but also by certain experiences, such as emotional support, academic help, recognition of abilities, and appreciation for students' positive behavior. Differences in educational social and cultural contexts can affect how students interpret teacher behavior, so cross-context validation is needed to keep the instrument meaningful to different populations.

The results of the convergent validity, discriminant validity, and reliability tests showed that PTTBS had adequate measurement quality. The indicators maintained are able to represent each dimension, while the reliability value indicates the consistency of the instrument in measuring students' perception of teachers' trust behavior. In addition, the fulfillment of discriminatory validity shows that emotional support, academic support, moral recognition, and competence recognition have different conceptual characteristics even though they are all in the same construct (Dash & Paul, 2021). This research provides three main contributions to the literature on educational measurement. First, this study enriches the empirical evidence of PTTBS by testing Indonesian elementary school students who are outside the context of initial development. Second, this study shows that the structure of PTTBS consisting of four dimensions can be applied to a new context with an adequate level of measurement quality. Third, this study emphasizes the need for cross-cultural validation to ensure that educational instruments have conceptual and empirical suitability in different populations.

Despite presenting an important contribution, this study still has some limitations. The research sample only included students from four public elementary schools in Cirebon Regency using convenience sampling techniques, so the scope of generalization of findings is still limited. In addition, this study has not carried out cross-validation, split-sample

validation, or measurement invariance based on gender, grade level, age, and school characteristics. The next study needs to use a more diverse sample and test invariance to obtain stronger evidence regarding the applicability of PTTBS to various groups of students.

CONCLUSION

Based on the results of the discussion, this study adds psychometric evidence on the use of the Perceived Teacher Trust Behavior Scale (PTTBS) in elementary school students in Indonesia. The findings show that a four-dimensional structure that includes emotional support, academic support, moral recognition, and competence recognition can describe students' perceptions of teachers' trust behaviors more comprehensively. These findings support the view that teachers' trust behaviors are a multidimensional construct that reflects various aspects of the interaction between teachers and students. This study also expands on the empirical evidence from the initial development study by showing that the conceptual structure of PTTBS is suitable for different educational contexts, although there are differences in the performance of some items. However, the results of this study need to be interpreted by considering the limitations of the sample coverage that only involves students from four public elementary schools in Cirebon Regency with convenience sampling techniques, so that the generalization of the findings to the wider elementary school student population is still limited. Subsequent research is recommended to use a larger and more diverse sample from different regions, as well as to conduct follow-up testing such as cross-validation and measurement invariance based on gender, grade level, age, and school characteristics. This is aimed at obtaining stronger evidence regarding the consistency of the structure of PTTBS in various student groups and educational contexts.

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