

The Development of Father Involvement Scale for the Indonesian Cultural Context (FIS-IV)

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Abstract / Abstrak

Research on father involvement in Indonesia frequently utilizes Western instruments that lack local cultural context. This study aimed to develop and validate the Father Involvement Scale: Indonesian Version (FIS-IV) using the Rasch model. Employing a methodological design, data were collected from 600 adolescents (ages 12–21) via purposive sampling and analyzed using Winsteps. Results indicated that 17 of 18 initial items met the criteria, with one misfit item removed. The scale demonstrated unidimensionality (50.4% variance), high reliability (person=.81, item=.98), adequate separation indices, and gender neutrality based on Differential Item Functioning analysis. Conceptually, the original dimensions—Engagement, Accessibility, and Responsibility—merged into a cohesive unidimensional trait suitable for the Indonesian context. Practically, the FIS-IV is a highly reliable, culturally relevant diagnostic tool. It empowers school counselors and practitioners to assess paternal support, identify "father hunger," and design targeted psychosocial interventions to improve adolescent well-being.

Penelitian keterlibatan ayah di Indonesia sering menggunakan instrumen Barat yang kurang mencakup konteks budaya lokal. Studi ini bertujuan mengembangkan dan memvalidasi Skala Keterlibatan Ayah: Versi Indonesia (FIS-IV) menggunakan model Rasch. Melalui desain metodologis, data dikumpulkan dari 600 remaja (12–21 tahun) menggunakan purposive sampling dan dianalisis dengan Winsteps. Hasil menunjukkan 17 dari 18 aitem awal memenuhi kriteria, setelah membuang satu aitem misfit. Skala ini terbukti unidimensional (varians 50.4%), memiliki reliabilitas tinggi (person=.81, aitem=.98), indeks separasi yang memadai, dan netral gender berdasarkan analisis Differential Item Functioning. Secara konseptual, dimensi asli—Keterlibatan, Aksesibilitas, dan Tanggung Jawab—menyatu menjadi sifat unidimensional yang kohesif dan sesuai untuk konteks Indonesia. Secara praktis, FIS-IV adalah alat diagnostik yang sangat reliabel dan relevan secara budaya. Skala ini membantu konselor sekolah dan praktisi untuk menilai dukungan ayah, mengidentifikasi father hunger, dan merancang intervensi psikososial yang tepat sasaran demi kesejahteraan remaja.

Keywords / Kata kunci

Father involvement;
Rasch model;
Adolescent; Instrument
development;

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Introduction

Paternal involvement has been widely recognized as a pivotal factor in supporting children's psychological, social, and cognitive development. The historical conceptualization of the father's role has undergone a fundamental paradigm shift, evolving from a primary focus on the breadwinner figure to that of an active and indispensable co-parent (Cabrera et al., 2018; Nuryanto & Saptandari, 2025). The contemporary paternal role now extends beyond material provision to encompass emotional companionship, educational engagement, and direct participation in daily caregiving (Doucet, 2020; Utami et al., 2024).

Fathers who are actively engaged, both physically through activities such as play and assistance with tasks, and emotionally through support and open communication, have been shown to be essential to children's well-being. Theoretically, the construct of "involved fathering" delineates three core dimensions: direct interaction (engagement), physical and psychological availability (accessibility), and undertaking responsibility for the child's welfare (responsibility) (Bataille & Hyland, 2023; Lamb, 2010). Moreover, fathers often contribute uniquely through distinct interactive styles, such as rough-and-tumble play, which specifically aids children in developing

emotional regulation and social competence (Freeman & Robinson, 2022).

In line with shifting global family dynamics, the recognition of the father's importance has been increasingly solidified. Fathers are no longer viewed as peripheral figures but as central components in their children's developmental processes (Sona & Linsiya, 2025). A substantial body of empirical evidence consistently demonstrates that positive paternal involvement has significant, long-term impacts. A systematic review of longitudinal studies, for instance, revealed that father involvement is consistently associated with fewer behavioral problems in boys and a lower risk of psychological issues in girls later in life (Zheng et al., 2026). This impact extends into the academic domain, where early paternal engagement uniquely predicts a child's educational attainment in adulthood, independent of maternal contributions or the family's socioeconomic status (Flouri & Buchanan, 2004). This phenomenon is not confined to Western nations but is also emerging in collectivist cultures such as Indonesia, signaling an evolution in societal mindsets that increasingly value fathers' roles in creating a balanced family environment.

However, understanding father involvement in Indonesia requires a nuanced examination of its unique cultural and religious tapestry. Indonesia, with its predominantly collectivist culture and strong adherence to religious values, traditionally places the father as the head of the family, a role heavily laden with authority and the obligation to provide for the family financially. As noted by Abubakar et al. (2023), in Islamic-Indonesian families, fathers are positioned as central figures not only for economic stability but also for moral and spiritual guardianship, a dimension often overlooked in secular Western models. Historically, this cultural construct created a psychological distance, where fathers were respected but emotionally reserved figures. Nevertheless, recent studies indicate a shift. Wibiharto et al. (2021) highlights that while the traditional provider role remains strong, modern Indonesian fathers are increasingly navigating the tension between economic demands and the desire for emotional closeness, often struggling against the fatherless phenomenon, a condition of psychological absence despite physical presence that has been linked to increased adolescent vulnerability.

In the Indonesian academic landscape, the measurement of father involvement has predominantly relied on the adaptation of

Western-developed instruments, particularly the Inventory of Father Involvement (IFI). Recent Indonesian studies have employed translated versions of the IFI and reported acceptable internal consistency based on Classical Test Theory indicators such as Cronbach's alpha (Suhadra et al., 2024). However, the use of adapted instruments has raised concerns regarding their ability to adequately reflect culturally embedded expectations of fatherhood. Empirical research in Indonesia has demonstrated that religiosity is a significant predictor of father involvement in children's education and family roles, indicating that religious beliefs and practices are intertwined with paternal engagement in ways that may not be fully captured by Western-based measurement tools (Fitriana et al., 2025). Furthermore, the continued reliance on Classical Test Theory limits measurement interpretation to sample-dependent reliability estimates and does not permit evaluation of item-level functioning or potential bias related to respondents' sociocultural backgrounds, highlighting the need for more robust measurement approaches (Kline, 2023).

The urgency of this research stems from a critical gap: the lack of an instrument that is both culturally grounded in the Indonesian "collectivist-religious" framework and methodologically sophisticated. Current tools often produce a "ceiling effect" where fathers are rated highly involved simply for fulfilling basic economic roles, thereby obscuring the psychological nuances of the "fatherless" phenomenon prevalent in urban Indonesia. There is a pressing need for a measurement tool that moves beyond mere behavioral frequency and incorporates the psychological and spiritual presence that Indonesian adolescents perceive as meaningful involvement. Without such a tool, interventions aimed at reducing juvenile delinquency or improving adolescent mental health in Indonesia will continue to rely on data that may not accurately reflect the lived experience of the Indonesian family.

Consequently, measuring father involvement becomes complex and demands an approach sensitive to these local realities. A review of previous research in Indonesia reveals a significant reliance on translated or adapted Western instruments, which present critical limitations. Commonly used tools include translations of the Father Involvement Scale (Finley & Schwartz, 2004), the Inventory of Father Involvement (Hawkins et al., 2002), and the Nurturant Fathering Scale (Finley & Schwartz,

2004), as seen in various validation or adaptation studies (e.g., Sanjaya et al., 2024). While these efforts provide an initial framework, they often work well only in capturing dimensions of engagement that are universally recognized, such as basic caregiving or play. The absence of culturally validated instruments constitutes a serious barrier to effective diagnosis and intervention. Goretzko et al. (2023) argue that applying Western-derived parenting measures without rigorous cultural adaptation can lead to psychometric bias, potentially misinterpreting culturally normative behaviors (such as indirect support) as signs of neglect.

The critical gap lies in their frequent inability to capture the culturally salient dimensions of Indonesian fatherhood, such as spiritual guidance (e.g., teaching religious values, leading prayers), moral guardianship, and the unique expression of emotional closeness within a hierarchical family structure. Furthermore, these tools often lack items relevant to the father-adolescent dynamic and instead focus on young children. Without a precise tool, researchers risk failing to identify genuine disengagement, thereby hampering their ability to empirically link father involvement to crucial Indonesian youth issues, such as juvenile delinquency and emotional regulation (Dewi & Nurcahyo, 2025). This measurement gap directly underscores the urgency of developing a culturally grounded instrument to accurately assess the complex and evolving nature of father involvement in Indonesia, thereby strengthening the evidence base for targeted interventions and policy.

Nevertheless, the landscape of Indonesian fatherhood is currently undergoing a significant transition due to urbanization, increased maternal employment, and exposure to global parenting standards. Recent studies indicate a shift among modern Indonesian fathers who increasingly aspire to be “Ayah ASI” (breastfeeding-supportive fathers) or “Ayah Siaga” (alert/ready fathers), terms that reflect a desire for greater hands-on involvement. Despite this shift, the phenomenon of “Indonesia as a Fatherless Country, referring to the lack of psychological presence of fathers despite their physical presence, remains a critical discourse in national psychology. This paradox highlights a gap between the desire to be involved and the competence or cultural scripts available to fathers for interacting effectively with their children.

Furthermore, expressions of involvement in Indonesia are deeply intertwined with religious

coping and spiritual guidance. For many Indonesian fathers, involvement includes leading congregational prayers, teaching Quranic recitations, and instilling moral values. This spiritual dimension of parenting is a distinct feature of the Indonesian context that is rarely captured in secular Western models. Therefore, defining father involvement in this context cannot simply replicate Western behaviors (such as attending sports games); it must also encompass culturally specific acts of spiritual and moral guardianship.

Despite this growing awareness, research on father involvement in Indonesia faces significant challenges, primarily due to distinct sociocultural contexts (Maulana, 2023). The practices and expressions of paternal involvement vary considerably across cultures (Puglisi et al., 2024). In collectivist societies such as Indonesia, where gender roles tend to be more traditionally demarcated, paternal involvement may not always manifest in explicit, direct participation but rather through subtler means, such as serving as a role model or providing moral support (Sofyan & Hanjani, 2025). The ecological systems theory posits that paternal involvement is shaped by multiple systemic layers, from interactions within the family (microsystem) to broader cultural values and social norms (macrosystem) (Handayani et al., 2024). Consequently, measuring father involvement becomes more complex and demands an approach sensitive to local cultural context.

The absence of culturally validated instruments is not merely a methodological gap; it constitutes a serious barrier to effective diagnosis and intervention. Without a precise tool, psychologists and researchers risk misinterpreting cultural parenting styles as “neglect” or, conversely, failing to identify genuine disengagement. This measurement void hampers the ability to empirically link father involvement with crucial Indonesian youth issues, such as juvenile delinquency and drug abuse, rendering policy recommendations largely speculative rather than evidence-based.

To date, researchers in Indonesia have largely relied on translating established Western instruments, yet each possesses limitations when applied to the local context. For instance, the Father Involvement Scale (Finley & Schwartz, 2004) is robust in measuring perceived involvement but has been criticized in cross-cultural studies for its retrospective nature, which may not accurately capture the dynamic, real-time

relationship of adolescents in non-Western settings (Gebresilase et al., 2025). Similarly, while the Inventory of Father Involvement (IFI) by Hawkins et al. (2002) offers a multidimensional structure, it has been noted to focus heavily on the frequency of observable tasks rather than the quality of the connection (Chua et al., 2024). In the Indonesian context, where a father might work long hours but maintain a strong spiritual or emotional bond through limited interaction, a frequency-based measure might falsely categorize him as "uninvolved." This limitation underscores the need for instruments that capture felt sensing and spiritual availability alongside behavioral checklists.

Other scales, such as the Nurturant Fathering Scale, focus heavily on the affective quality of the relationship. While this addresses the "quality" aspect, it often lacks the breadth to encompass the functional responsibilities central to the Indonesian concept of a father as a provider and protector. Therefore, existing instruments tend to fall into one of two traps when applied to Indonesia: they are either too culturally specific to the West (etic imposition) or too narrow in their scope to capture the holistic nature of Indonesian fathering, which blends provider roles, spiritual guidance, and emerging emotional intimacy.

Efforts to bridge this gap are emerging, such as research by Chua et al., (2024) developing the Paternal Involvement in Early Infancy Scale (PEACE) for the Singaporean context, or by Lubis et al., (2024) developing a family function scale for Indonesia. However, research specifically developing a paternal involvement measure for adolescents in Indonesia remains critically limited, even as validation studies like that of Sanjaya et al., (2024) on the Nurturant Fathering Scale underscore the significant need and potential in this area.

Globally, instruments such as the Inventory of Father Involvement (IFI) and the Nurturant Fathering Scale (NFS) have long served as the gold standard for measurement in this field. The primary advantage of these established tools lies in their robust theoretical frameworks and extensive historical usage, which allow for standardized comparisons across different populations. However, a significant disadvantage is their predominant origin in Western, WEIRD (Western, Educated, Industrialized, Rich, and Democratic) societies. As noted by recent critics (Maciel et al., 2023; Volling & Bornstein, 2025), these instruments often fail to capture the nuances of collectivistic parenting, where "involvement"

may manifest more through moral guidance and economic provision rather than the direct, egalitarian play emphasized in Western models. Furthermore, many of these scales were originally designed for fathers of infants or young children, rendering some items developmentally inappropriate for assessing the complex, autonomy-seeking dynamic of father-adolescent relationships.

Methodologically, the majority of existing father involvement instruments rely on Classical Test Theory (CTT), which presents inherent limitations regarding precision and stability. In the Indonesian context, this reliance on CTT is particularly problematic because it assumes that the psychological construct of fatherhood is linear across different socio-economic strata, ignoring the "item difficulty" variations between urban and rural fathering styles. Previous Indonesian studies often report high Cronbach's alpha scores, yet they fail to identify whether the items truly differentiate between a father who is merely "present" and one who is "psychologically engaged". This limitation is inherent in Classical Test Theory, as Cronbach's alpha primarily reflects internal consistency under specific assumptions and does not provide item-level information regarding discrimination across different levels of the latent construct. Consequently, high alpha values may still obscure weak item discrimination, prompting recent methodological literature to recommend item response theory-based approaches, including Rasch modeling, to evaluate item functioning and measurement precision beyond overall reliability indices (Stefana et al., 2025). The gap in current Indonesian psychometrics lies in the absence of a latent trait approach that can provide an invariant measurement. While CTT-based instruments are generally easier to develop, they suffer from sample dependency, meaning the psychometric properties of the scale can fluctuate significantly depending on the specific group being tested. A critical disadvantage, as highlighted by Marôco (2024) and recent methodological reviews, is that CTT treats ordinal Likert-scale data as linear interval data without mathematical transformation. This often leads to imprecise measurements where the "distance" between response categories (e.g., "Agree" vs. "Strongly Agree") is assumed to be equal, potentially obscuring true respondent ability. Consequently, these instruments often lack the diagnostic sensitivity required to distinguish between subtle

levels of father involvement, particularly in clinical screening contexts.

In the specific context of Indonesia, the reliance on adapting these foreign instruments presents further challenges. Although translation and validation efforts exist, they often result in cultural disconnects where the linguistic translation is accurate, but the functional equivalence is lost. For instance, existing Western scales often prioritize "accessibility" as physical presence for leisure, whereas in the Indonesian cultural context, accessibility is often deeply intertwined with the father's role as a religious and moral authority figure. By continuing to rely on direct translations or broad family function scales, researchers risk overlooking these unique cultural stressors and support systems. Therefore, there is a pressing need for an instrument like the FIS-IV that is not only methodologically rigorous via Rasch modeling but also culturally constructed to reflect the lived reality of Indonesian adolescents.

Furthermore, methodological limitations often arise from measurements that focus merely on the quantity of interaction or subsume the father's role into the general construct of "parental role." Yet, the quality of the relationship is a significantly more robust predictor of child well-being than the mere frequency of contact (Amato & Gilbreth, 1999). Modern theoretical frameworks emphasize the importance of comprehensively measuring paternal involvement by capturing not only behavioral engagement but also the affective quality of the father-child relationship and the degree of responsibility undertaken in caregiving (responsible fathering) (Palkovitz, 2019). Without a measurement tool capable of capturing these qualitative and contextual dimensions, our understanding of the paternal role will remain partial and incomplete.

Previous research has provided a strong theoretical foundation. The Theory of Father Involvement (Lamb, 2010), with its three dimensions of engagement, accessibility, and responsibility, remains a cornerstone. This theory is enriched by the Parental Acceptance-Rejection Theory (Rohner et al., 2005), which highlights the impact of parental emotional acceptance, and the Social Role Theory (Eagly & Wood, 2012), which explains how gendered expectations shape parenting practices.

Based on the foregoing discussion, developing a valid, reliable, and culturally contextualized father involvement scale for Indonesia is urgently needed. The primary objective of the present study is, therefore, to

develop such an instrument, test its factor structure and internal consistency, and provide an empirical foundation for future family interventions and policies. Specifically, this research aims to develop a measurement tool that exhibits unidimensionality, has an effective rating-scale structure, and includes items that accurately reflect the diverse levels of paternal involvement in Indonesia. As such, this study is expected to contribute significantly to the literature on family psychology and to the development of more contextually relevant measurement instruments.

Method

Study Design This study employed a methodological research design focused on instrument development and psychometric validation. Unlike standard quantitative surveys that test relationships among variables, this design aims to construct a standardized scale and evaluate its psychometric properties. The development process utilized the Rasch Model (Sumintono & Widhiarso, 2014) to transform raw ordinal data from Likert scales into interval data (logits), ensuring accurate measurement of the latent trait (father involvement).

Table 1
Data Demographic Participants

Category	n	%
Gender		
Male	293	48.8
Female	307	51.2
Age Group (years)		
14 – 16	403	67.1
17 – 20	197	32.9
Ethnicity		
Javanese	284	47.3
Acehnese	154	25.7
Malay	99	16.5
Minang	32	5.3
Batak	31	5.2

Participants

Participants The participants consisted of 600 adolescents. This sample size was determined based on the requirements for stable item calibration in Rasch Model analysis. According to Linacre (1994), a sample size of 243 to 483 is sufficient to achieve item calibrations stable within ± 0.5 logits with 99% confidence. Thus, $N=600$ provides high stability and minimizes standard errors across the entire item difficulty sp-

Table 2
Instrument Blueprint

Dimension	Indicator	Item	Total
<i>Engagement</i>	1. Devoting quality time to children 2. Providing direct emotional support	1, 2, 3, 4, 5, 6	6
<i>Accessibility</i>	1. Maintaining physical proximity to children 2. Being accessible and reliable when needed	7, 8, 9, 10, 11, 12	6
<i>Responsibility</i>	1. Engaging in future-oriented planning for children 2. Providing support to facilitate the achievement of children's future goals	13, 14, 15, 16, 17, 18	6

ectrum. In contrast to probability sampling, this study used purposive non-probability sampling to recruit participants who met specific inclusion criteria relevant to the construct being measured. The data were conducted through both online (Google Forms) and offline surveys. The specific inclusion criteria were: (1) being an adolescent aged 12 to 21 years (Hurlock, 2001), covering the stages of early, middle, and late adolescence, (2) having a living father, and (3) having lived with the father for at least the last three years.

The demographic information of the respondents is presented in Table 1. The sample comprised 293 (49%) male adolescents and 307 (51%) female adolescents. The respondents' ages ranged from 14-20 years (M age = 16.15, SD age = 1.29). Regarding ethnic identity, 154 (26%) were from Aceh, 284 (47%) were Javanese, 99 (17%) were Malay, 32 (5%) were Minang, and 31 (5%) were Batak.

Scale Development Procedure

The development of the Father Involvement Scale followed a systematic procedure based on the framework proposed by DeVellis (2016) and Azwar (2021), which involves defining the construct, generating an item pool, expert review, and psychometric evaluation. The process was integrated as follows:

1. Theoretical Grounding (Grand Theory): The instrument was grounded in Lamb's (2000, 2010) Three-Part Model of Father Involvement. This grand theory posits that paternal involvement is a multidimensional construct consisting of (a) engagement (direct interaction through play or caregiving), (b) accessibility (physical and psychological availability), and (c) responsibility (organizing and planning resources for the child). This model was selected for its comprehensive nature, which extends beyond mere physical presence.
2. Item Generation and Blueprinting: Based on Lamb's dimensions, indicators were derived

and operationalized into an initial pool of 18 items. To avoid central-tendency bias common in Asian samples, the items were structured on a 4-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree).

3. Content Validity and Professional Review: The draft was evaluated through a professional judgment process involving the Internal Test Commission and subject-matter experts. These reviewers ensured that the items were linguistically appropriate for Indonesian adolescents and culturally relevant (e.g., by including spiritual guidance under "Accessibility").
4. Field Testing and Rasch Analysis: The instrument was administered to the target sample (N=600). The empirical data were then analyzed using Rasch Modeling to ensure unidimensionality and local independence, moving beyond the limitations of Classical Test Theory.

The development of the Father Involvement Scale followed a systematic, multi-phase procedure to ensure both content validity and psychometric robustness. The process was divided into three key stages. The first step was to define the construct to ensure content validity. The instrument was grounded by Lamb (2000), which posits that fathering is a multidimensional construct comprising three distinct components: Engagement, Accessibility, and Responsibility. To validate the method, the researchers operationalized these theoretical definitions into specific behavioral indicators relevant to the adolescent context.

The second step was arranging the instrument Blueprint and Item Generation. Based on the operationalized indicators, an initial pool of 18 items was generated. To ensure the instrument was suitable for the target population, the items were structured on a 4-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree) to avoid central-tendency bias.

The third step was content validation. Before statistical testing, the content validity was established through expert review. The items were evaluated to ensure they accurately reflected Lamb's theoretical dimensions and were linguistically appropriate for adolescents. This qualitative validation step ensured that the instrument measured the intended construct prior to the quantitative Rasch analysis.

Instrument

As mentioned, the FIS-IV is derived from Lamb's (2000) grand theory. The scale uses a Likert model with four response options. Table 2 describes the four dimensions of the developed Father Involvement Scale: Indonesian Version (FIS-IV) coded as E (Engagement), A (Accessibility), and R (Responsibility). For instance, Item 1 is coded E11, where E represents Engagement, the first '1' denotes the first indicator, and the second '1' indicates the first item within the Engagement dimension. The rating scale used scores from 1 to 4. The instrument also included demographic variables: gender, age, and ethnicity.

Data Analysis

The data were analyzed using the Rasch Rating Scale Model (RSM) (Andrich, 1978) utilizing the Winsteps software. The RSM was selected specifically because all items in the instrument employed the same polytomous Likert-scale structure (4 distinct response categories). Unlike Classical Test Theory (CTT), the Rasch model transforms raw ordinal data into interval-level logit (log-odds) measures, allowing for linear estimation of both item difficulty and person ability.

To ensure the psychometric quality of the instrument, the analysis adhered to the following statistical criteria for Rasch assumptions. **Dimensionality** using Principal Component Analysis (PCA) of Residuals. A variance explained by measures of $\geq 20\%$ is typically considered the minimum threshold for accepting unidimensionality in a developed instrument. **Local independence** to assess independence between items using standardized residual correlations between items with the minimum required criteria < 0.30 . **Item and person fit** using outfit mean square (MNSQ) with the acceptable range is $0.5 - 1.5$ logit. **Item and person separation** or reliability with the criteria > 2.0 indicates hierarchy of item difficulty and person hierarchy. **Rating scale diagnostics** to assess rating scale effectiveness using Andrich thresholds with the criteria increase monotonically

assessing disordered thresholds. **Differential item function (DIF)** to examine measurement invariance in item level using Rasch-Welch t-test with criteria there are no item has contrast difficulty level more than 0.4 logit.

Results

The Principal Component Analysis (PCA) of Residuals was conducted to determine if the instrument measured a single latent trait. The analysis revealed that the raw variance explained by the measures was 50.4%. This value significantly exceeds the minimum threshold of 20% required for unidimensionality (Sumintono & Widhiarso, 2014), indicating that the instrument is fundamentally measuring one dominant construct (Father Involvement).

Table 3

Person and item reliability of the instrument

	Mean	SD	Separation	Reliability
Person	.970	1.860	3.150	.910
Item	-1.000	.510	7.060	.980

Table 4

Rating scale analysis statistics

Rating (score)	Observed average	Andrich Threshold
1	-1.640	None
2	-.090	-2.090
3	1.250	-.170
4	2.590	2.260

The assumption of local independence requires that, after controlling for the latent trait, responses to items should be statistically independent. This was assessed by examining the Standardized Residual Correlations. The analysis showed that no pair of items had a residual correlation exceeding 0.30 (a common cutoff for dependency). This confirms that there is no redundancy between items and the assumption of local independence is met.

The summary of the model fit and reliability is presented in Table 3. The instrument demonstrated excellent psychometric properties. The Person Reliability was 0.91 with a separation index of 3.18, indicating the instrument can distinguish between distinct levels of respondent ability. The Item Reliability was 0.98, suggesting that the item difficulty hierarchy is highly stable. Additionally, the Cronbach's Alpha coefficient was 0.95, confirming high internal consistency.

The rating scale analysis results showed a progressive increase in responses across all four rating scale categories. This indicates that the respondents' use of the rating scale categories was

Table 5
Item fit statistics

Item	Measure	S.E.	Outfit		
			MNSQ	ZSTD	PTM-Corr
A11	.680	.070	2.320	9.900	.460
E13	.630	.070	1.120	1.940	.670
A21	.560	.070	1.100	1.590	.700
R21	.560	.070	1.060	1.020	.710
E11	.480	.070	1.040	.640	.680
R13	.330	.070	1.030	.540	.710
R11	.270	.070	.880	-1.580	.700
A12	.120	.070	.950	-.850	.720
A13	.080	.070	.960	-.630	.730
A23	.050	.070	.940	-.890	.710
E21	-.010	.070	.950	-.900	.720
A22	-.030	.070	.900	-1.640	.740
R22	-.090	.080	.890	-1.890	.740
R23	-.420	.070	.810	-2.770	.730
E22	-.560	.070	.830	-2.830	.740
E12	-.790	.070	.820	-3.060	.730
R12	-.880	.070	.760	-3.800	.750
E23	-.990	.080	.790	-3.640	.750

Measure = item difficulty, S.E. = standard error, Outfit MNSQ = mean square, Outfit ZSTD = Z-standardized, PTM-Corr = point to measure correlation.

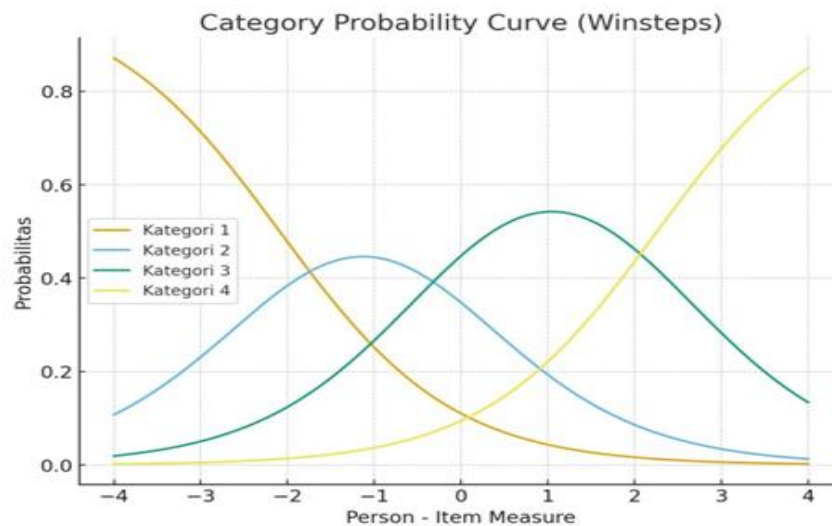


Figure 1. Rating scale analysis

appropriate and aligned with the measured variable. The table and figure above display the distribution of response ratings, with the highest frequency found in rating scale 4, followed by rating scales 3, 2, and 1, in descending order.

Item fit was evaluated using Outfit Mean Square (MNSQ) and Outfit Z-Standardized (ZSTD) values. Ideally, MNSQ values should fall

between 0.5 and 1.5. As shown in the item statistics (Table 5), the majority of the items fit well within these productive measurement limits. However, one item, A11 (“My father is often at home at night”), exhibited an Outfit MNSQ of 2.32. This underfitting value suggests that this specific item introduces noise into the measurement and may have been interpreted

inconsistently by respondents (e.g., some interpreting it as physical presence, others as availability).

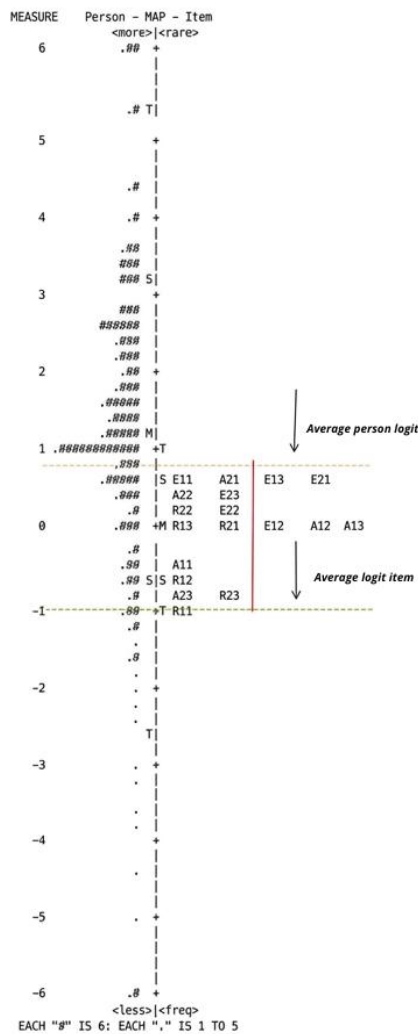


Figure 2. Wright map

Figure 2 presents the Wright Map (Person-Item Map), which plots respondent ability (left) and item difficulty (right) on the same logit scale. The distribution shows that the mean person's ability is significantly higher than the mean item difficulty. This indicates that for this specific sample of adolescents, the instrument was relatively easy to endorse; most respondents reported high levels of father involvement.

Rating Scale Diagnostics The functioning of the 4-point Likert scale was analyzed to ensure that the categories were used as intended. The analysis (Table 4) showed a monotonic increase in the average measure and step calibration (Andrich thresholds) across all four categories (1 to 4). This confirms that as the category level increases (from "Strongly Disagree" to "Strongly Agree"), the

underlying level of father involvement also increases, validating the effectiveness of the 4-point scale.

To ensure the instrument is fair and unbiased, Differential Item Functioning (DIF) analysis was conducted to compare item difficulty across demographic groups, specifically Gender (Male vs. Female). A noticeable DIF contrast is typically defined as a difference in item difficulty greater than 0.5 logits. The results indicated that no items exceeded this threshold, suggesting that the items function equivalently for both boys and girls. This confirms that the FIS-IV measures father involvement without gender bias.

Figure 3 displays the Differential Item Functioning (DIF) by gender. The yellow curve represents male respondents, and the red curve represents female respondents. For several items (E12, A12, R13), the yellow and red lines are almost superimposed, indicating no significant difference in responses between males and females. Other items (E21, A23, R11, R23) showed a clearer distinction between the two groups, suggesting that these items can differentiate between participant groups. A curve approaching the top of the graph indicates that the item is relatively more difficult for that group, while a curve near the bottom suggests the item is easier.

Discussions

The primary objective of this study was to develop and validate the Father Involvement Scale (FIS-IV) using the Rasch model. The findings confirm that the FIS-IV is a unidimensional instrument capable of measuring the latent trait of father involvement with high precision. Regarding the conceptual structure, while this study utilizes Lamb's (2000) tripartite dimensions (Engagement, Accessibility, and Responsibility) as a theoretical blueprint, the Rasch analysis demonstrates that these dimensions converge into a single latent continuum. This suggests that in the Indonesian adolescent context, father involvement functions as a holistic construct where various behaviors—from physical presence to emotional support—align along a single scale of "intensity" or "difficulty," rather than acting as independent, unrelated factors. The analysis revealed that the instrument explains 50.4% of the variance, meeting the criteria for measurement effectiveness. Unlike studies relying solely on Classical Test Theory (CTT), which often fails to separate item difficulty from person ability, the Rasch analysis in this study provided a sample-

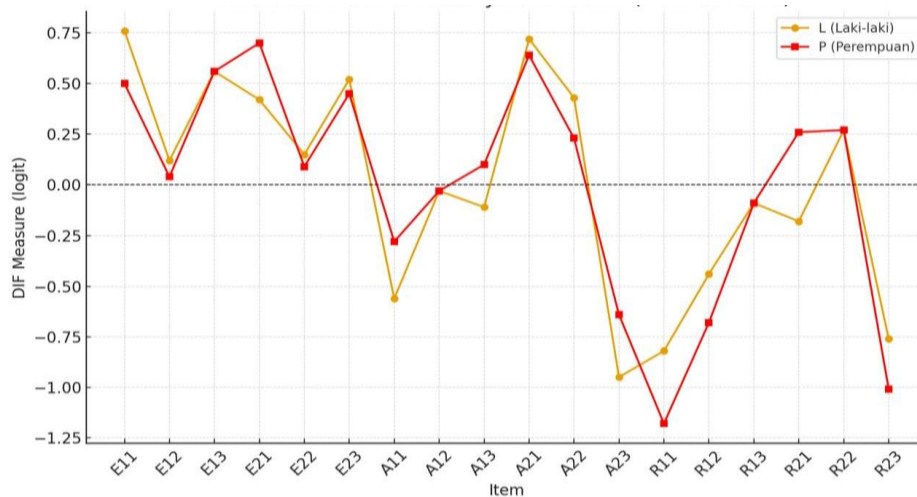


Figure 3. Differential item function (DIF) based on Gender

independent measurement (Denys et al., 2024; Sumintono & Widhiarso, 2014). This addresses a common limitation in previous fatherhood research: instruments validated via CTT or Confirmatory Factor Analysis (CFA) often struggle to maintain stability across different demographic groups due to sample dependency (Schonfeld et al., 2024).

The high person reliability coefficient obtained (.81) indicates that the FIS-IV can effectively discriminate between adolescents with varying levels of paternal involvement. A novel contribution of this study is the identification of the item hierarchy through the Wright Map, which provides a visual representation of the latent trait. This hierarchy confirms that "Responsibility" items (e.g., providing for needs) are generally "easier" for Indonesian fathers to endorse, whereas "Engagement" items involving deep emotional disclosure are "harder" (higher difficulty), reflecting the progression of the fathering role in collectivist societies.

Regarding the misfit of Item A11 ("My father is often at home at night"), which showed an Outfit MNSQ > 2.0, a strategic decision was made to remove this item from the final version of the FIS-IV. The statistical justification for this removal is that an Outfit MNSQ above 2.0 indicates "noise" that can degrade measurement quality and distort the latent scale. Conceptually, this misfit suggests that in modern Indonesia, a father's presence at home at night is no longer a reliable indicator of involvement, given diverse work shifts and urban commuting patterns. Removing Item A11 improved the overall model fit and ensured that the scale remains focused on psychological and functional engagement rather than mere physical proximity, which is often a

matter of economic necessity rather than parental choice (Fitriana et al., 2025).

Furthermore, this study conducted a Differential Item Functioning (DIF) analysis to ensure measurement fairness across genders. The results indicated that all items functioned equivalently for both male and female adolescent respondents (DIF Contrast < 0.64 logits). This is a crucial finding, as it suggests that the FIS-IV is a "gender-neutral" assessment tool in the child's eyes. Unlike previous Western scales that sometimes show bias, in which daughters perceive "engagement" differently from sons, the FIS-IV captures a shared cultural understanding of fatherhood that transcends adolescent gender.

The development of the FIS-IV carries significant practical implications for family-based interventions. Rather than making broad claims about national policy, these findings provide a precise tool for school counselors and family therapists to conduct initial assessments. By identifying specific hard-to-meet needs that a father fails to fulfill, practitioners can design targeted interventions, such as "emotional coaching" workshops, that move beyond encouraging mere physical presence to foster deeper psychological availability. This instrument provides the empirical baseline needed to evaluate the effectiveness of local parenting programs aimed at reducing adolescent "father hunger."

This finding aligns with recent international studies emphasizing that accurate measurement of fathering requires instruments sensitive to the nuances of modern parenting dynamics (Cabrera et al., 2018). While recent studies using CFA often focus on model fit indices that can be sensitive to sample size (Goretzko et al., 2023), the Rasch approach used here prioritizes the hierarchy of

item difficulty, confirming that the construct of father involvement follows a logical progression from presence to complex emotional support.

Regarding the conceptual structure, this study clarifies that while Lamb's (2000) tripartite model (Engagement, Accessibility, and Responsibility) provides the theoretical dimensions, these dimensions function as a single latent continuum in the Indonesian context. The Rasch analysis empirically demonstrates that these three aspects do not operate as independent multidimensional factors, but rather as hierarchical indicators of a unidimensional construct. The results resonate with those of Zheng et al. (2026) and Puglisi et al. (2024), who argue that modern fatherhood is multidimensional, moving beyond the traditional breadwinner role to encompass active emotional engagement. The validity of the Engagement dimension in this study supports Zulfa et al. (2025), who found that direct father-child interaction is a significant predictor of social-emotional competence in adolescents. Furthermore, the Accessibility items validated here corroborate Pradani et al. (2026), who reported that adolescents' perception of paternal availability serves as a protective factor against internalizing disorders.

A critical finding from the Rasch analysis was the misfit of Item A11 ("My father is often at home at night"), which showed an Outfit MNSQ > 2.0. This misfit likely reflects shifting cultural and economic realities rather than a flaw in the construct. As noted by Fitriana et al. (2025) in the Indonesian context, economic pressures often necessitate long working hours, meaning physical absence does not necessarily equate to psychological disengagement. This contrasts with older studies (Finley & Schwartz, 2004) that prioritized physical presence. Contemporary research suggests that intentionality and emotional resonance are more accurate indicators of involvement than mere physical duration (Xu et al., 2026). Therefore, future iterations of the scale should focus on psychological accessibility (e.g., availability via phone/chat) rather than physical presence in the home, aligning with the quality-over-quantity paradigm advocated.

Compared with recent studies employing CTT or standard Factor Analysis, the Rasch model provided superior diagnostic information about the rating scale. For instance, Koo and Yang (2025) noted that traditional Likert-scale evaluations often suffer from central-tendency bias, in which respondents avoid extreme options. The Rasch diagnostic in this study verified the 4-

point scale's functioning, ensuring that the step-calibrations between "Agree" and "Strongly Agree" were statistically distinct. This level of granular diagnostic is rarely achieved in studies that rely solely on Cronbach's alpha or EFA (Exploratory Factor Analysis), as seen in comparable instrument development in non-Western contexts (Tsui et al., 2024).

The development of the FIS-IV has significant practical implications for assessment and clinical utility. Primarily, school counselors can utilize the instrument as a diagnostic screening tool to identify adolescents at risk of "father hunger" or low paternal support, which Zulfa et al. (2025) identify as a precursor to delinquency. The specific item hierarchy established here allows practitioners to design stepped-care interventions that guide fathers from basic responsibility to complex emotional engagement. While these findings are vital for clinical assessment, future longitudinal studies are required before these results can be generalized to national policy level.

Despite its strengths, this study has limitations. First, the use of non-probability sampling limits the generalizability of the findings to the broader adolescent population. Second, the study relied on self-report data from adolescents, which may differ from fathers' own perceptions; Ko et al. (2025) suggest that dyadic data (measuring both father and child) provides a more holistic view. Third, the cross-sectional design prevents causal inferences regarding how father involvement changes over time. Future research should employ longitudinal designs (as recommended by Cabrera et al. (2018) and test the instrument's Measurement Invariance across gender and socioeconomic status to ensure it is free of differential item functioning (DIF), a standard often demanded in recent psychometric literature (Marôco, 2024).

Conclusion

In conclusion, the Rasch model analysis demonstrates that the FIS-IV is a psychometrically robust instrument for measuring father involvement among Indonesian adolescents, as evidenced by a person reliability of .81 and item reliability of .98. The scale satisfactorily meets the critical assumption of unidimensionality (raw variance explained by data = 50.4%), confirming that it effectively measures a single underlying construct. Furthermore, the rating scale analysis showed that the 4-point Likert scale functioned optimally, with clear threshold separations that effectively differentiated respondents across the

latent continuum. The Differential Item Functioning (DIF) analysis confirmed the instrument's fairness, as no items exhibited substantive bias (DIF Contrast < 0.64 logits) across gender, except for the initial detection of minor variance which did not require item deletion, thus ensuring the scale's stability for both male and female respondents.

The primary scientific contribution of this study lies in the transition from Classical Test Theory to a latent-trait approach (the Rasch Model) in the context of Indonesian family psychology. By establishing a validated item hierarchy (Wright Map), this research provides a new "standard ruler" that enables more precise diagnostic assessments than previous Western-adapted scales. This study successfully bridges the gap between Lamb's theoretical dimensions and the empirical reality of Indonesian fatherhood, offering a measurement tool that is not only methodologically rigorous but also culturally sensitive to the nuances of paternal roles in a collectivist society.

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