JOURNAL OF LIFESTYLE & SDG'S REVIEW
e-ISSN: 2965-730X
THE GLOBAL GOALS

ADAPTATION AND VALIDATION OF THE PARENT'S MOTIVATIONAL BELIEF INSTRUMENT IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT GOALS (SDGS)

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ABSTRACT

Introduction: Parents' motivational beliefs (PMB) are a critical factor in shaping children's educational experiences and outcomes. PMB plays a crucial role in supporting children's academic achievement. A literature review of PMB measurement instruments from 2005 to 2024 identified five relevant scales.

Objective: This study aims to adapt and validate the Parent's Motivational Belief Scale developed by Walker *et al*. (2005), which serves as a foundation for various PMB-related constructs.

Method: The study follows the International Test Commission (ITC) guidelines using a six-step adaptation and validation procedure. A total of 987 parents participated in the study, but after data cleansing based on response completeness, completion time, and attention checks, 593 valid responses were analyzed. Participants ranged in age from 21 to 78 years (M = 35.93, SD = 7.6 years). Confirmatory Factor Analysis (CFA) was conducted to assess the psychometric properties of the adapted scale.

Results and Discussion: The final instrument consisted of 17 valid and reliable items, and the model demonstrated a good fit to the data. These findings indicate that the adapted Parent's Motivational Belief Scale effectively measures PMB within the Indonesian context while maintaining alignment with the original scale.

Originality/Value: This study highlights the relevance of PMB to Sustainable Development Goal (SDG) 4: Quality Education, as parents with strong motivational beliefs tend to be more engaged in their children's education, fostering early literacy and academic achievement. The validated instrument is expected to be a valuable tool for future research on parental involvement and child development, particularly in Indonesia.

Keywords: parent's motivational belief, instrument adaptation, validation, parental involvement, confirmatory factor analysis, sustainable development goals (SDG 4), quality education, sustainable development goals (SDG).

Received: Nov/22/2024
Accepted: Jan/24/2025
DOI: https://doi.org/10.47172/2965-730X.SDGsReview.v5.n03.pe05170

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1 INTRODUCTION

Parents' motivational beliefs (PMB) significantly influence their children's educational outcomes, including persistence, academic achievement, and self-efficacy (Brown, 2013). These beliefs shape the way parents interact with their children and support their learning, which in turn affects children's motivation and performance in school (Falanga *et al.*, 2023; Falanga & Gonida, 2022; Song *et al.*, 2022; Su & He, 2024). Parents who hold a growth mindset, believing that abilities can be developed through effort, positively influence their children's persistence and reading skills. Children of such parents tend to self-report higher persistence and are rated by teachers as more capable readers (Song *et al.*, 2022). The activities that parents do with their children are influenced by their beliefs about reading and writing, and how they can develop literacy skills in children (Korat & Haglili, 2007; Curenton & Justice, 2008; Puccioni dkk., 2020). The quality and type of parental involvement are influenced by parents' motivational beliefs (Solichah *et al.*, 2025b, 2025a; Stephenson *et al.*, 2008). For instance, parents with high self-efficacy and positive beliefs about their children's abilities are more likely to provide autonomy support and less likely to engage in controlling practices (Falanga *et al.*, 2023; Falanga & Gonida, 2022).

Increasing parents' awareness of the impact of their beliefs on their children's education can enhance parental involvement and support (Anderson *et al.*, 2010). Educating parents about the benefits of a growth mindset and positive failure beliefs can foster a more supportive learning environment (Alahmad *et al.*, 2024). Parents' beliefs about their children's abilities and their own efficacy influence the types of achievement goals they set for their children (Kim *et al.*, 2024). In addition to psychological aspects, sociocultural factors also shape parental motivational beliefs. Studies have shown that cultural values, socioeconomic status, and educational background influence the extent and nature of parental involvement in children's education (Filik-Uyanık & Demircan, 2021; Green *et al.*, 2007). For instance, parents from cultures emphasizing collectivism may perceive their involvement in a more community-centered manner, whereas those from individualistic cultures may

focus on fostering independent learning. Despite these findings, there remains limited research examining PMB within diverse cultural contexts, particularly in Indonesia.

While numerous studies have explored the relationship between PMB and parental involvement, research on this topic in non-Western contexts remains scarce (Manya C. Whitaker, 2011; Tekin, 2016). Most existing PMB measurement instruments were developed and validated in Western countries (Curry *et al.*, 2016; Filik-Uyanık & Demircan, 2021; Green *et al.*, 2007; Walker *et al.*, 2011) and may not fully capture the cultural and linguistic nuances of parental beliefs in Indonesia. No standardized Indonesian adaptation of the PMB scale currently exists, creating a critical gap in assessing and understanding the motivational beliefs of Indonesian parents.

The urgency of this research is further supported by Indonesia's ongoing educational challenges, including low literacy rates in early childhood and unequal access to quality education (UNESCO, 2023). Strengthening parental involvement through accurate measurement and targeted interventions can contribute to improving early childhood education outcomes, aligning with Sustainable Development Goal (SDG) 4: Quality Education, which emphasizes inclusive and equitable quality education for all children. This study aims to adapt and validate the Parent's Motivational Belief Scale developed by Walker *et al.* (2005), which serves as a foundation for various PMB-related constructs.

2 THEORETICAL FRAMEWORK

2.1 PARENT'S MOTIVATIONAL BELIEF

Parental motivational beliefs are the underlying beliefs that drive parents to engage in their children's development, often conceptualized as parental self-efficacy (Walker *et al.*, 2005). This construct encompasses parents' understanding of their roles and responsibilities in fostering child development based on various sources of information, both scientific and non-scientific (Walker *et al.*, 2005). The measurement tool developed in Walker *et al.*'s study was later used by Tekin (2016), who reported a Cronbach's alpha

reliability coefficient of 0.70 based on a sample of 374 parents in Turkey. In this study, the Parental Motivational Beliefs Questionnaire was adapted from Walker *et al*. (2005).

Parental motivational beliefs refer to parents' perceptions of child-rearing, shaped by the information they receive from various sources, whether scientific or non-scientific (Holden, Bayam, Baruah, & Holland, 2013). These beliefs are defined as a set of naïve theories about developmental achievements, essential aspects of parenting, and the factors influencing children's development (Bornstein dkk., 2019). Parental beliefs are the ideas or knowledge that parents perceive as real and valid (McGillicuddy-De Lisi & Sigel, 1995).

Parental motivational beliefs can also be interpreted as the convictions that encourage parents to participate in their children's education, the efforts they must exert, and their perceived ability to engage in their child's learning process (Holden dkk., 2013). These beliefs shape parents' perceptions of child development and the necessary parenting approaches to meet their children's needs.

Parental motivational beliefs play a crucial role in achieving several Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education and SDG 3: Good Health and Well-being (United Nations, 2022). Research indicates that higher parental self-efficacy leads to greater parental involvement, which in turn enhances children's academic success (Walker *et al*., 2005). By fostering positive parental beliefs, communities can reduce educational disparities, particularly in low-income and marginalized populations, thereby supporting Target 4.2 of SDG 4, which aims to ensure that all children have access to quality early childhood education and development.

2.2 DIMENSIONS OF PARENTS' MOTIVATIONAL BELIEFS

Parents' motivational beliefs are a crucial factor influencing parental involvement in children's education (Walker *et al*., 2005). These beliefs are divided into two key dimensions: (1) parental role construction and (2) parental self-efficacy. Parental motivational beliefs refer to the underlying convictions

that drive parents to engage in their child's development (parental self-efficacy) and their understanding of their roles and responsibilities based on various sources of information, both scientific and non-scientific (Walker *et al.*, 2005).

Parental role construction pertains to parents' perceived obligations and responsibilities regarding their child's education, such as monitoring their child's progress, assisting with homework, and communicating with teachers(Walker *et al.*, 2005). Meanwhile, parental self-efficacy in supporting children's education is defined as parents' belief that their involvement positively influences their child's learning process and academic success (Walker *et al.*, 2005).

Parental motivational beliefs play a crucial role in achieving the Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education (United Nations, 2022). SDG 4 aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." Research has shown that parental involvement, which is driven by strong parental motivational beliefs, enhances children's educational outcomes, reduces learning disparities, and fosters long-term academic success (Bornstein dkk., 2019).

Moreover, parental role construction and self-efficacy contribute to SDG 10: Reduced Inequalities by encouraging active parental engagement in children's learning, especially in disadvantaged communities where access to quality education is limited. When parents perceive themselves as responsible for their child's education and have confidence in their ability to support learning, children from marginalized backgrounds are more likely to receive educational support at home, mitigating the negative effects of socioeconomic disparities (McGillicuddy-De Lisi & Sigel, 1995).

3 METHODOLOGY

3.1 RESEARCH DESIGN

The adaptation of the measuring instruments aims to ensure equivalence

or functional equivalence between the original measuring instrument and the one used in the study (Epstein *et al.*, 2015). Adaptation involves considering differences between the culture of origin of the measurement tool and the culture in which it will be applied to maintain equivalence in meaning (Epstein *et al.*, 2015). In this study, an adaptation of measuring instruments follows guidelines based on the International Test Commission (ITC) Guidelines for Translating and Adapting Test (Gana *et al.*, 2021), which comprises five stages: 1) preconditioning, 2) test development, 3) confirmation, 4) administration, and 5) documentation. The process of translating measuring instruments at the test development stage follows guidelines based on Beaton *et al.* (2000), which includes five stages: 1) translation, 2) synthesis, 3) back translation, 4) expert committee review, and 5) pretesting.

According to guidance from the International Test Commission (Gana *et al.*, 2021), this stage involves several steps: 1) ensuring that the translation and adaptation process considers linguistic, psychological, and cultural differences in the intended population through the selection of experts with relevant expertise (TD 1), 2) using appropriate translation design and procedures to maximize the suitability of the measure adaptation in the intended population (TD 2), 3) providing evidence that the item content, test instructions, and comparability of language and relevance of the measure have similar meanings in the intended population (TD 3) (Sperber, 2004), 4) providing evidence that item formats, rating scales, scoring categories, test conventions, administration modes, and other procedures are appropriate for the intended population (TD 4), and 5) collecting pilot data on the adapted measure to enable item analyses, reliability assessments, and validity studies in a small setting for important revisions to the adapted measure (readability testing) (TD 5).

3.2 POPULATION AND SAMPLE

The participants in this study were parents (both fathers and mothers) of children aged 4-6 years who voluntarily agreed to participate. Ethical approval was obtained from the Research Ethics Committee with certificate

number 359/KE/IV/2024. A questionnaire was utilized as the data collection technique, employing a non-probability convenience sampling technique to reach parents from various backgrounds. This diversity was essential to ensure the broad applicability of the adaptation instrument to a wide range of parents. An online Likert-scale questionnaire was developed using LimeSurvey and distributed via WhatsApp groups and social media. A total of 987 parents participated initially, but after data cleansing for completeness of answers (302), estimated processing time (75), and attention check (17), 394 respondents failed. Thus, data from 593 respondents were analyzed, ranging in age from 21 to 78 years (mean = 35.93, SD = 7.6 years).

Table 1

Participants Demographics

Category	Frequency
Role	Father = 237 (40%); Mother = 356 (60%)
Parents' Education	High School = 226 (38%); Diploma = 46 (8%); Bachelor = 276 (47%); Postgraduate = 45 (8%)
Age Range of parents	20-30 years = 163 (27%); 31-40 years = 296 (50%); 41-50 years = 102 (17%); 51-80 years = 32 (5%)
Gender of children	Male = 306 (52%); Female = 287 (48%)
Number of Children	1 = 175 (30%); 2 = 241 (41%); >3 = 177 (30%)
Place of Residence	Living separately from other families (nuclear family) = 404 (68%); living with other families (extended family) = 189 (32%)
Family income (in million)	1-5 = 447 (75%); 6-10 = 123 (21%); 11-20 = 8 (1%); 21-30 = 8 (1%); >30 = 7 (1%)

3.3 RESEARCH INSTRUMENTS

The research utilized several validated instruments to measure key variables in the study. The Parent's Motivational Belief Scale (PMB), which assesses parental beliefs regarding involvement in their child's early literacy, was adapted and validated in the Indonesian context. The scale consists of two subdimensions: parental role construction and parental self-efficacy, with reliability scores of 0.79 and 0.75.

Table 2

Blue Print Parent's Motivational Belief Scale

Dimension	Number	Number of Items
Parental role construction	1-10	10
Parental self efficacy	1-7	7
Total		17

3.4 DATA ANALYSIS METHOD

To ensure measurement validity, Confirmatory Factor Analysis (CFA) was conducted to evaluate factor loadings, composite reliability (CR), and average variance extracted (AVE). The results confirmed the adequacy of the constructs, with all factor loadings exceeding 0.50 and reliability scores meeting the recommended threshold of 0.70 (Hair *et al.*, 2019).

4 RESULTS AND DISCUSSIONS

4.1 RESULT

4.1.1 Preconditioning stage

The preconditioning stage constitutes the initial step undertaken by the researcher, involving obtaining the necessary permissions from intellectual property rights/copyright holders related to the measuring instrument before making adaptations. In this stage, the author sought permission via e-mail from the developer of each measuring instrument used in the study. Specifically, the author emailed Joan Walker to request permission to use and adapt the Parent's Motivational Belief Scale. The creator of the measuring instrument, Walker *et al*. (2005), responded to the correspondence by granting permission to develop the instrument and providing the psychometric properties of the scales.

4.1.2 Test development

The adaptation process concerning the language and culture of the measuring instrument in this study adheres to the adaptation flow from Beaton

et al. (2000). The detailed explanation is as follows:

4.1.2.1 Translation Stage (TD 1 and 2)

The translation of the measuring instrument follows guidelines based on the Guideline for the Process of Cross-Cultural Adaptation of Self-Report Measures by Beaton *et al*. (2000). This process encompasses five stages: forward translation, synthesis, back translation, expert committee assessment, and pilot testing. The initial stage of the scale adaptation process is forward translation, which involves at least two translators tasked with translating from the original language to the intended language. This approach allows the researcher to obtain diverse perspectives from the two translators, minimizing ambiguity of meaning. Ideally, the initial translators possess different profiles, with the first translator possessing a deep understanding of the language and concepts related to the scale and the second translator focusing solely on language translation without substantial comprehension of the academic purpose (Beaton *et al*., 2000).

Following forward translation, the next step is to synthesize the translations provided by the two translators. Synthesis entails reviewing the translated statement items individually and addressing any issues encountered during the initial translation process. The outcome of this process is the statement items of the scale translated from the original language to the intended language (Beaton *et al*., 2000). The translators reached a consensus to produce a single Indonesian questionnaire (T1.2).

Subsequent to obtaining the translation results from the original language to the intended language, namely the questionnaire in Indonesian from the previous synthesis process, the next phase involves backward translation of the translated results to the original language. This validation step ensures that the translation to the intended language reflects the same meaning as the original statement items. Two translators and one synthesizer (B1 and B2) undertook this process. It was preferred that the individual involved in this aspect would lack understanding of the concept of the adapted scale item and possess a mother tongue similar to the original language of the scale

being translated, facilitating a more natural process (Beaton *et al.*, 2000). At this stage, a translator with a minimum of three years' experience residing in an English-speaking country was selected. As in the forward translation process, the two translators deliberated on the results of the two backward translations (B1 and B2), resulting in a consensus on a single English questionnaire.

4.1.2.2 Expert Committee Review (TD 3 and 4)

The expert review process occurred subsequent to the translation of the measuring instrument, aiming to validate the translation results. Expert reviewers were selected based on their proficiency in English and Indonesian, knowledge of the subject matter, and understanding of the context in which the data were collected. Translators meeting these criteria also participated as committee members (Beaton *et al.*, 2000). Experts validated the translation by comparing the original scale version with the translated version, providing ratings for the compiled items. Researchers referred to studies by Sperber (2004) to assess the level of comparability and similarity between the original version and the back-translated and forward-translated versions of items.

Following the assessment of scale items by three experts, the average value for each item was calculated. According to Sperber (2004), if the mean score exceeds 3 (with 7 indicating the lowest agreement and 1 indicating the highest agreement), the item necessitates a formal review of its translation. Similarly, any mean score falling between 2.5 and 3 in the similarity section is considered problematic, and warrants review for possible item revision. In theory, retranslated items may differ from the original questionnaire in linguistic form, but the conveyed meaning should ideally remain similar. However, similarity of meaning is prioritized over language form, which may vary to ensure similarity of meaning.

Table 3

Comparability and Similarity Calculation Results

Scale	Comparability Mean		Similarity Mean		
	Mean Score Total	Range	Mean Score Total	Range	Points to note
Parent's Motivational Belief Scale (PMB)	1.5	1 - 2	1.48	1 - 2	1

Furthermore, after receiving results from linguistic experts, the researcher conducted a content expert test to evaluate item format, rating scale, scoring category, test convention, administration mode, and other procedures according to the intended population in the Expert review, namely Educational and Developmental Psychologists in accordance with the research context. Content validity was assessed by calculating the content validity index (CVI) for the five adapted measuring instruments. The CVI calculation was based on guidelines from Yaghmaie (2003), with four assessments: relevance, clarity, simplicity, and ambiguity. The I-CVI and S-CVI calculation was done using guidelines from Ã & El-masri (2005) and Ibiyemi *et al*. (2019).

After obtaining input from content review experts, the researcher developed the draft scale and administration procedures to provide evidence that item formats, rating scales, scoring categories, test conventions, administration modes, and other procedures were appropriate for the intended population (TD 4).

4.1.3 Content validity index (CVI)

In this study, evidence based on test content was obtained by calculating the content validity index (CVI) for four adapted measurement tools. Experts rated items' relevance, clarity, or importance, assigning scores from 1 (not relevant, not clear, not important) to 4 (very relevant, very clear, very important). Polit *et al*. (2007) stated that the CVI value can be calculated for each item on the scale (I-CVI) as well as for the scale as a whole (S-CVI). Based on expert assessments (scores 1-4), a dichotomous assessment was made again, where scores of 1 or 2 were given a score of 0 and scores of 3 or 4 were given a score of 1. Furthermore, the I-CVI score was calculated by summing the rating

value of each item and dividing by the number of expert reviewers. In contrast, the S-CVI was calculated by summing the I-CVI score divided by the total number of items.

An item is considered good if it has an I-CVI ≥ 0.78, while the S-CVI score is considered good if it is ≥ 0.90. The calculation results for each item on the scale yielded an I-CVI score = 1, as did the S-CVI score for all scales involved in this study, indicating good content validity for all scales.

Table 4

Content validity index

Scale	Unit	Relevance	Clarity	Simplicity	Ambiguity
Parent's Motivational Belief Scale (PMB)	I-CVI	1.00	1.00	1.00	1.00
	S-CVI	1.00	1.00	1.00	1.00

4.1.4 Pilot study

Stage 5 is utilized to assess whether the translated scale is understandable, applicable, and complete. In this stage, the researcher engaged 30 parent respondents with the assistance of LimeSurvey, but only 21 individuals (13 mothers and 8 fathers) provided full input and assessment by filling out the piloted scale. The piloted scale was accompanied by a column where participants could offer comments or input regarding the scale items. This aligns with guidelines from Peterson *et al*. (2017), specifying that the process of this readability test involves evaluating instructions and questionnaire items with 5-15 respondents. Several items required re-examination and correction based on feedback provided by respondents, including feelings of difficulty in understanding statements, confusing meanings, complicated sentences, and sentences with more than two words confusing). These items were addressed by the researcher, and the complete scale processing time ranged from 7 to 11 minutes. The items needing adjustments were on the Parent's Motivational Belief Scale (PMB), specifically items number 1,11,14,15, dan 17.

Following the receipt of results and improvements from the pilot study or readability test, researchers improved the items. Subsequently, content experts reassessed CVR. The three experts deemed the items appropriate

without any noted issues. After expert review, researchers registered for ethical testing at Udayana University, obtaining ethical clearance with registration number 359/KE/IV/2024.

4.1.5 Confirmation stage

Based on guidance from the International Test Commission (Gana *et al.*, 2021), stage 3 involves guidelines grounded in empirical analyses of scale validity studies. Additionally, it furnishes statistical evidence concerning construct validity, particularly through confirmatory factor analysis (CFA). The validity of this measuring instrument aims to derive evidence based on relations to other variables. Construct validity comprises a set of statements or items used to measure and reflect latent constructs theoretically to ensure accurate measurements (Gervilla-García *et al.*, 2023; J. F. J. Hair, W. C. Black, B. J. Babin, 2019; Lai *et al.*, 2022). Convergent validity and discriminant validity are included in the tests for construct validity.

4.1.5.1 Validity and Reliability

4.1.5.1.1 Validity based on internal structure

The author examined the validity of the internal structure using confirmatory factor analysis conducted with JASP software. Convergent validity, average variance extracted (AVE), and construct reliability (CR) can be determined based on factor loading from CFA. According to Hair *et al.* (2010), the standard AVE value is > 0.5 with a CR value > 0.7. Model fit to the data was assessed using the guidelines from Hooper *et al.* (2008).

The most common index of model accuracy is the Chi-Square value to evaluate model fit. Ideally, the Chi-Square value is not significant (p-value > 0.05), indicating no difference between the model and the data (Hooper *et al.*, 2008). However, the Chi-Square value is sensitive to sample size, where larger samples tend to yield significant estimation results, suggesting poor model fit. In such cases, researchers are advised to consider other parameters. The results

of testing the validity of each adapted measuring instrument are outlined in the subsequent explanation:

The Parent's Motivational Belief Scale (PMB) is unidimensional, and a first-order CFA model was employed in the analysis of this instrument.

Table 5

Model First-Order

Criteria Parameter	Parameter Fit	Model	Conclusion
Chi-square	< Chi-square table	0.001	Poor fit
CFI	≥0.90 (good fit) 0,8 ≤ GFI ≥ 0,9 (marginal fit)	0.944	Good fit
TLI	≥0.90 (good fit) 0,8 ≤ GFI ≥ 0,9 (marginal fit)	0.932	Good fit
NNFI	≥0.90 (good fit) 0,8 ≤ GFI ≥ 0,9 (marginal fit)	0.932	Good fit
NFI	≥0.90 (good fit) 0,8 ≤ GFI ≥ 0,9 (marginal fit)	0.924	Good fit
RFI	≥0.90 (good fit) 0,8 ≤ GFI ≥ 0,9 (marginal fit)	0.908	Good fit
IFI	≥0.90 (good fit) 0,8 ≤ GFI ≥ 0,9 (marginal fit)	0.944	Good fit
RNI	≥0.90 (good fit) 0,8 ≤ GFI ≥ 0,9 (marginal fit)	0.944	Good fit
RMSEA	≤0.08	0.066	Good fit
GFI	≥0.90 (good fit) 0,8 ≤ GFI ≥ 0,9 (marginal fit)	0.996	Good fit

Goodness-of-Fit (GOF) test results with cut-off value criteria are assessed based on the Chi-Square value. RMSEA (Root Mean Square Error of Approximation) should be < 0.08, while the GFI (Goodness-of-Fit Index) value is considered a good fit if GFI ≥ 0.9 and marginally fit or acceptable if 0.8 ≤ GFI ≤ 0.9. The AGFI (Adjusted Goodness-of-Fit Index) is categorized as fit when AGFI ≥ 0.9 and marginal when 0.8 ≤ AGFI ≤ 0.9. The expected CMIN/DF value should be ≤ 2.00. The TLI (Tucker-Lewis Index) ranges from 0 to 1, where TLI ≥ 0.9 is classified as a good fit, and 0.8 ≤ TLI ≤ 0.9 is considered a marginal fit. The CFI (Comparative Fit Index) is categorized as a good fit if CFI ≥ 0.9 and marginally

fit if 0.8 ≤ CFI ≤ 0.9. Additionally, the IFI (Incremental Fit Index) and NFI (Normed Fit Index) should both be ≥ 0.90 (Ferdinand, 2014; Wijanto, 2008).

Based on the table above, the resulting GOF coefficients indicate that all criteria have been met, signifying that the measurement model for the Parent's Motivational Belief variable is deemed feasible and satisfies the unidimensionality requirements for use in the structural measurement stage. This aligns with Ghozali *et al*. (2012), who cited Hair *et al*. (2010), stating that evaluating a model's feasibility requires implementing 4–5 goodness-of-fit criteria, provided that absolute fit indices, incremental fit indices, and parsimony fit indices are represented. Thus, the resulting SEM model can be utilized to analyze and test the hypotheses proposed in this study.

Table 6

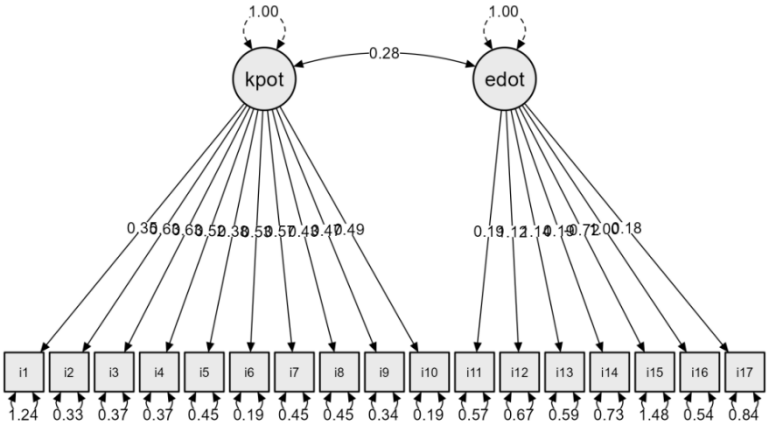
Factor Loading

Factor	Item	Standard factor loading
Parental role construction	i1	0.300
	i2	0.740
	i3	0.717
	i4	0.652
	i5	0.493
	i6	0.770
	i7	0.649
	i8	0.543
	i9	0.629
	i10	0.744
Parental self-efficacy	i11	0.530
	i12	0.812
	i13	0.849
	i14	0.492
	i15	0.511
	i16	0.789
	i17	0.514

Testing the Parent's Motivational Belief Scale with 17 items resulted in factor loadings ranging from 0.300 to 0.849. Based on the pilot test of the Parent's Motivational Belief Scale with 12 items and 593 respondents, the first-order CFA results indicated that one item, specifically item 1, had a factor loading below 0.5. According to Hair *et al*. (2019), a factor loading of 0.30–0.40 represents the minimum threshold for interpretability, while a factor loading of ≥0.70 indicates a well-defined structure. In this instrument, all items are well-defined.

Figure 1

CFA Model Unidimensionality of PMB Scale



Convergent validity was fulfilled based on confirmatory factor analysis (see Figure 1). Discriminant validity is a prerequisite to demonstrating the validity of a measurement construct. It can be assessed by comparing the square root of the average extracted variable (AVE) with the square value of the correlation (R^2) between structures. Furthermore, discriminant validity can be verified by comparing the correlation value with 1, where if the correlation value is smaller than 1, discriminant validity is achieved (Ingarianti *et al.*, 2022; Perugini & Bagozzi, 2001; Woodman *et al.*, 2023). Table 7 depicts the comparison table between AVE and R^2:

Table 7

Discriminant Validity

	i1	i2	i3	i4	i5	i6	i7	i8	i9	i10	i11	i12	i13	i14	i15	i16	i17
i1	0.359																
i2	0.221	0.731															
i3	0.218	0.395	0.759														
i4	0.182	0.329	0.325	0.638													
i5	0.132	0.239	0.236	0.197	0.588												
i6	0.186	0.337	0.333	0.277	0.201	0.478											
i7	0.199	0.361	0.356	0.297	0.216	0.304	0.773										
i8	0.151	0.273	0.270	0.225	0.163	0.230	0.247	0.635									
i9	0.164	0.297	0.293	0.244	0.177	0.250	0.268	0.203	0.559								
i10	0.172	0.311	0.307	0.256	0.186	0.262	0.280	0.213	0.231	0.436							
i11	0.019	0.034	0.034	0.028	0.020	0.029	0.031	0.023	0.025	0.027	0.604						
i12	0.110	0.200	0.197	0.164	0.119	0.168	0.180	0.136	0.148	0.155	0.214	0.919					
i13	0.112	0.203	0.201	0.167	0.121	0.171	0.183	0.139	0.151	0.158	0.217	0.267	0.879				
i14	0.019	0.035	0.034	0.029	0.021	0.029	0.031	0.024	0.026	0.027	0.037	0.217	0.221	0.763			

	i1	i2	i3	i4	i5	i6	i7	i8	i9	i10	i11	i12	i13	i14	i15	i16	i17
i15	0.071	0.129	0.128	0.106	0.077	0.109	0.117	0.088	0.096	0.100	0.138	0.807	0.820	0.141	0.998		
i16	0.098	0.178	0.176	0.147	0.107	0.150	0.161	0.122	0.132	0.139	0.191	0.112	0.131	0.194	0.720	0.533	
i17	0.018	0.033	0.032	0.027	0.020	0.028	0.030	0.022	0.024	0.026	0.035	0.205	0.209	0.036	0.133	0.183	0.869

CFA can provide reliability values, including construct reliability (CR) and average variance extracted (AVE). Table 8 details the calculation of CR and AVE:

Table 8

Reliability

Dimensions	Item	CR	AVE	Result
Parental role construction	i1	0.872	0.372	Reliability acceptable
	i2			
	i3			
	i4			
	i5			
	i6			
	i7			
	i8			
	i9			
	i10			
Parental self-efficacy	i11	0.856	0.670	Good Reliability
	i12			
	i13			
	i14			
	i15			
	i16			
	i17			

If the CR value ≥ 0.7, it indicates good reliability; CR values between 0.6 and around 0.7, along with AVE values ≥ 0.5, indicate acceptable reliability. However, if CR ≥ 0.6 while AVE is below 0.5, then convergence validity remains adequate (Dwiastuti *et al.*, 2024; Hair *et al.*, 2019; Yang *et al.*, 2023). The CFA analysis conducted in this study yielded reliability results for each item as follows: the construction of parental roles = 0.872, parental self-efficacy = 0.856, The CFI results were 0.953, RMSEA was 0.066. These findings are consistent with previous research, such as Tekin (2011), which reported a reliability coefficient of 0.79 for parental role construction for involvement and

0.75 for parental self-efficacy in helping children succeed in school. Similarly, Curry *et al*. (2016) found an overall reliability score of 0.84.

4.1.5 Documentation stage

Based on guidelines from the international test commission Gana *et al*. (2021) this step provides technical documentation of any changes, including an explanation of the evidence obtained to support equivalence, when a test is adapted for use in another population. TIMSS and PISA have been very successful in observing this guideline by documenting changes that occur during the adaptation process. With this information, it is possible to focus on the appropriateness of the changes that have been made. The technical documentation contains sufficient methodological details for future researchers to replicate the procedures used in the same or other populations.

4.2 DISCUSSION

The adaptation and validation of the Parent's Motivational Belief Scale (PMB) demonstrated strong psychometric properties, confirming its reliability and validity for assessing parental motivational beliefs within the Indonesian context. The rigorous adaptation process, which encompassed translation, expert evaluation, and pilot testing, ensured that the scale retained both linguistic and cultural relevance while preserving the conceptual integrity of the original instrument. The confirmatory factor analysis (CFA) yielded acceptable fit indices, and the high content validity indices (I-CVI and S-CVI) further validated the scale's effectiveness in measuring the intended constructs. These findings underscore the critical role of a meticulous adaptation process in cross-cultural research, emphasizing the necessity of maintaining both validity and reliability in psychological measurement tools.

This study is in line with prior research (Curry *et al*., 2016; Tekin, 2011) which highlights the importance of ensuring cultural and linguistic equivalence when adapting psychological instruments. The strong factor loadings and reliability scores observed in this study align with contemporary psychometric

standards (Hair *et al.*, 2019). One of the key strengths of this research is its comprehensive methodological approach, including expert reviews and pilot testing, which contributed to refining the scale and ensuring its clarity and applicability within the Indonesian setting. However, certain limitations should be acknowledged. The relatively small sample size in the pilot study (n=21) may limit the generalizability of the findings. Furthermore, marginal fit indices observed in the CFA suggest that further refinement of the scale may enhance its structural robustness. Additionally, some items required more substantial revisions than initially anticipated, illustrating the inherent challenges of cross-cultural adaptation in psychological assessment.

Despite its strong empirical findings, this study presents several limitations. First, the sample size used in the pilot study was relatively small, which may restrict the broader applicability of the results. Future studies should incorporate larger and more diverse samples to enhance the scale's generalizability. Second, as this research was conducted within a specific cultural setting (Indonesia), the applicability of the PMB scale to other cultural contexts remains an open question. Third, the marginal fit indices identified in CFA indicate the need for potential refinements in certain scale items. Moreover, the reliance on self-reported data introduces the possibility of response biases, which could be mitigated in future research through the incorporation of multiple data sources.

4.2.1 Benefits of measuring instrument adaptation

Accurate and culturally relevant measurement tools are essential for ensuring the validity and reliability of research findings in various sociocultural contexts. The adaptation of the Parent Motivational Belief (PMB) measurement tool in Indonesia represents a significant step toward capturing the unique perspectives and parental engagement behaviors within the country's diverse cultural and socioeconomic landscape. This adaptation aligns with the broader need for measuring instruments (Taymanov & Sapozhnikova, 2019).

The adaptation process of the PMB instrument in Indonesia improves measurement accuracy by incorporating localized nuances and addressing

potential biases inherent in direct translations. Previous research has demonstrated that adaptive measuring instruments contribute to enhanced performance and reliability by ensuring that responses reflect genuine parental motivations rather than being influenced by linguistic or cultural misunderstandings (Shestakov *et al.*, 2025). By refining its psychometric properties through validation studies, the adapted PMB tool increases confidence in its ability to measure parental beliefs effectively, making it a robust tool for assessing parental involvement in early childhood education across diverse Indonesian communities.

A major advantage of adapting the PMB measurement tool is its increased cross-cultural and contextual relevance. As Cross-Cultural and Contextual Relevance (Reichenheim & Moraes, 2007). Measurement tools must be sensitive to the cultural and societal contexts in which they are applied (Reichenheim & Moraes, 2007). The Indonesian adaptation ensures that the tool captures local parenting norms, values, and educational practices, leading to more accurate data collection and meaningful insights into parental involvement in early childhood literacy. This is particularly important in a country with diverse cultural backgrounds, where parenting styles and expectations vary significantly across regions.

Adaptive measuring instruments can also optimize resource utilization by adjusting their operation based on current conditions (Fabeck *et al.*, 2009; Merlin & Heinzelman, 2010). The Indonesian version of the PMB tool allows policymakers and educators to make data-driven decisions that align with local needs, ensuring that resources allocated to parental engagement initiatives are effectively targeted. By identifying key motivational factors that influence parental involvement, stakeholders can develop interventions that maximize parental contributions to children's education while minimizing inefficiencies in program implementation.

The adaptation of the PMB measurement tool in Indonesia aligns with the Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education (United Nations, 2022). SDG 4 emphasizes the importance of inclusive and equitable quality education, which is closely linked to active parental involvement in children's learning. Research indicates that when parents have

strong motivational beliefs about their role in education, children tend to achieve better academic outcomes and develop essential cognitive and social skills (Bornstein dkk., 2019).

Despite the rigorous adaptation process and strong psychometric results, several limitations must be acknowledged in this study. First, while the adapted instrument has demonstrated cultural relevance and reliability within the Indonesian context, its applicability to other cultural settings remains uncertain. Future research should explore the generalizability of the adapted instrument in diverse cultural environments to ensure its cross-cultural validity. Second, this study primarily focused on the psychometric properties of the adapted scale, such as reliability and construct validity. However, its predictive validity concerning parental involvement and child development outcomes remains an area for further exploration. Future studies should examine the extent to which the adapted scale can predict actual parental behaviors and their impact on children's literacy and overall development. Third, the sample used in this study, although representative of a particular demographic, may not fully capture the socio-economic and educational diversity of Indonesian parents. A broader and more heterogeneous sample would strengthen the findings and enhance the instrument's applicability across different parental backgrounds. Lastly, while this adaptation contributes significantly to psychological assessment in Indonesia, future research should also consider the dynamic nature of parenting beliefs and practices, particularly in response to socio-economic changes, digitalization, and evolving educational paradigms. Continuous validation and refinement of the instrument will be necessary to ensure its ongoing relevance and utility. By addressing these limitations, future research can further strengthen the adapted instrument's credibility and provide deeper insights into the role of parental motivational beliefs in child development.

5 CONCLUSION

This study demonstrates the critical role of Parents' Motivational Beliefs (PMB) in influencing parental involvement and educational outcomes,

particularly in the context of early childhood education. The adaptation and validation of the Parent's Motivational Belief Scale (PMB Scale) confirm its reliability and applicability within the Indonesian cultural context, ensuring that it effectively measures parental beliefs and their impact on children's learning experiences.

Findings indicate that PMB significantly contributes to Sustainable Development Goal (SDG) 4: Quality Education, as parents with stronger motivational beliefs are more engaged in fostering their children's academic success. The validated instrument can serve as a valuable tool for future research, educational interventions, and policy-making aimed at enhancing parental involvement in early literacy and learning development.

Given the study's implications, future research should explore longitudinal applications of the PMB Scale and examine sociocultural factors influencing parental beliefs. By addressing these aspects, this study contributes to the advancement of educational psychology and parental engagement strategies, promoting more inclusive and sustainable educational practices.

ACKNOWLEDGEMENTS

We extend our sincere gratitude to all the contributing authors for their invaluable initial feedback and guidance throughout the preparation of this paper.

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