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Testing the Validity and Reliability of Self-Efficacy in Parents of Children with Special Needs in Home-Based Informal Education

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ABSTRACT

Parental self-efficacy refers to parents' beliefs in their ability to perform parenting roles and support the development and education of children with special needs. This study aimed to conduct a preliminary psychometric evaluation of the Parental Self-Efficacy Scale for parents involved in home-based informal education in Medan, Indonesia. A quantitative psychometric design was employed with 32 parents selected using saturated sampling. The instrument was adapted from the Self-Efficacy for Parental Tasks Index (SEPTI) and consisted of 15 items representing five dimensions: health, discipline, education, play, and emotion. Item validity was assessed using corrected item-total correlation, while internal consistency was evaluated using Cronbach's Alpha. The results showed that four items (26.7%), namely Items 4, 7, 8, and 9, met the validity criterion of 0.349, whereas 11 items (73.3%) did not. Item 10 showed a negative item-total correlation ($r = -0.087$), indicating the need to verify its scoring direction and possible reverse scoring. The overall Cronbach's Alpha was 0.638, below the predetermined criterion of 0.70. Although deleting Item 10 increased Alpha to 0.686, the coefficient remained below the criterion. Therefore, the instrument requires further revision and comprehensive psychometric testing before being used as a finalized measurement tool. Future studies should employ larger samples and examine content and construct validity.

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1. INTRODUCTION

Education for children with special needs (ABK) doesn't just happen in formal institutions, but also through the family as an ongoing informal learning environment [1]. In home-based education, parents play a role in guiding learning, providing stimulation, shaping adaptive behavior, and giving social and emotional support according to the child's needs. The complexity of children with special needs makes parents' belief in their own

abilities, or parental self-efficacy, an important aspect in the process of supporting education at home [2].

In the context of Medan City, parents not only take on the role of caregivers, but they can also act as learning companions, communication facilitators, behavior guides, and supporters of their child's independence. These demands require parents to adjust their strategies according to the child's characteristics and abilities. Therefore, measuring self-efficacy is important to get an idea of parents' confidence in consistently carrying out informal educational roles.

Although parental self-efficacy has been widely studied, the measurement instruments need to be adjusted to the characteristics of the population and the educational context. Instruments developed for parents in general do not necessarily fully represent the experiences of parents of children with special needs, especially when educational support is carried out at home [3]. Differences in children's needs, interaction patterns, the intensity of guidance, and learning adaptation demands show the need for psychometric evaluation to make sure each item fits the construct being measured [4].

Psychometric evaluation is needed to get empirical evidence about item quality, validity, and the reliability of the instrument. In the early stages, the evaluation is aimed at finding out each item's ability to represent the construct and the internal consistency of the scale [5]. Thus, the term early psychometric evaluation emphasizes that this study is a preliminary stage aimed at identifying items that need to be kept, improved, or developed before further testing, rather than claiming that the instrument has been fully validated.

The city of Medan is an important context because social, cultural, family characteristics, and access to educational services can influence parents' experiences in supporting children with special needs. This diversity can lead to variations in parenting styles and involvement in home education. Therefore, an initial evaluation of parents' self-efficacy in the context of home-based informal education in Medan is needed to gather empirical evidence that fits the characteristics of the local population.

Several previous studies have developed instruments for parental self-efficacy in the context of children with special needs. Nisa & Fitri developed the Child Adjustment and Parent Efficacy Scale-Developmental Disability (CAPES-DD) to measure parents' efficacy in dealing with the behavioral and emotional issues of children with developmental disabilities [6]. Kurniawan & Qotrunnada developed the Parental Self-Efficacy Scale for Preventing Challenging Behaviors in Children with Autism Spectrum Disorder (PASEC) [7]. Meanwhile, Orellana et al. evaluated the Persian version of TOPSE on parents of children with ASD [8]. The research shows the development of measuring parents' self-efficacy, but most of it focuses on specific conditions or special needs.

The research gap of this study lies in the limited studies that simultaneously connect the self-efficacy of parents of children with disabilities, home-based informal education, and the local context of Medan City. Previous instruments generally focus on parenting aspects, behavior, health, or specific conditions like ASD, so they have not specifically positioned parents as facilitators of their children's education at home. The novelty of this study is in the initial psychometric evaluation of a self-efficacy scale aimed at parents' confidence in

carrying out learning support, parenting, developmental support, and informal education for children with disabilities in Medan City.

Methodologically, this study treats the evaluation as a preliminary psychometric evaluation, so the results are aimed at providing initial evidence about item quality and internal consistency before more comprehensive testing is conducted. This approach is important because the psychometric quality of an instrument can vary when applied to different populations and contexts. Therefore, this study is expected to serve as a basis for improving the instrument through item revisions, construct validity testing, factor analysis, test-retest reliability, and testing on larger and more diverse samples.

2. METHOD

This study uses a quantitative approach with a psychometric evaluation design to obtain initial evidence about the quality of the Parental Self-Efficacy Scale for parents of children with special needs involved in home-based informal education in Medan. The evaluation focuses on item validity and internal consistency reliability. The instrument development refers to the concept of parenting self-efficacy, which sees parenting self-efficacy as parents' confidence in their ability to carry out parenting tasks. The study involved 145 mothers with school-age children and emphasizes the importance of measuring self-efficacy based on parenting tasks [9].

The instrument is an adaptation of the Self-Efficacy for Parenting Tasks Index (SEPTI) with five domains: health, discipline, education, play, and emotion. It consists of 15 statements with four Likert response categories: Strongly Agree, Agree, Disagree, and Strongly Disagree. The total score is obtained by summing the scores of each item after ensuring the scoring direction, including reverse scoring for negative statements. Higher scores indicate higher parenting self-efficacy. The domain-based approach aligns with the view [10] that parents' self-efficacy can vary depending on the specific parenting task.

The research subjects consisted of 32 parents of children with special needs who were directly involved in home-based caregiving and education. The sampling used saturated sampling by including the entire accessible population that met the criteria. Since the number of respondents was limited, the findings are positioned as a preliminary psychometric evaluation and are not intended as broad evidence for instrument validation. Testing with a larger sample is still needed to obtain proof of construct validity and factor structure stability [11].

The instrument adaptation was done by keeping the five SEPTI domains and adjusting the statements to fit the context of parents of children with special needs. The instrument was first reviewed by an expert to assess the relevance of indicators, clarity of wording, and construct representation. In further development, the adaptation procedure needs to be documented more comprehensively through forward translation, back translation, expert review, and semantic testing. This aligns with the COSMIN principles, which focus on content validity in terms of relevance, completeness, and item clarity [12]. Content validity ideally also involves several experts and can be complemented with the Content Validity Index (CVI), Aiken's V, and cognitive interviews.

Data were collected directly after the respondents received an explanation about the purpose, procedure, data confidentiality, and participation rights. The data were then coded according to the scoring directions and summed to get the dimension scores and total score. Checking for reverse scoring is important because Item 10 showed a negative item-total correlation in the initial analysis [11]. Therefore, the direction of the statement and possible coding errors need to be checked before deciding to delete or revise an item.

Item validity was analyzed using the Pearson Product-Moment correlation between each item's score and the total instrument score. With 32 respondents, we got df = 30 and a critical value of around 0.349 at a 5% two-tailed significance level. Items with an item-total correlation higher than this value meet the initial criteria. However, the decision to keep or remove an item is not based solely on the correlation coefficient, but also takes into account content validity, theoretical foundation, language clarity, and the characteristics of the target population, in line with the COSMIN instrument evaluation framework [13]. Mathematically, the Pearson correlation can be expressed as:

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{[N\sum X^2 - (\sum X)^2][N\sum Y^2 - (\sum Y)^2]}}$$

Explanation: r_xy is the correlation coefficient between the item score and the total score; X is the score for each item; Y is the total score; and N is the number of respondents. In this study, item-total correlation is used as initial evidence to identify items that have an adequate relationship with the overall construct.

Table 1. Operationalization of Dimensions and Instrument Evaluation

Dimension	Measurement Focus	Response Format	Psychometric Evaluation
Health	Parents' confidence in supporting their child's health	4-point Likert scale	Item-total correlation
Discipline	Parents' confidence in guiding and managing their child's behavior	4-point Likert scale	Item-total correlation
Education	Parents' confidence in supporting and facilitating their child's educational process	4-point Likert scale	Item-total correlation
Play	Parents' confidence in supporting their child's play activities and development	4-point Likert scale	Item-total correlation
Emotion	Parents' confidence in providing emotional support to their child	4-point Likert scale	Item-total correlation
Parental self-efficacy	Five dimensions	15 items	Item validity and Cronbach's Alpha

Source: Adapted from [14] and modified in accordance with the research design. The concept of parenting self-efficacy proposed by Coleman and Karraker serves as the conceptual foundation for developing the measurement of parental self-efficacy.

The reliability of the instrument was analyzed using Cronbach's Alpha to determine the internal consistency of the 15 items used. The Alpha coefficient is used to see to what extent the items in the instrument show consistency in measuring the same construct. In this study, the reliability threshold set was 0.70. The initial analysis showed a Cronbach's Alpha of 0.638, so it has not yet reached the set threshold. The item-deleted analysis showed that removing Item 10 could increase the Alpha value to 0.686, but this increase still did not

reach 0.70 [15]. Therefore, removing Item 10 should not be done just because of the increase in Alpha. It is still necessary to check the content of the item, the scoring direction, possible reverse scoring mistakes, and whether the item fits the construct before making any revision or elimination decisions.

So, the whole analysis procedure in this study was aimed at getting initial psychometric evidence, not claiming that the instrument has been fully validated. Further evaluation needs to include content validity testing with several experts, cognitive interviews, trials on larger samples, exploratory and/or confirmatory factor analysis, and reliability testing using a more comprehensive approach. This step-by-step approach aligns with the principle of instrument development, which treats validity evidence as a cumulative process, not just based on a single statistical coefficient.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Item Validity Test Results

An initial psychometric evaluation was conducted on 15 items of the Parental Self-Efficacy Scale administered to 32 parents of children with special needs who were involved in home-based informal education. Item validity was examined using the corrected item-total correlation with the relevant degrees of freedom. At the five percent significance level, the critical value was 0.349. An item was considered to meet the validity criterion when its corrected item-total correlation coefficient was greater than the critical value. The analysis showed that only four items, namely Items 4, 7, 8, and 9, met the established criterion, whereas the remaining 11 items did not reach the required correlation value.

Table 2. Results of the Item Validity Test of the Parental Self-Efficacy Scale

Item	Corrected Item-Total Correlation	Critical Value	Decision
1	0.288	0.349	Invalid
2	0.331	0.349	Invalid
3	0.195	0.349	Invalid
4	0.422	0.349	Valid
5	0.293	0.349	Invalid
6	0.183	0.349	Invalid
7	0.410	0.349	Valid
8	0.416	0.349	Valid
9	0.353	0.349	Valid
10	−0.087	0.349	Invalid
11	0.285	0.349	Invalid
12	0.305	0.349	Invalid
13	0.057	0.349	Invalid
14	0.320	0.349	Invalid
15	0.238	0.349	Invalid

Source: Analysis of the research data.

Based on Table 2, only 4 of the 15 items, representing 26.7 percent, met the established validity criterion, whereas 11 items, representing 73.3 percent, did not meet the specified criterion. The lowest correlation coefficient was observed for Item 13, with a correlation coefficient of 0.057, followed by Item 6, with a correlation coefficient of 0.183, and Item 3, with a correlation coefficient of 0.195. In contrast, the highest correlation coefficient was obtained for Item 4, with a correlation coefficient of 0.422. The four items that met the validity criterion, namely Items 4, 7, 8, and 9, demonstrated positive relationships with the total scale score. These findings indicate that most items in the tested version of the instrument have not yet demonstrated sufficiently strong relationships with the overall measure of parental self-efficacy.

A finding that requires particular attention is Item 10, which produced a corrected item-total correlation coefficient of −0.087. A negative coefficient indicates that the direction of responses to this item is opposite to the direction of the total scale score. However, this finding should not be interpreted immediately as evidence that Item 10 is substantively inconsistent with the construct being measured. The characteristics of the item should first be examined, particularly to determine whether Item 10 was designed as a negatively worded statement that requires reverse scoring. If the item was indeed designed as a negatively worded statement but reverse scoring has not yet been performed, the validity and reliability analyses should be recalculated after the appropriate recoding procedure has been completed.

3.1.2. Distribution of Valid Grains by Dimension

The Parental Self-Efficacy Scale was developed based on five dimensions, namely *health, discipline, education, play,* and *emotion*. The analysis showed that the four items meeting the validity criterion were distributed across four dimensions: Item 4 represented the *health* dimension, Item 7 represented the *education* dimension, Item 8 represented the *emotion* dimension, and Item 9 represented the *play* dimension. Meanwhile, no item met the validity criterion within the *discipline* dimension. This finding indicates that the initial evidence of validity was not evenly distributed across all dimensions incorporated into the instrument.

Table 3. Distribution of Valid Items by Dimension of Parental Self-Efficacy

Dimension	Items Meeting the Validity Criterion	Items Not Meeting the Validity Criterion*	Evaluation Result
Health	Item 4	—	Initial validity evidence was found for Item 4
Discipline	None	Items 11–12	No item met the validity criterion
Education	Item 7	—	Initial validity evidence was found for Item 7
Play	Item 9	—	Initial validity evidence was found for Item 9
Emotion	Item 8	—	Initial validity evidence was found for Item 8

Note: The symbol "—" indicates that complete item mapping was not available in the research data analyzed. The research data explicitly identified Items 4, 7, 8, and 9 as valid items and indicated that Items 11 and 12 within the *discipline* dimension did not meet the validity criterion.

Based on Table 3, the *health, education, play,* and *emotion* dimensions each contained one item demonstrating initial evidence of validity. In contrast, the *discipline* dimension did not contain any item that met the validity criterion. This condition indicates that the psychometric issues associated with the instrument are not limited to the number of valid items but also involve an uneven distribution of psychometric representation across dimensions. However, the absence of valid items within the *discipline* dimension should not be interpreted as evidence that discipline is irrelevant to the construct of parental self-efficacy. Rather, this finding is more appropriately understood as an indication that the items used to measure this dimension have not yet demonstrated an adequate relationship with the total score within the sample examined in this study.

The findings concerning the *discipline* dimension warrant particular attention in subsequent instrument development. Parents of children with special needs may encounter different forms and demands of discipline depending on the characteristics, developmental conditions, and individual needs of their children. Therefore, the low performance of the items within this dimension may provide a basis for reviewing the clarity of the item wording, contextual appropriateness, and conceptual representation of discipline in the daily experiences of parents who support their children's education at home. Item revision should be guided by theoretical and contextual considerations rather than based solely on statistical decisions to remove items.

3.1.3. Reliability Test

A reliability test was conducted on all 15 items of the Parental Self-Efficacy Scale using the Cronbach's Alpha coefficient to evaluate the internal consistency of the instrument. The analysis was based on data from 32 participants. The results showed a Cronbach's Alpha coefficient of 0.638. Based on the reliability criterion established in the study, namely a coefficient of 0.70 or higher, this value did not reach the required threshold. Therefore, the 15-item version of the instrument did not meet the predetermined criterion for internal consistency and requires further refinement before it can be used as a final measurement instrument.

Table 4. Results of the Reliability Test of the Parental Self-Efficacy Scale

Component	Result
Number of items	15
Number of participants	32
Cronbach's Alpha coefficient	0.638
Reliability criterion	0.70 or higher
Status	Did not meet the criterion

Source: Analysis of the research data.

These results indicate that although a certain degree of internal consistency was observed, the Alpha coefficient obtained did not meet the standard predetermined in the study. Therefore, the value of 0.638 should not be interpreted as evidence that the instrument has adequate reliability. Rather, it indicates that the internal consistency of the scale still needs to be improved. This finding should also be interpreted alongside the results of the

item validity analysis, which showed that only four of the 15 items met the validity criterion. This condition suggests that the relatively low internal consistency may be associated with the presence of several items that have not demonstrated sufficiently strong relationships with the total scale score.

Further analysis using Cronbach's Alpha if Item Deleted showed that removing Item 10 would increase the Cronbach's Alpha coefficient from 0.638 to 0.686. This increase indicates that Item 10 contributes less favorably to the internal consistency of the scale. However, the resulting Alpha coefficient of 0.686 still does not reach the predetermined criterion of 0.70. Therefore, the increase in reliability cannot serve as the sole basis for mechanically removing Item 10.

Item 10 should first be examined in terms of its scoring direction, particularly because the item validity analysis produced a negative corrected item-total correlation of −0.087. If Item 10 is a negatively worded statement, it is necessary to verify that reverse scoring has been performed correctly before interpreting the reliability analysis. After the scoring procedure has been verified, the reliability analysis should be recalculated. If the coefficient remains low, item revision may be considered by taking into account the clarity of the wording, contextual appropriateness for parents of children with special needs, and alignment of the item with the theoretical construct being measured.

The results of the preliminary psychometric evaluation of the Parental Self-Efficacy Scale indicate that the 15-item version still requires further refinement before it can be used as a final measurement instrument. Of the 15 items tested with 32 participants, only four items, representing 26.7 percent, namely Items 4, 7, 8, and 9, met the validity criterion, whereas the remaining 11 items, representing 73.3 percent, did not meet the predetermined criterion. In addition, the reliability analysis produced a Cronbach's Alpha coefficient of 0.638, which remains below the criterion of 0.70 or higher. These findings indicate that the psychometric quality of the instrument at this stage does not yet fully meet the standards established in the study.

Table 5. Summary of the Results of the Preliminary Psychometric Evaluation

Evaluation Aspect	Result	Interpretation
Number of participants	32 participants	Relatively small sample size; findings are preliminary
Number of items	15 items	Covers five dimensions of parental self-efficacy
Items meeting the validity criterion	4 items (26.7 percent)	Items 4, 7, 8, and 9 met the criterion
Items not meeting the validity criterion	11 items (73.3 percent)	Require further review and revision
Lowest corrected item-total correlation	−0.087	Item 10; scoring direction requires examination
Cronbach's Alpha coefficient	0.638	Did not meet the criterion of 0.70 or higher
Cronbach's Alpha coefficient if Item 10 is deleted	0.686	Increased but remained below 0.70
Instrument status	Preliminary	Cannot yet be considered a fully validated final instrument

Source: Analysis of the research data.

The results presented in Table 5 demonstrate that the psychometric issues associated with the instrument are not limited to overall reliability but also involve the performance of most individual items. Only 26.7 percent of the items met the validity criterion, whereas the remaining 73.3 percent did not demonstrate sufficiently adequate relationships with the total scale score. Item 10 requires particular attention because it produced a negative item-total correlation of −0.087. However, before deciding to revise or remove this item, it is necessary to determine whether the statement is negatively worded and whether it has undergone the appropriate reverse scoring procedure.

In terms of reliability, the Cronbach's Alpha coefficient of 0.638 indicates a certain degree of internal consistency but does not meet the criterion of 0.70 or higher established in the study. Removing Item 10 increased the Alpha coefficient to 0.686; however, this increase still did not reach the required criterion. Therefore, these findings do not support the mechanical removal of Item 10 based solely on statistical considerations. Instrument revision should take into account theoretical considerations, clarity of wording, contextual appropriateness, scoring direction, and the relevance of each item to the experiences of parents of children with special needs.

Overall, the findings indicate that the 15-item version of the Parental Self-Efficacy Scale remains at the stage of preliminary psychometric evaluation. These findings cannot yet be used to conclude that the instrument has been fully validated or possesses adequate reliability for broader application. The sample size of only 32 participants also requires the item-total correlations and reliability estimates to be interpreted cautiously because such estimates may be less stable when generalized to a larger population. Therefore, future research should revise the instrument based on both statistical and theoretical considerations and subsequently retest it using a larger and more heterogeneous sample.

Thus, the primary contribution of this stage of the study is the empirical identification of items that have demonstrated initial evidence of validity and aspects of the instrument that still require further development. These findings provide a basis for instrument refinement rather than serving as grounds for establishing the scale as a final measurement instrument. This approach is consistent with the position of the study as a preliminary psychometric evaluation, whereby subsequent development can be directed toward examining content validity, revising items, testing the underlying construct structure, and evaluating reliability using a more adequate sample.

3.2. Discussion

The research results show that the Parental Self-Efficacy Scale, which consists of 15 items and was tested on 32 parents of children with special needs, is still in the early stage of psychometric evaluation. Based on the corrected item-total correlation analysis, only Items 4, 7, 8, and 9 met the validity criteria with values above 0.349, while the other 11 items did not meet the criteria. Thus, only 26.7% of the items showed an adequate relationship with the total score. These findings indicate that the instrument cannot yet be considered a final measurement tool and still requires further development and testing. This situation is understandable since parental self-efficacy is a multidimensional construct that includes parents' beliefs in their ability to handle various parenting tasks. Zarei et al. showed that the

parenting self-efficacy instrument includes various factors like parents' personal traits, social and family factors, and child characteristics [16]. Therefore, the differences in the strength of correlations between items can show that not all statements have the same ability to represent that complex construct.

The findings are also relevant to Bandura's self-efficacy theory, which explains that self-efficacy is an individual's belief in their ability to organize and carry out the actions needed to achieve a certain performance [17]. In the context of parenting, self-efficacy is not only about the general belief that someone can be a parent, but also about the belief in their ability to carry out specific parenting tasks. So, the domain-specific nature of self-efficacy becomes important in understanding the results of this study. The tool that was developed includes five dimensions: health, discipline, education, play, and emotion. Parents might feel pretty confident in one area, but that does not necessarily mean they feel the same way in the others. That is why low correlation on some items does not automatically mean the whole concept is off; it could just mean that some items are not fully representative of the parenting domain being measured.

Population characteristics are also an important aspect in explaining research results. Alqraini, through a systematic review of 53 studies on parental self-efficacy in parents of autistic children, showed that self-efficacy is related to parent characteristics, stress, well-being, social support, as well as child characteristics, including the level of symptoms and problematic behavior [18]. This shows that the self-efficacy of parents of children with special needs has a more complex context compared to the self-efficacy of parents in the general population. In the context of home-based informal education, this complexity becomes even more important because parents don't just act as caregivers, but also as learning companions, providers of stimulation, managers of the learning environment, and mediators between their child and the school or professionals. Therefore, some items that have not met the validity criteria may indicate that the statements do not fully capture the concrete experiences of parents in carrying out all these roles.

The social and family dimensions also need to be considered in understanding the construct being measured. Nelson et al. found a link between self-efficacy, family stress, and social support in parents of children with special needs [19]. Social support plays an important role in the relationship between self-efficacy and family stress. The findings show that self-efficacy is not just an individual trait, but develops within the social environment where parents carry out their parenting roles. Parents of children with special needs face demands from family, school, professionals, and their social environment. Along these lines, Koskey et al. showed that mastery beliefs and the quality of co-parenting relationships are related to parenting self-efficacy, while higher levels of self-efficacy are linked to lower levels of psychological distress [20]. Therefore, developing the instrument needs to include parents' real experiences in dealing with stress, making decisions, managing children's needs, and maintaining self-confidence when facing parenting challenges.

The distribution of valid items in this study provides important findings regarding the dimensional structure of the instrument. Item 4 falls under the health dimension, Item 7 under education, Item 8 under emotion, and Item 9 under play, while the discipline dimension does not have any items that meet the validity criteria. This situation cannot be

directly interpreted to mean that the discipline dimension is irrelevant to parental self-efficacy. Instead, these results are more appropriately understood as an indication that the discipline indicators formulated have not fully captured the experiences of parents of children with special needs. ShahaliBegloo et al. show that self-efficacy in parenting children with autism spectrum disorder has different characteristics across various task areas [21]. Therefore, the discipline indicator should not only measure parents' ability to make rules, but also their ability to adjust rules to the child's condition, manage behavior, understand individual needs, and maintain a positive relationship between parent and child.

The importance of developing instruments that are specific to the characteristics of the population was also highlighted by Gagnon et al. The development of the Parental Self-Efficacy Scale for Preventing Challenging Behaviors in Children with Autism Spectrum Disorder resulted in six items that formed two factors, namely empowerment of children's sociality and optimization of children's environment, with a Cronbach's Alpha of 0.82. These findings suggest that self-efficacy instruments for parents of children with special needs need to have a clear focus on the concrete tasks actually faced by the target group [22]. Thus, the development of the scale in this study can be directed toward formulating more specific indicators of parenting behavior in the dimensions of health, discipline, education, play, and emotion, so that each item truly represents the experiences and parenting demands faced by parents at home.

Comparison with Zhang et al.'s research also gives some perspective on the importance of carrying out a comprehensive psychometric development process [23]. The study involved 433 parents of children with autism and tested content validity, item analysis, construct validity, confirmatory factor analysis, and internal consistency. The results showed a content validity index of 0.93, item-total correlations of 0.338–0.846, a two-factor structure with 19 items, and a Cronbach's Alpha of 0.85. Although these results are psychometrically stronger than the current study's findings, the comparison cannot be used to conclude that this study's instrument is overall inferior due to differences in the number of respondents, population characteristics, cultural context, development process, and measurement goals. Instead, the comparison highlights that this study's results are an initial stage that requires further development.

The need to test the instrument on a more diverse sample group was also shown by Fante et al. The study used three studies with a total of 2,088 respondents to evaluate factor structure, internal consistency, test-retest reliability, and criterion validity. The results of the confirmatory factor analysis supported a two-factor structure, namely Satisfaction and Efficacy. In addition, parents of children with developmental disorders showed lower levels of efficacy compared to parents of typically developing children [24]. This finding reinforces that self-efficacy instruments need to take into account the characteristics of the target group. Therefore, tools for parents of children with special needs are not enough to just be adapted from instruments for the general population, but need to be developed and tested based on the parenting experiences of the target group.

Language and cultural aspects are also relevant in explaining the low performance of some items. Wang and colleagues, in adapting the Persian version of the Tool to Measure Parenting Self-Efficacy (TOPSE), carried out translation, back-translation, face validity,

content validity using CVI and CVR, as well as reliability testing through Cronbach's Alpha and test-retest reliability [25]. This approach shows that the quality of an instrument is determined not only by the statistical characteristics of its items but also by how well the statements are understood according to the respondents' language and cultural context. This is relevant for developing scales in the Indonesian context because terms like discipline, education, emotions, playing, and health can be understood differently by parents based on their family experiences and parenting culture. Yang et al. also showed through the adaptation of the Brief Parental Self-Efficacy Scale on 363 parents of children with autism in China that the characteristics of the child and the parent can be related to responses to the instrument [26]. So, the next evaluation needs to take into account the demographic characteristics of the parents and the characteristics of the child as part of testing the construct validity.

The specific finding on Item 10 also needs methodological attention. This item has a corrected item-total correlation of -0.087, which indicates that the direction of its responses is opposite to the total score. However, a negative correlation cannot be used directly as a reason to remove the item, because first the wording and reverse scoring procedures need to be checked. Mistakes in recoding negative items can produce negative correlations and artificially lower internal consistency. In this study, removing Item 10 increased Cronbach's Alpha from 0.638 to 0.686, but this value is still below the set threshold of 0.70. Therefore, the decision to remove Item 10 should not be based solely on the increase in Alpha, but should also take into account content relevance, scoring direction, and the item's relationship with the theoretical construct.

This principle aligns with the framework of the Consensus-based Standards for the Selection of Health Measurement Instruments (COSMIN). Terwee et al. consider content validity as one of the fundamental aspects in evaluating instrument quality [27]. Content validity covers relevance, completeness, and how well the items are understood by the target population. Therefore, a low item-total correlation should not automatically be fixed just by deleting the item. A qualitative evaluation of the statement's content, language clarity, alignment with respondents' experiences, and construct representation needs to be done before deciding whether an item should be kept, revised, or removed. This approach helps ensure that psychometric decisions are not solely based on statistical indicators but still have a theoretical and substantive foundation.

From a reliability perspective, a Cronbach's Alpha of 0.638 indicates that the scale has a certain level of internal consistency, but it hasn't reached the ≥ 0.70 criterion set in the study. This result aligns with the low proportion of items that meet the validity criteria. However, Cronbach's Alpha cannot be used as the sole basis to determine the quality of an instrument. A high Alpha value does not necessarily guarantee content or construct validity, while an Alpha that has not reached 0.70 at an early stage does not mean the entire construct should be discarded. So, interpreting an Alpha of 0.638 needs to be considered alongside the item validity results, the dimensional structure, the theory behind the instrument, and the characteristics of the respondents.

A sample size of 32 respondents is an important limitation in interpreting research results. Item-total correlations and Cronbach's Alpha estimates in a relatively small sample

can produce unstable estimates if directly generalized to a larger population. This situation is different from the study by Gözüm et al., which involved 2,088 respondents, and the Parental Competence Scale study, which involved 433 parents [28], as well as the study by Wang et al., which involved 363 parents [29]. Therefore, the results of this study are more appropriately positioned as a pilot study or preliminary psychometric evaluation to identify initial patterns in item performance. Testing with a larger sample is needed to get more stable estimates of validity and reliability, and to allow for exploratory or confirmatory factor analysis.

In the context of home-based informal education, the construct of parental self-efficacy has a relatively wide scope. Parents not only carry out parenting functions, but also act as learning companions, stimulators, learning environment managers, and mediators between children and schools and professionals. Thus, the self-efficacy required includes broader abilities than just the belief of being a parent. Sun et al.'s perspective supports the use of several dimensions in instruments, but the structure of health, discipline, education, play, and emotion still needs to be empirically proven [30]. Factor analysis in follow-up research can be used to test whether those five dimensions really form a consistent construct structure.

Substantively, parents' self-efficacy is also a construct that can potentially change through experience and support. Xiao and colleagues' research shows that parents of children with ASD who had lower self-efficacy at the start of the study could improve after receiving psychoeducational intervention [31]. The findings show that self-efficacy is not just a fixed trait, but can be influenced by knowledge, successful experiences, social support, and experience in handling parenting tasks. Therefore, the items on the instrument should be aimed at measuring confidence in performing specific parenting tasks, not just the general perception that the respondent is a capable parent.

Overall, this study contributes to the early stages of developing a self-efficacy measurement tool for parents of children with special needs in home-based informal education. Four items, namely Items 4, 7, 8, and 9, show preliminary evidence of validity, but it is not enough to form a final instrument because the other 11 items have not met the validity criteria, and the Cronbach's Alpha is still 0.638. So, the instrument should not be used as a final measurement tool without further revision and testing. The items that meet the criteria can be considered candidates to keep, while the ones that do not need to be reviewed based on theory, content validity, language clarity, cultural context, child characteristics, and parents' real experiences. Specifically, Item 10 needs to have its reverse scoring procedure rechecked, while the discipline dimension requires a review of its operational definition and indicators. The next steps should ideally include expert evaluation, cognitive interviews, item revision, trials with a larger sample, factor analysis, and further reliability and validity testing before the instrument can be considered fit for wider use.

4. CONCLUSION

This study shows that the *Parental Self-Efficacy Scale* for parents of children with special needs involved in home-based informal education remains at the stage of preliminary psychometric evaluation. Of the 15 items tested with 32 participants, only four items,

representing 26.7 percent, met the validity criterion, whereas 11 items, representing 73.3 percent, did not meet the criterion. The Cronbach's Alpha coefficient was 0.638, which remains below the predetermined threshold of 0.70. These findings indicate that the instrument cannot yet be used as a final measurement instrument. However, the findings provide an empirical basis for item refinement and further instrument development that is more appropriate for the context of parents of children with special needs. The primary limitations of the study concern the small sample size and the instrument adaptation procedures, which require further strengthening. Future research should involve a larger and more heterogeneous sample, revise the items based on theoretical and contextual considerations, re-examine the reverse scoring procedure, particularly for Item 10, and conduct content validity, construct validity, factor analysis, and test-retest reliability before the instrument is applied more broadly.

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