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Development of the Parental Mind-Mindedness Perception Scale: A Validity and Reliability Study*

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ABSTRACT

This scale development article describes the application and analysis of validity and reliability studies for a data collection instrument designed to assess parents' levels of mind-mindedness (PMMPS). The study was conducted using data collected from five different study groups consisting of parents of children aged 0–6 in Diyarbakır, Türkiye. The PMMPS consists of 7-point Likert-type items. Eight experts were consulted to assess the content validity of the 50-item draft scale. Following expert reviews and a pilot study, 30 items were removed from the scale. The results of the EFA and CFA conducted on the 20-item scale revealed a 3-factor structure with 18 items that explained 54.1% of the total variance. A nonadditivity analysis revealed that a total score could not be derived from the scale. The CFA findings and fit indices supported the EFA results. To assess criterion and construct validity, the Parent-Child Communication Scale developed by Kahraman (2016) and the Parental Mind-Mindedness Perception Scale (PMMPS) developed in this study were administered simultaneously to 262 parents; the correlation coefficients between the subdimensions of these scales ranged from .03 to .40. A test-retest correlation analysis, a 27% upper-lower group t-test, item-total and item-residual correlation values, and Cronbach's alpha all demonstrated the scale's reliability.

Keywords: Perception of parental mind-mindedness, assessment of parental mind-mindedness perception, scale development

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1. Introduction

Changes in areas of development are influenced by two main factors: heredity and environment. Heredity refers to the traits an individual inherits from their parents through genes—traits that are difficult to change, or in many cases impossible to change, relative to the environment; the environment, on the other hand, encompasses all factors other than genes that influence the individual. Modifying environmental factors is generally considered more feasible than altering genetic traits (Bee and Boyd, 2009). Numerous studies have been conducted on the effects of virtually every environmental factor—such as parental characteristics, media, school, peers, socioeconomic status, culture, and birth order—on the developmental process (Bronfenbrenner, 1979; Sameroff, 2009; Wallerich et al., 2023). Among these environmental factors, parental characteristics have been identified as one of the most significant variables influencing the developmental process (Belsky, 1984; Baumrind, 1991). Parental characteristics are among the primary factors that influence an individual throughout their entire life but have the most decisive impact on children's development, particularly during the early years (Bornstein, 2019; Selçuk and Yavuz, 2018). In this context, it is of great importance for parents to possess the necessary competence and knowledge regarding their children's developmental needs (Hess et al., 2004) and for their parenting capacities to be supported accordingly. The impact of numerous parental characteristics—such as vocabulary, intelligence, educational background, personality, age, psychological

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state, and attitudes toward child-rearing—on a child's developmental process has been documented (Cermakova et al., 2023; Dubow et al., 2009; Fernández, 2024; Lansford, 2021; Lawson and Hook, 2018; Sanvictores and Mendez, 2022; Schady, 2011). One of the key parental characteristics—and a concept that has gained prominence in parenting research over the past thirty years—is the trait known in the Turkish literature as "Mind-mindedness." (Akkor, 2025; Akyüz, 2025; Algan, 2021; Çoban and Pala, 2025; Gürtunca Hanif, 2023; Karaalioğlu, 2024; Yılmaz, 2017).

The concept introduced into the literature by Meins (1997) reflects the caregiver's tendency to view the child not merely in terms of behavior, but as an active psychological subject with mental states. Meins et al. (2001) defined mind-mindedness as "the mother's perception of her child not merely as a being with physical needs, but as an active being with a mind of its own, and her tendency to behave accordingly." Furthermore, Meins et al. (2001) later expanded this definition, stating that beyond simply treating the infant as a thinking individual, the mother must use "Mental State Language" appropriately—that is, speak in a way that aligns with the infant's mental states—during her interactions with the infant. This tendency, referred to as "mind-mindedness" in the Turkish literature, refers to the parent's attribution of meaning to the child's beliefs, desires, intentions, emotions, and knowledge states, as well as the timely and appropriate use of these attributions within the interaction (Meins, 2013). A mind-minded caregiver, for example, does not view crying merely as a "behavior"; rather, they consider it a result of an internal state such as "sadness" or "disappointment" and responds accordingly (Meins et al., 2001; Meins, Fernyhough et al., 2013). Parental responses consistent with this perspective lay the foundation for social cognition; this approach transforms Ainsworth's concept of responsiveness into a specific dimension of interaction by focusing on mental processes (Ainsworth et al., 1978; Meins, 1997). Perception is a fundamental cognitive structure that directly shapes individuals' behaviors, decision-making processes, and the ways in which they make sense of their environment (Lazarus, 1991; Neisser, 1967). In this context, a parent's approach to their child is shaped not so much by the child's behavior itself, but rather by how the parent perceives and interprets that behavior in their mind (Fonagy & Target, 1997). Given that individuals interpret reality not objectively but through their own cognitive filters (Kahneman, 2011), it becomes clear that parents' perceptions of their children—including their beliefs, expectations, and attributions—serve as the fundamental mechanism governing their parenting behaviors and interactions with their children (Bugental & Johnston, 2000; Duncan et al., 2009; Johnston et al., 2018). In this context, changing existing behavioral patterns becomes difficult without understanding parents' perceptions and mental processes. This is because creating lasting change in parenting behaviors first requires increasing the parent's capacity for awareness of their own and their child's mental states (Camoirano, 2017; Fonagy & Bateman, 2006; Slade, 2005).

While research on mind-mindedness in Turkish culture is on the rise (Akyüz, 2025; Demirkan & Yeşilyaprak, 2023; Gürtunca Hanif, 2023; Karaalioğlu, 2024), current studies rely on observation and interview methods developed by Meins et al. (1998; 2001). A significant portion of the measurements is based on observation and interview methods that are time-consuming and require expertise. Although mind-mindedness is frequently assessed through observation in the current literature, determining parents' subjective perceptions/self-reports regarding this skill is at least as important as the observed behavior. The advantages that self-report instruments offer in parenting research in terms of cost and time are well known (Luyten et al., 2017). However, the literature reveals a limited number of data collection tools designed to measure parents' tendencies toward mind-mindedness. Building on this gap, the current study aims to develop a valid and reliable data collection tool designed to assess parents' mind-mindedness through self-report. The development of this scale will not only determine the individual's own perception; but will also, when used in conjunction with observation-based methods in future studies, enable the identification of potential differences between the parent's "perceived" (representational) and "observed" (interactional) mind-mindedness, as well as facilitate multidimensional assessments (Algan, 2021; McMahon & Bernier, 2017). This scale will help determine Turkish parents' perceptions of mind-mindedness and lay the groundwork for initiatives aimed at enhancing these levels.

2. Methodology

2.1. Research Model

Since this study aimed to develop a valid and reliable measurement tool to assess the perceptions of parental mind-mindedness among parents of preschool-aged children, it was conducted using a survey method, and the data were collected cross-sectionally.

2.2. Study Groups

The population of the study consists of parents with children aged 0–6 in the four central districts of Diyarbakır Province. The sample for this study consists of a total of 1,218 parents selected using purposive (judgmental) sampling—a non-probability sampling method—and the criterion sampling strategy, which is a subtype of this method. In determining the study group for this research, purposive (judgmental) sampling—a non-probability sampling method—and the criterion sampling strategy, a subtype of this method, were used. Purposive sampling involves the researcher, based on their own thoughts and experiences and in line with the research objectives, consciously selecting the segment of the population most appropriate for the research question as the subject of observation (Patton, 2014). In this context, the researcher aims to select participants who are considered to provide the best answers to the research problem and who are rich in knowledge; indeed, this approach is frequently preferred in specific studies where it is necessary to precisely target the intended group (Özmen, 2000). Criteria sampling, on the other hand, refers to the inclusion of individuals in the sample who have direct experience with the phenomenon under study and who meet a set of basic characteristics (criteria) predetermined by the researcher (Yıldırım & Şimşek, 2008). To reach participants who best represent the target population and theoretical structure of the developed Parental Mind-Mindedness Perception Scale (PMMPS), the study required that participants be parents of children aged 0–6.

Data were collected from five independent study groups for the different stages of the scale development process (pilot study, exploratory factor analysis, confirmatory factor analysis, test-retest analysis, and criterion validity analysis). A total of 67 parents participated in the pilot study, 386 in the exploratory factor analysis, 461 in the confirmatory factor analysis, 48 in the test-retest analysis, and 262 in the criterion validity analyses. Data were collected from 67 parents for the pilot study, which was conducted to test the comprehensibility of the draft scale's items and to perform initial psychometric evaluations. Scale development literature emphasizes that, before proceeding to the main application, a pilot study of the draft scale should be conducted with a group of at least 30 to 100 participants who share characteristics similar to the target population (Gökdemir & Yılmaz, 2023). In this context, the dataset of 67 participants is a sufficiently large sample to meet the pilot study's objectives of "comprehensibility and psychometric structure" (Gökdemir & Yılmaz, 2023).

During the Exploratory Factor Analysis (EFA) phase—conducted to determine the scale's factor structure and construct validity following the pilot study-data were collected from 386 participants. Various criteria exist in the literature regarding the sample size required for factor analyses to yield statistically reliable results. Tabachnick and Fidell (2012) state that a sample of at least 300 participants is appropriate for factor analysis (Zamur Tuncer, 2024); Comrey and Lee (1992) classify a sample size of 300 as "good" and 500 as "very good" for factor analysis (Çelik, 2013; Yılmaz & Pekgör, 2023). In addition, there is a general consensus that the sample size should be at least five times the number of items on the scale, and ideally ten times that number (Gökdemir & Yılmaz, 2023; Yılmaz & Pekgör, 2023). Accordingly, the sample size of 386 participants obtained for the EFA is statistically sufficient and "good," meeting both the minimum rule of 300 participants and the criterion of being a multiple of the number of items (Çelik, 2013; Yılmaz & Pekgör, 2023). The Mahalanobis distance was used to identify outliers. In this context, Mahalanobis distance values were calculated for each participant, and the resulting values were compared to the critical value in the chi-square distribution, taking the number of items into account. As a result of the analysis, the 6 observations exceeding the critical value were classified as multivariate outliers. These observations, which were identified as outliers, were removed from the dataset, and the analysis continued using a dataset consisting of 380 participants.

To validate the structure obtained from the EFA and test the model-data fit, data were collected from an additional 461 parents—completely independent of the EFA sample—and Confirmatory Factor Analysis (CFA) was conducted. It is recommended that EFA and CFA be conducted sequentially on different datasets

during scale development processes (Orçan, 2018). It is noted that for the CFA phase, data should be collected from a new and independent sample of at least 150 participants, ideally 250 (Gökdemir & Yılmaz, 2023). The independent sample of 461 participants obtained for the CFA in this study meets the ideal sample size criteria specified in the literature and enhances the reliability of the psychometric results (Gökdemir & Yılmaz, 2023).

As shown in Table 1, 49.25% of the participants in the pilot study group were female parents (n = 33) and 50.75% were male parents (n = 34), indicating a fairly balanced gender distribution. A total of 380 parents participated in the EFA study; of these, 53.2% were female (n = 202) and 46.8% were male (n = 178). In the CFA phase, 461 parents participated, with 54.2% being women (n = 250) and 45.8% being men (n = 211). The test-retest reliability study was conducted with 48 parents; 79.20% of the participants were female (n = 38), and 20.80% were male (n = 10). A total of 262 parents were included in the criterion validity study; 68.32% were women (n = 179) and 31.68% were men (n = 173). When examining the age distribution of parents across all study groups, it is evident that the 26–35 and 36–45 age ranges constitute the predominant groups. In the pilot study group, 49.25% of participants were in the 26–35 age range, and 46.27% were in the 36–45 age range. In the EFA group, these percentages were 46.3% and 46.8%, respectively; in the CFA group, they were 45.8% and 47.5%. In the test-retest group, the 26–35 age group accounted for 47.9% and the 36–45 age group for 37.5%, while in the criterion validity group, these percentages were 49.62% and 39.69%, respectively. It is noteworthy that the 18–25 and 46+ age groups were represented at relatively low rates in all stages.

Table 1. *Distribution of the Study Groups By Demographic Variables*

		Pilot Program		EFA		CFA		Test retest		Criterion validity	
		n	%	n	%	n	%	n	%	n	%
Parent's gender	Female	33	49.25	202	53.2	250	54.2	38	79.20	179	68.32
	Male	34	50.75	178	46.8	211	45.8	10	20.80	83	31.68
Parent's age	Ages 18–25	1	1.49	10	2.6	10	2.2	3	6.3	10	3.82
	Ages 26-35	33	49.25	176	46.3	211	45.8	23	47.9	130	49.62
	Ages 36-45	31	46.27	178	46.8	219	47.5	18	37.5	104	39.69
	46 and older	2	2.99	16	4.2	21	4.6	4	8.3	18	6.87
	Total	67	100	380	100	461	100	48	100	262	100

Based on these findings, it can be concluded that the sample groups identified at different stages of the study share similar demographic characteristics in terms of age and gender, and that the sample adequately represents the overall profile of parents.

2.3. Data Collection Tools

In the study, an Information Form was used to determine the participants' age and gender characteristics, and the "Parent-Child Communication Scale" was used to test the criterion validity.

Parent-Child Communication Scale: Developed by Kahraman (2016), this scale aims to measure the quality of communication between parents and their children; it is a 5-point Likert-type scale consisting of 27 items across five subdimensions: "openness to sharing," "unbiased listening," "respect and acceptance," "sensitivity," and "problem-solving." The items in the scale's "Unbiased Listening" dimension are reverse-scored. The scale items are scored as follows: "5 = always," "4 = often," "3 = sometimes," "2 = occasionally," and "1 = never." The Cronbach's Alpha reliability coefficient for the scale in this study was calculated as .75. In addition, CFA fit indices were examined [χ^2/df=2.12; RMR = .085; SRMR = .067; GFI = .83; AGFI = .80; IFI = .86; CFI = .86; RMSEA = .06], and it was observed that while the GFI value was slightly below the acceptable threshold, the other fit indices met acceptable fit criteria.

Mind-Mindedness Perception Scale: The scale is a 7-point Likert-type scale consisting of 18 items and 3 subdimensions. The scale is rated as follows: "Strongly Disagree = 1, Disagree = 2, Somewhat Disagree = 3, Undecided = 4, Somewhat Agree = 5, Agree = 6, and Strongly Agree = 7." The scale includes 4 items (1, 2, 3, 4) in the "Desires and Preferences" subscale and 8 items (5, 6, 7, 8, 9, 10, 11, 12) in the "Cognitive Processes" subscale. and 6 items (13, 14, 15, 16, 17, 18) in the "Emotions" subscale. The scale does not contain any reverse-scored items. When comparing the subscales with one another, the arithmetic mean of the subscales is calculated for evaluation. The scores parents receive on the subdimensions are defined as the level of perceived parental mental orientation (the degree to which they possess the trait being measured) regarding that dimension. In general, a low score on a subdimension of the PMMPS instrument indicates that, according to

their self-report, the parent is at a low level in terms of viewing their child as a separate individual with a unique mind and reflecting this to the child through language—that is, the level of possession of the trait being measured is low; a high score, on the other hand, indicates a high level of possession of the trait being measured.

2.3.2. Scale Development Procedure

In the development of the scale, the following six stages of scale development were implemented: (i) item development, (ii) content validity, (iii) determination and application of sample size, (iv) exploratory and confirmatory factor analysis, (v) internal consistency/reliability, and (vi) determination of criterion validity. (Hinkin, 1998; Hinkin et al., 1997).

As part of the scale development process, a literature review was conducted to identify the dimensions of parental mind-mindedness perception and to establish an item pool. (e.g., Aldrich et al., 2021; Fishburn et al., 2022; Laranjo et al., 2014; McMahon and Bernier, 2017; Meins, 1997; Meins et al., 2001; Meins and Fernyhough, 2015; Zeegers et al., 2017). Since no scales measuring parental mind-mindedness perception have been developed in this field, mind-mindedness—which is the umbrella concept for mind-mindedness (Luyten et al., 2020; Sharp and Fonagy, 2008)—which is the umbrella concept for mind-mindedness—and the Parental Reflective Functioning Scale (Luyten et al., 2017), which is one of the components of the parental mentalization structure and is the closest to the concept of mind-mindedness, —a Turkish adaptation of the short-form Parent Internalizing Functioning Scale (Arıkan et al., 2020)—was examined. In addition, domestic theses and academic publications related to mind-mindedness were reviewed (Akkor, 2025; Akyüz, 2025; Algan, 2021; Demirkan & Yeşilyaprak, 2023; Gürtunca Hanif, 2023; Karaalioğlu, 2024; Yılmaz, 2017).

In addition to the literature review, focus group interviews were conducted during the item pool development phase to determine parents' perceptions and views regarding mind-mindedness. After the interviews were completed, the interview recordings were transcribed by the researcher, and codes and categories were identified from the parents' statements based on the transcribed recordings. To determine the reliability of the coding, another coder was assigned to code the parents' statements from the focus group transcripts. A Cohen's kappa analysis was conducted to test the coding agreement between the two coders. The level of inter-coder agreement was assessed using the kappa statistic developed by Cohen (1960). According to the results of the analysis, a level of "substantial agreement" (0.62) was observed between the coders, indicating a close level of agreement (Landis & Koch, 1977).

In developing the item pool for the scale, the focus was on the approaches of Meins (1997)—who introduced the concept of mind-mindedness to the literature and outlined its fundamental theoretical framework—and the Mind-Mindedness Coding Guide by Meins and Fernyhough (2015), which standardized the measurement principles of this parental trait. This structure, grounded in the theoretical literature, was synthesized with qualitative findings from focus group interviews conducted with parents to support the content validity and cultural appropriateness of the item pool, resulting in the creation of two distinct item pools, each consisting of 50 items.

During the item-development process, care was taken to ensure that the articles would enable parents to assess themselves in terms of accurately interpreting their child's desires, preferences, cognitive processes, and emotions—from the perspective of the child's mind-mindedness—and to use language appropriate to the child's mental state, while avoiding misinterpretations and using expressions that the target audience could understand in terms of both language and meaning. Following the item review, a 50-item form structure was developed—one that includes longer items based on concrete situations constructed through example scenarios (e.g., When my child says, "Is this what's going to happen next?" while listening to a story, I reflect their ability to anticipate and make predictions by saying, "You're wondering what happens next; you're trying to guess what comes next, right?" thereby reflecting their ability to anticipate and predict back to them.) and one based on relatively shorter sentences (e.g., "When I realize my child is anticipating something, I tell them they are anticipating it."). These two draft forms were sent via email to one expert in the field of measurement and evaluation, two experts in educational sciences, and five experts in early childhood education. These experts were provided with explanations regarding the purpose of the study and the scale, and were asked to evaluate each item in terms of appropriateness (appropriate, needs revision, or inappropriate) and to indicate, with justification, which of the two draft forms they considered more

appropriate. Based on the feedback received, it was observed that five experts preferred the short-sentence format, one expert preferred the long, example-based format, and, finally, two experts believed that both formats were equally appropriate. For this reason, the short-item format was chosen for this study. Based on feedback from experts, the content validity ratio (CVR) and content validity index (CVI) proposed by Lawshe (1975) for each item are presented in the table below.

Table 2. *Lawshe Analysis Results*

Items	CVR	Items	CVR	Items	CVR
1	0.750	9	0.750	17	1.000
2	0.750	10	0.750	18	0.750
3	1.000	11	1.000	19	0.750
4	0.750	12	1.000	20	0.750
5	1.000	13	1.000	21	1.000
6	0.750	14	0.750	22	0.750
7	1.000	15	0.750	23	0.750
8	0.750	16	0.750	24	0.750
Content Validity Index (CVI)=0.833, Content Validity Criterion (CVC-N=8): 0.75					

As a result of the comparison conducted according to the scope validity criterion proposed by Lawshe, the CVR critical value was determined to be 0.75 at a significance level of α=0.05 for the 8 experts included in this study; based on this critical value, 19 items were excluded. Furthermore, based on feedback from the experts, 7 items from the remaining 31 that were deemed to measure the same construct were removed from the draft form; the CVI value for the remaining 24 items was calculated as 0.83, resulting in a 24-item form for the pilot study. Subsequently, the 24-item pilot form was administered to 67 parents. Based on the analysis results of the pilot study, it was observed that the difference in cross-factor loadings was insufficient for 4 items—meaning the items showed "overlap"—so they were removed from the scale, resulting in the final 20-item form to be used in the main study.

2.3.3. Data Collection and Analysis

After obtaining approval from the Scientific Research and Publication Ethics Committee of Fatih Sultan Mehmet University (Decision No. 2024-41/01 L), data were collected through in-person and online forms (Google Forms).

To determine whether the data collected from the first study group of 386 participants for the EFA were suitable for factor analysis, the assumptions regarding outliers, missing values, normality, multicollinearity, and adequate sample size were examined. It was determined that there were no missing values in the dataset. The Mahalanobis distance was used to identify outliers. In this context, Mahalanobis distance values were calculated for each participant, and the resulting values were compared to the critical value in the chi-square distribution, taking the number of items into account. As a result of the examination, 6 observations exceeding the critical value were classified as multivariate outliers. These observations, identified as outliers, were removed from the dataset, and the analyses continued using a dataset consisting of 380 participants. To assess the normality assumption, the P-P plot and the skewness and kurtosis coefficients were examined. The analysis of the total scores revealed a skewness value of -1.513 and a kurtosis value of 4.048. The negative skewness value indicates that the scores are clustered toward higher values, while the positive and high kurtosis value indicates that the distribution exhibits a more peaked structure compared to a normal distribution. These findings suggest a partial deviation from a normal distribution in terms of total scores. However, analyses conducted at the item level revealed that the skewness and kurtosis coefficients generally fell within the acceptance range of ±1.96. Furthermore, the fact that the values observed in the P-P plot showed a distribution very close to the expected linear line supported the conclusion that the data were suitable for factor analysis. In assessing the normality assumption, the skewness and kurtosis coefficients, along with their corresponding standard error values, were taken into account. In the literature, it is accepted that if the z-values—obtained by dividing the skewness and kurtosis coefficients by their standard errors—fall within the range of ±1.96, there is no significant deviation from a normal distribution at the .05 significance level (Field, 2009). The inter-item correlation coefficients range from .271 to .791. Considering Cohen's (1988) classification of correlation coefficients, it can be said that these values generally reflect moderate to high levels of

relationship. Furthermore, the fact that the correlation coefficients remain below .90 indicates that there are no high levels of relationship among the items that could create a problem of multicollinearity.

The Bartlett Sphericity Test and the Kaiser-Meyer-Olkin (KMO) test were used to assess the sample size and the suitability of the data for factor analysis. Since the Bartlett Sphericity Test yielded a significant result and the KMO value was close to 1, the data were deemed suitable for factor analysis. EFA began with Principal Component Analysis, followed by the Varimax Orthogonal Rotation technique. In the analyses, 0.30 was set as the cutoff point for item loadings; items with loadings below 0.30 and those loading on more than one factor were removed sequentially, and the analyses were repeated after each item removal. To determine whether the structure consisting of 3 factors and 20 items obtained from the EFA was valid, CFA was conducted using data collected from 461 participants. Assumptions were tested to verify that the CFA data were also suitable for factor analysis.

To determine the level of discriminative power of the items between those who possess the characteristics they are intended to measure and those who do not, item-total and item-residual test correlations, as well as t-test comparisons of the top and bottom 27% groups, were examined. Additionally, to provide evidence of criterion validity, the Parent-Child Communication Scale was administered to a study group consisting of 262 participants. Correlation coefficients between the Parent-Child Communication Scale and the Parental Mind-Mindedness Perception Scale—developed in this study—were calculated. Cronbach's alpha reliability coefficient was calculated to assess the scale's reliability. IBM SPSS and IBM AMOS software packages were used for data analysis. The significance level for statistical analysis was set at .05.

2.4. Ethical

After obtaining approval from the Scientific Research and Publication Ethics Committee of Fatih Sultan Mehmet University (Decision No. 2024-41/01 L), data were collected through in-person interviews and online forms. Data from participants for the development of the Parental Mind-Mindedness Perception Scale were obtained through voluntary participation. Participants were informed about the study and told that they could withdraw from the study at any time if they wished.

3. Results

Table 3 presents the item discrimination indices of the PMMPS based on independent-samples t-tests comparing the upper and lower groups.

Table 3. *The t-value of PMMPS Items (Item Discrimination Index)*

Item No	t value	Item No	t value
I1	10.26	I11	12.02
I2	10.86	I12	11.42
I3	8.13	I13	12.78
I4	8.67	I15	11.34
I6	11.10	I16	10.76
I7	10.25	I17	11.47
I8	12.54	I18	12.80
I9	0.62	I19	12.78
I10	11.85	I20	10.95

An examination of Table 3 reveals that the t-values for all items of the PMMPS are high and statistically significant. The fact that there are statistically significant differences between the bottom 27% and top 27% groups for each item indicates that the scale items have sufficient discriminant power to distinguish individuals based on the trait being measured (Büyüköztürk, 2012). These findings reveal that the items function consistently with the total score and that the scale possesses a robust structure in terms of item discrimination. Accordingly, it can be concluded that the items included in the scale are sufficiently discriminant and that the scale is psychometrically valid.

3.1. Validity Findings

Table 4 compares the skewness and kurtosis coefficients of the datasets used for exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

An examination of Table 4 reveals that the descriptive statistics for the EFA and CFA groups are generally similar. The high average scores in both groups indicate that the participants' scores for the measured trait are close to the upper limits. However, the fact that the skewness coefficient in the EFA group is higher and negative suggests that the scores are clustered toward the higher values. Furthermore, the positive and relatively high kurtosis coefficient in the same group indicates that the distribution exhibits a more peaked structure compared to a normal distribution. In the CFA group, on the other hand, the skewness and kurtosis values are at more moderate levels; consequently, the distribution appears closer to normal compared to the EFA group. Overall, the descriptive statistics for both groups contribute to an understanding of the data structure; in particular, it is evident that the distribution in the EFA group deviates somewhat from the normal distribution, while the CFA group exhibits a more balanced distribution structure.

Table 4. *Skewness and Kurtosis Coefficients of the Datasets Used for EFA and CFA*

	EFA		CFA	
	Statistic	Std. Error	Statistic	Std. Error
Mean	6.03	.05	6.15	.03
Median	6.40		6.10	
Variance	.882		.26	
Std. Deviation	.939		.51	
Minimum	1.00		5.10	
Maximum	7.00		7.00	
Range	6.00		1.90	
Interquartile Range	1.35		.79	
Skewness	-1.51	.13	-.16	.12
Kurtosis	4.05	.25	-.93	.24

Table 5. *Tukey's Test for Nonadditivity in ANOVA*

	Sum of Squares	df	Mean Square	F	p
Between groups	6665.56	378	17.63		
Within groups	509.98	19	26.84	27.49	.000
Collectability	12.990[a]	1	12.99	1333	.000

An examination of Table 5 reveals that the probability of non-scalability was determined to be p = .000 and that the scale does not exhibit scalability (F = 13.33; p < .01). An examination of the variation across measurements, however, shows that there are significant differences among the items (F = 27.49; p < .01). These findings indicate that the scale items differ from one another at a significant level and that the scale does not exhibit a simple additive structure (Alpar, 2010). The results of the Hotelling's T^2 test, conducted to determine whether there was a significant difference among the item means of the scale, are presented in Table 6.

Table 6. *Hotelling T^2 Test*

Hotelling's T test statistic	F	df1	df2	p
229.78	11.52	19	360	.000

An examination of Table 6 reveals that the result of Hotelling's T^2 test is statistically significant (Hotelling's T^2 = 229.78; F = 11.52; p < .01). This finding indicates that there is a significant difference between the means of the items included in the draft scale. Exploratory Factor Analysis (EFA) was used in the initial stage to assess the construct validity of the measurement instrument. The primary function of factor analysis is to classify interrelated items by examining correlation patterns among variables, to summarize the dataset by reducing it to a smaller number of factors (dimensions), and to reveal the underlying latent construct—a structure that cannot be directly observed—of the variables (Boateng et al., 2018; DeVellis, 2017). Accordingly, the Kaiser–Meyer–Olkin (KMO) and Bartlett's Sphericity Test were conducted; the varimax rotation technique was used to simplify the factor structure (Tabachnick & Fidell, 2012; DeVellis, 2017). For item selection in EFA, the criteria used were an eigenvalue greater than 1, a factor loading of at least .30, and a loading difference of at least .10 for items loading on two factors (Büyüköztürk, 2012). Additionally, the recommendation that the KMO be greater than .60 and the Bartlett test be significant (p < .05) was taken into account to ensure the suitability of the EFA (Büyüköztürk, 2012).

Table 7. *KMO and Bartlett's Test*

		EFA	CFA
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.933	.880
Bartlett's Sphericity Test	Chi-Square	4832.10	3766.74
	sd	171	190
	p	.00	.00

An examination of Table 7 reveals that the KMO values for both analysis groups range from .880 to .933, indicating that the sample sizes are "good" to "excellent" for factor analysis (Kaiser, 1974). The fact that the results of the Bartlett Sphericity Test were statistically significant in both groups ($p < .001$) demonstrates that the correlation matrix among the variables is not an identity matrix and that the data are suitable for factor analysis (Field, 2018). Based on these findings, it was concluded that the dataset meets the necessary prerequisites for both exploratory and confirmatory factor analysis.

Table 8. *Eigenvalues and Variances*

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	9.9	49.4	49.4
2	1.9	5.8	55.2
3	1.2	9.8	65.1

As a result of the principal component analysis conducted as part of exploratory factor analysis, the factor structure of the scale was examined, and the eigenvalues and the proportions of variance explained are presented in Table 8. The analysis identified three factors with eigenvalues greater than 1. The first factor has an eigenvalue of 9.9 and explains 49.4% of the total variance. The second factor has an eigenvalue of 1.9 and contributes 5.8% to the total variance, while the third factor has an eigenvalue of 1.2 and contributes 9.8% to the total variance. The total variance explained by the three factors combined is 65.1%. To provide additional evidence for the scale's factor structure, the scree plot is examined in Figure 1.

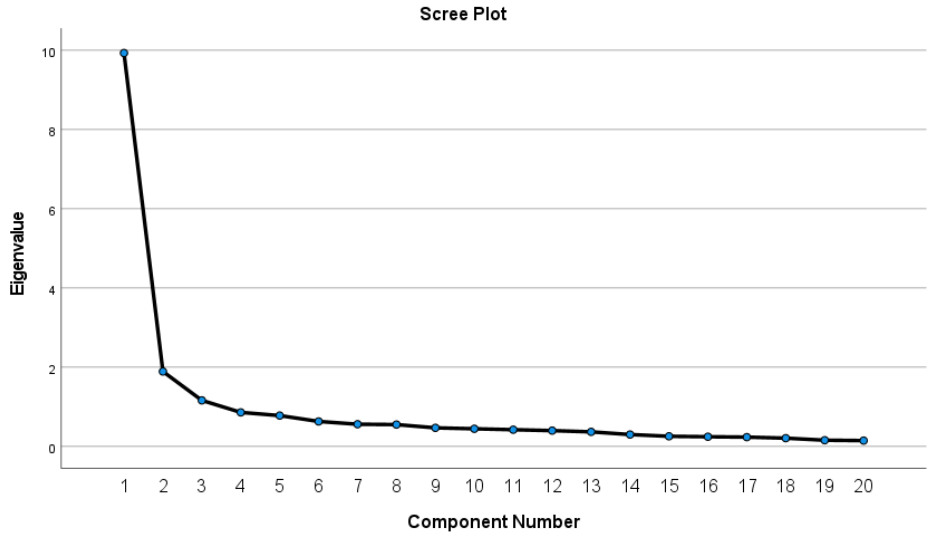

Figure 1. *Scree Plot After EFA - Post-EFA Scree Plot*

In determining the number of factors, the scree plot was examined in addition to the eigenvalue statistics. As shown in Figure 1, a distinct and steep decline is observed in the plot from the first component to the second; starting with the second and third components, the curve flattens out, forming a series. According to the principle for interpreting scree plots proposed by Cattell (1966), the number of factors immediately preceding the point where the curve breaks and begins to level off indicates the number of factors that should be retained. This graphical analysis supports the finding from the Kaiser criterion that three factors with eigenvalues greater than 1 were identified. When these findings are evaluated together, it is concluded that the scale consists of a three-factor structure.

Table 9. *Results of Exploratory Factor Analysis (EFA) for the Scale: Factor Loadings, Explained Variance, and Reliability Coefficients (Cronbach's Alpha)*

		Factor Effect	Explanation of Factors	Reliability Coefficient (Cronbach's alpha)
Dimension 1	Item 1	.778	49.4	.812
	Item 2	.731		
	Item 3	.717		
	Item 4	.573		
	Item 5	.484		
Dimension 2	Item 7	.813	5.8	.906
	Item 8	.769		
	Item 10	.762		
	Item 12	.696		
	Item 9	.648		
	Item 11	.644		
	Item 13	.570		
	Item 6	.508		
Dimension 3	Item 17	.862	9.8	.924
	Item 16	.848		
	Item 18	.816		
	Item 19	.790		
	Item 15	.772		
	Item 20	.617		
Total Variance Explained			65.1	
Kaiser Meyer Olkin (KMO)			.933	
Bartlett's Sphericity Test Chi-Square			4832.10	
sd			171	
p			.00	

A look at Table 9 shows that the findings indicate the data are quite suitable for factor analysis. While the KMO value of .933 indicates that the sample adequacy is at an "excellent" level, the significant result of Bartlett's Sphericity Test shows that the correlation matrix is not an identity matrix and that there are factorizable relationships among the variables ($\chi^2(171)=4832.10$, $p<.001$). In the evaluation conducted according to the established criteria, it was decided to remove Item 14 from the scale because the difference between its loadings on the two factors was less than .10 (cross-loading), and the analyses were continued using the remaining items.

Following Varimax rotation, it was determined that the scale exhibited a three-dimensional structure; it was found that these three factors together explained 65.1% of the total variance. The variance explained by each factor was 49.4% for Dimension 1, 5.8% for Dimension 2, and 9.8% for Dimension 3. Upon examining the item-factor loadings, it was observed that factor loadings ranged from .484 to .778 for Dimension 1, from .508 to .813 for Dimension 2, and from .617 to .862 for Dimension 3; across the scale as a whole, loadings ranged from .484 to .862.

Reliability analyses have shown that the scale has high internal consistency. Cronbach's alpha coefficients were calculated as .812 for Dimension 1, .906 for Dimension 2, and .924 for Dimension 3; the scale's overall reliability coefficient was found to be .941. These results indicate that the scale's three-dimensional factor structure is supported in terms of construct validity and that the level of reliability is high for both the subscales and the scale as a whole.

An examination of Table 10 reveals that the adjusted item-total correlations (r_it) for the scale's items range from .380 to .637. This finding indicates that the items are sufficiently related to the construct they are intended to measure and that the items' ability to distinguish the total score is at an acceptable/good level. Furthermore, it is observed that the "Cronbach's alpha when an item is deleted" values range from .874 to .882; removing any single item does not result in a significant increase in the scale's overall internal consistency. These results demonstrate that the items contribute positively to the scale's integrity, that the scale's internal consistency is high, and that reliability at the item level is consistently maintained.

Table 10. *Scale-Adjusted Item-Total Statistics*

Items	(r_it)	A	Items	(r_it)	α
M1	.380	.882	M11	.585	.875
M2	.458	.879	M12	.461	.880
M3	.394	.882	M13	.593	.874
M4	.403	.881	M15	.603	.875
M6	.488	.878	M16	.533	.877
M7	.410	.881	M17	.576	.876
M8	.527	.877	M18	.637	.874
M9	.589	.875	M19	.573	.875
M10	.536	.877	M20	.525	.877

To validate the factor structure obtained through Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA) was applied to a sample of 461 participants. CFA is a method designed to test the extent to which a theoretically defined measurement model aligns with the observed data (Orçan, 2018). In this study, model fit was evaluated by considering the χ^2/df, RMSEA, SRMR, GFI, AGFI, and CFI indices, and the cut-off values commonly used in interpretation were adopted (Hu & Bentler, 1999; Kline, 2011; Schermelleh-Engel et al., 2003). The criteria for the fit indices and the findings regarding CFA are presented in Table 11; the path diagram of the measurement model is shown in Figure 2. The analyses were conducted using SPSS 27 for EFA and AMOS 24 for CFA.

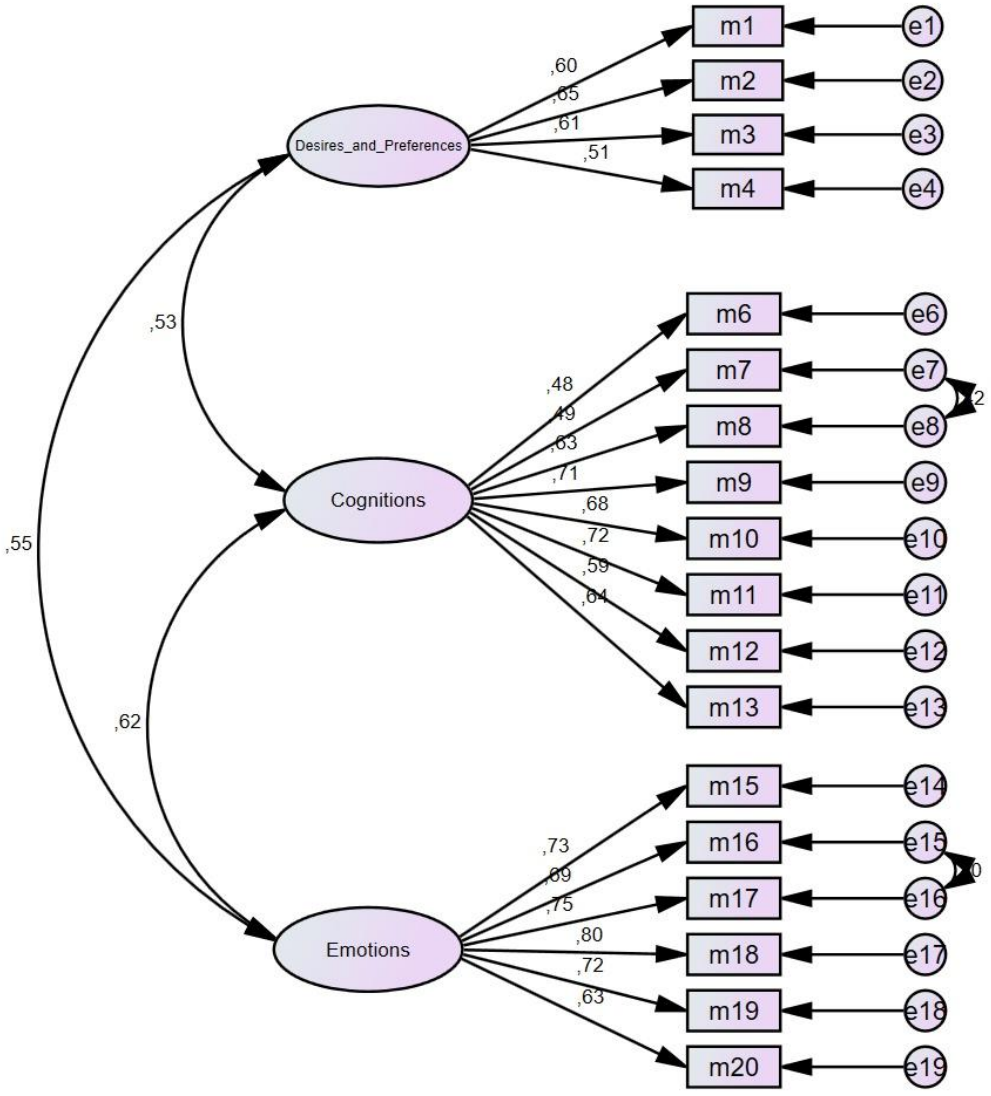

Figure 2. *Confirmatory Factor Analysis*

When the standardized factor loadings (Estimates) of the items related to the relevant factors were examined within the scope of CFA, item m5 was removed from the measurement model because its standardized factor loading remained at .253 (an insufficient loading value), and the analyses were continued using the remaining items. m1 = .603, m2 = .649, m3 = .613, m4 = .514; in the Cognitive Processes dimension, m6 = .483, m7 = .487, m8 = .634, m9 = .706, m10 = .678, m11 = .724, m12 = .587, m13 = .639; and in the Emotions dimension, m15 = .726, m16 = .690, m17 = .752, m18 = .801, m19 = .715, m20 = .629. Overall, the fact that the factor loadings ranged from .483 to .801 indicates that the vast majority of items adequately represent their respective dimensions and that the three-dimensional structure is supported by the CFA results.

In the confirmatory factor analysis conducted in this study to test the scale's theoretically predicted three-dimensional structure, all items were included in the analysis in the initial CFA model; however, it was observed that the standardized factor loading of the fifth item (Item 5) on the relevant factor was below .30. From a psychometric perspective, a low factor loading indicates that the item does not adequately represent the relevant latent structure; therefore, Item 5 was removed from the model and the analyses were repeated. Table 11 presents the factor loadings, explained variance ratios, and reliability coefficients (Cronbach's alpha) obtained after removing Item 5 from the model, along with indicators of sample adequacy and suitability for factor analysis.

Table 11. *Revised Values Following the Deletion of Item 5*

		Factor Effect	Explanation of Factors	Reliability Coefficient (Cronbach's alpha)
Dimension 1	Item 3	.762	34.7	.69
	Item 1	.695		
	Item 2	.648		
	Item 4	.603		
Dimension 2	Item 8	.764	11.2	.84
	Item 10	.728		
	Item 7	.700		
	Item 11	.668		
	Item 12	.639		
	Item 9	.619		
	Item 13	.561		
	Item 6	.461		
Dimension 3	Item 17	.812	8.2	.87
	Item 16	.773		
	Item 18	.754		
	Item 19	.731		
	Item 15	.730		
	Item 20	.624		
Total Variance Explained			54.1	
Kaiser Meyer Olkin (KMO)			.88	
Bartlett's Sphericity Test Chi-Square			3284.99	
Sd			153	
P			.00	

An examination of Table 11 reveals that, after Item 5 was removed from the model during the CFA process, the scale retained its three-factor structure, and the remaining items had acceptable factor loadings on their respective factors. The factor loadings for the first dimension range from .603 to .762, and the Cronbach's alpha reliability coefficient for this dimension was calculated as .69. For the second dimension, the factor loadings of the items range from .461 to .764, and the Cronbach's alpha reliability coefficient for this dimension is .84; for the third dimension, the factor loadings range from .624 to .812, and the reliability coefficient for this dimension is .87. These findings indicate that the reliability levels of the second and third dimensions, in particular, are high, while the reliability of the first dimension is within acceptable limits.

Upon examining the total variance explained, it was determined that the three factors together explained 54.1% of the total variance. Since a total variance explained of over 40% is generally considered sufficient in multifactor scale development studies, the obtained rate of 54% indicates that the factor structure is

psychometrically satisfactory. The KMO value, which indicates the scale's suitability for factor analysis, was found to be .88, demonstrating that the sample size is adequate for the analysis. The result of Bartlett's sphericity test ($\chi^2 = 3284.99$, df = 153, $p < .001$) shows that the correlation matrix is meaningful and suitable for factor analysis. These findings, obtained after Item 5 was removed from the model during the CFA process due to its low factor loading, demonstrate that the scale's three-dimensional structure is both statistically adequate and theoretically consistent.

Since the factor loading for Item 5 was not at an acceptable level according to the results of confirmatory factor analysis, exploratory factor analysis was repeated to reassess the scale's final factor structure after removing the relevant item from the scale. The eigenvalues and variances explained obtained from the final set of items are presented in Table 12.

Table 12. *Updated Eigenvalues and Variances After the Removal of Item 5*

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	6.25	34.7	34.7
2	2.01	11.2	45.9
3	1.47	8.2	54.1

An examination of Table 12 reveals that, after removing item 5, a three-factor structure with eigenvalues greater than 1 emerged. The first factor has an eigenvalue of 6.251 and explains 34.7% of the total variance. The second factor, with an eigenvalue of 2.009, explains 11.16% of the variance, while the third factor, with an eigenvalue of 1.47, explains 8.2% of the variance. Together, the three factors explain 54.1% of the total variance. In scale development studies conducted in the social sciences, it is noted that a range of 40% to 60% of the total variance explained is considered an acceptable level (Hair et al., 1998; Tavşancıl, 2010). Furthermore, a percentage of total variance explained exceeding 50% is considered an important criterion for assessing the ability of the resulting factor structure to represent the construct being measured (Yaşlıoğlu, 2017).

Table 13. *Recommended Cut-off Values for Fit Indices and Fit Values Obtained from CFA*

Fit Measures	Good Fit Values	Acceptable Fit Values	Scale Values	Evaluation
χ^2/df	$0 \leq \chi^2/df \leq 2$	$2 < \chi^2/df \leq 3$	3.010	Acceptable fit
RMSEA	$0 \leq$ RMSEA $\leq$,05	.05 <RMSEA $\leq$ .08	.066	Acceptable fit
SRMR	$0 \leq$ SRMR $\leq$ .05	.05 <SRMR $\leq$ .10	.057	Acceptable fit
GFI	,95 $\leq$ GFI $\leq$ 1.00	.90 $\leq$ GFI <.95	.916	Acceptable fit
AGFI	.90 $\leq$ AGFI $\leq$ 1.00*	.85 $\leq$ AGFI <.90*	.886	Acceptable fit
CFI	.97 $\leq$ CFI $\leq$ 1.00	.95 $\leq$ CFI <.97	.920	Below the acceptable fit threshold

The threshold values presented in Table 13 were used as criteria for interpreting the CFA goodness-of-fit indices. The goodness-of-fit indices obtained in this study were evaluated with these thresholds in mind. Upon examining the model's goodness-of-fit indices, it was determined that the χ^2/df ratio was 3.010 and that this value met the criterion of $2 < \chi^2/df \leq 3$—which indicates that the model exhibits an acceptable level of fit—albeit by a small margin (Kline, 2016; Schermelleh-Engel et al., 2003). Additionally, the RMSEA was calculated as .066 and the SRMR as .057; these values were found to fall within the "acceptable fit range" reported in the literature and to indicate the model's validity (Browne and Cudeck, 1993; Hu and Bentler, 1999; Schermelleh-Engel et al., 2003).

Furthermore, the GFI (.916) and AGFI (.886) values also meet the recommended criteria for acceptable fit. Although the obtained CFI value (.920) falls slightly below the acceptable fit threshold of .95, the literature emphasizes that one should not strictly adhere to a single fit index; rather, the indices should be evaluated as a whole (Hu and Bentler, 1999; Kline, 2016). To provide evidence of the scale's criterion validity, the correlation between the PMMPS and the Parent-Child Communication Scale was calculated and is presented in Table 14.

Table 14. *Criterion Validity Correlation Values*

Dimensions	Problem-solving		Openness to sharing		Respect and acceptance		Sensitivity		Unbiased listening	
	r	p	r	p	r	p	r	p	r	p
Desires and Preferences	.28	.00	.30	.00	.22	.00	.40	.00	.07	.28
Cognitions	.22	.00	.23	.00	.13	.05	.13	.00	.12	.06
Emotions	.23	.00	.22	.00	.20	.00	.33	.00	.03	.58

An examination of Table 14 reveals that the Desires and Preferences dimension is positively correlated with the problem-solving ($r = .28$, $p < .001$), openness to sharing ($r = .30$, $p < .001$), respect and acceptance ($r = .22$, $p < .001$), and sensitivity ($r = .40$, $p < .001$). It was observed that the Cognitions dimension showed positive correlations with the problem-solving ($r = .22$, $p < .001$), openness to sharing ($r = .23$, $p < .001$), respect and acceptance ($r = .13$, $p = .05$), and sensitivity ($r = .13$, $p < .001$) dimensions. The "Emotions" dimension, on the other hand, was found to have positive and significant correlations with the dimensions of problem-solving ($r = .23$, $p < .001$), openness to sharing ($r = .22$, $p < .001$), respect and acceptance ($r = .20$, $p < .001$), and sensitivity ($r = .33$, $p < .001$). No statistically significant relationship was found between parental mind-mindedness and the dimensions of desires and preferences ($r = .07$, $p = .28$), cognitions ($r = .12$, $p = .06$), and emotions ($r = .03$, $p = .58$) and the unbiased listening subdimension of parent-child communication. The lack of a relationship between mind-mindedness and the unbiased listening dimension is attributed to methodological and theoretical differences in the nature of the concepts being measured. From a methodological perspective, the unbiased listening dimension of the Parent-Child Communication Scale consists of items that are reverse-scored and include negative, communication-inhibiting attitudes—such as not taking what the child says seriously, changing the subject when one does not wish to listen, or brushing off what is said as a joke (Kahraman, 2016). It is considered that the fact that a parent does not exhibit such obstructive behaviors when communicating with their child (merely remaining in the role of a passive listener who is not obstructive) does not imply that the parent possesses an active cognitive capacity (mentalization)—such as making sense of, interpreting, and making immediate references to the child's mental processes. In a theoretical context, however, mind-mindedness is not merely about a parent being open to communication or listening to the child; but the parent's ability to perceive the child as an autonomous psychological being with thoughts, feelings, and intentions of their own, and to accurately interpret these internal states and proactively articulate them (cognitive sensitivity) (Meins et al., 2001; Prime et al., 2015). The literature indicates that mind-mindedness is a much more specific and profound orientation that differs from the general quality of verbal communication between a parent and a child or from superficial parenting skills (Rosenblum et al., 2008). The findings indicate low- to moderate-level positive correlations between the scale's dimensions and related constructs, which supports the scale's criterion-related validity.

3.2. Reliability Findings

One of the primary goals in the scale development process is to increase the true variance by minimizing measurement error (DeVellis, 2017). As measurement error decreases, the scale's reliability increases, and the measurement process yields more consistent results (Nunnally & Bernstein, 1994). Accordingly, evidence regarding the scale's reliability was obtained through item-total and item-residual correlation analyses, a comparison of the top and bottom 27% groups, Cronbach's alpha internal consistency coefficient, and test-retest analyses. Item-total and item-residual correlation analyses were conducted to determine whether the items included in the scale made a significant contribution to the total score.

An examination of Table 15 reveals that the adjusted item-total correlation coefficients for the items in the Desires and Preferences dimension ranged from .574 to .678. It was determined that these coefficients ranged from .615 to .708 in the Cognitions dimension and from .657 to .748 in the Emotions dimension. The findings indicate that all items demonstrate a sufficient level of relationship with their respective dimensions and that the items possess high discriminant validity. Furthermore, the fact that the corrected item-total correlation values for all items are above .30 indicates that the scale has strong internal consistency.

Table 15. *Scale-Related Item-Total Statistics Adjusted After CFA*

Desires and Preferences			Cognitions			Emotions		
	(r_it)	α		(r_it)	α		(r_it)	α
i1	.380	.882	i6	.488	.878	i15	.603	.875
i2	.458	.879	i7	.410	.881	i16	.533	.877
i3	.394	.882	i8	.527	.877	i17	.576	.876
i4	.403	.881	i9	.589	.875	i18	.637	.874
			i10	.536	.877	i19	.573	.875
			i11	.585	.875	i20	.525	.877
			i12	.461	.880			
			i13	.593	.874			

A 27% upper-lower group comparison was conducted to determine whether each scale item and the scale factors possessed discriminant validity. In this method, participants' total scale scores are ranked from highest to lowest to identify the top 27% with the highest scores and the bottom 27% with the lowest scores; the remaining 46% is excluded from the analysis (Büyüköztürk, 2012). The significance of the difference between the lower and upper groups is tested using an independent samples t-test. If the t-test results for the items are significant ($p < .05$), this is interpreted as an indication that the item can statistically distinguish between the two groups and is therefore appropriate for inclusion in the scale (Tavşancıl, 2014; DeVellis, 2022). The results of the 27% lower-upper group t-tests conducted in this context are presented in Table 16.

Table 16. *Independent-Samples t-Test Comparing the Upper and Lower 27% Groups*

Items	Groups	N	$\bar{X}$	ss	t	p
I1	Lower group	124	5.65	1.23	10.26	.00
	Upper group	124	6.83	.38		
I2	Lower group	124	5.40	1.29	10.86	.00
	Upper group	124	6.77	.53		
I3	Lower group	124	5.57	1.39	8.13	.00
	Upper group	124	6.73	.75		
I4	Lower group	124	5.55	1.32	8.67	.00
	Upper group	124	6.73	.74		
I6	Lower group	124	5.27	1.35	11.10	.00
	Upper group	124	6.72	.53		
I7	Lower group	124	5.28	1.30	10.25	.00
	Upper group	124	6.65	.70		
I8	Lower group	124	5.16	1.33	12.54	.00
	Upper group	124	6.74	.46		
I9	Lower group	124	5.61	1.25	0.62	.00
	Upper group	124	6.88	.45		
I10	Lower group	124	5.23	1.26	11.85	.00
	Upper group	124	6.69	.56		
I11	Lower group	124	5.40	1.28	12.02	.00
	Upper group	124	6.85	.38		
I12	Lower group	124	5.17	1.37	11.42	.00
	Upper group	124	6.72	.64		
I13	Lower group	124	5.10	1.39	12.78	.00
	Upper group	124	6.78	.45		
I15	Lower group	124	5.60	1.31	11.34	.00
	Upper group	124	6.95	.22		
I16	Lower group	124	5.49	1.51	10.76	.00
	Upper group	124	6.96	.20		
I17	Lower group	124	5.61	1.25	11.47	.00
	Upper group	124	6.94	.28		
I18	Lower group	124	5.58	1.18	12.80	.00
	Upper group	124	6.96	.20		
I19	Lower group	124	5.21	1.41	12.78	.00

	Upper group	124	6.89	.39		
I20	Lower group	124	5.40	1.37	10.95	.00
	Upper group	124	6.81	.45		
Desires and Preferences	Lower group	124	5.54	.86	14.71	.00
	Upper group	124	6.76	.34		
Cognitions	Lower group	124	5.20	.74	20.34	.00
	Upper group	124	6.64	.29		
Emotions	Lower group	124	5.48	.92	17.10	.00
	Upper group	124	6.92	.15		

An examination of Table 16 reveals that the differences between the high- and low-scoring groups for all items and factors on the scale are statistically significant ($p < .001$). These findings indicate that all items and factors on the scale meet the criterion for discriminant validity.

For a measurement instrument to be considered reliable, it must produce consistent and stable results under different testing conditions. In this context, reliability is defined as a fundamental psychometric criterion that reflects the degree of stability of the scores obtained from the measurement (Büyüköztürk, 2012; Tavşancıl, 2014). The results of the analysis regarding the scale's test-retest reliability are presented in Table 17.

Table 17. *Test–Retest Correlation Coefficients*

Desires and Preferences		Cognitions		Emotions	
Item	r	Item	R	Item	r
i1	.511	i6	.667	i15	.768
i2	.682	i7	.489	i16	.483
i3	.714	i8	.582	i17	.596
i4	.643	i9	.646	i18	.575
		i10	.524	i19	.358
		i11	.750	i20	.375
		i12	.640		
		i13	.481		
Desires and Preferences			.653		
Cognitions			.792		
Emotions			.893		

An examination of Table 17 reveals that the test-retest correlation coefficients for the items in the Desires and Preferences dimension ranged from .511 to .714. It was determined that these values ranged from .481 to .750 in the Cognitions dimension and from .358 to .768 in the Emotions dimension. The test-retest correlation coefficients obtained at the dimension level were found to be .653 for the "Desires and Preferences" dimension, .792 for the "Cognitions" dimension, and .893 for the "Emotions" dimension.

The findings indicate that the scale demonstrates adequate stability over time at both the item and dimension levels. In particular, the fact that the correlation coefficients for the dimensions are at moderate to high levels demonstrates that the scale provides consistent measurements over time and that its test-retest reliability is at an adequate level.

4. Discussion, Conclusion and Recommendations

A review of the literature reveals that parental mind-mindedness has far-reaching and long-term effects on a child's cognitive, social-emotional, and academic development (Aldrich et al., 2021; McMahon and Bernier, 2017). In this context, while parental mind-mindedness is recognized as an important parental trait, the literature reveals a limited number of data collection tools designed to measure parents' tendencies toward mind-mindedness. In the literature, this parental trait has been measured using interview (representational) and observation (interactive) methods—based on the coding of parental narratives or free-play interactions—as developed by Meins and Fernyhough (2015); however, no standard self-report (survey) instrument has been found that practically assesses this specific construct. Furthermore, a review of studies conducted in Turkey on this topic (Akyüz, 2024; Demirkan and Yeşilyaprak, 2023; Karaalioğlu, 2024) reveals that researchers have also employed the open-ended interview and interactive observation coding methods developed by Meins and Fernyhough (2015). Considering that individuals interpret reality not objectively but through their own cognitive filters (Kahneman, 2011); it is understood that parents' perceptions of their children—including their

beliefs, expectations, and attributions—constitute the fundamental mechanism governing their parenting behaviors and interactions with their children (Bugental and Johnston, 2000; Duncan et al., 2009; Johnston et al., 2018). From this perspective, the lack of a self-report scale that assesses parental mind-mindedness based on parents' perceptions was identified as a significant need; to address this need, a study was conducted to develop a valid and reliable scale that measures parents' tendencies toward mind-mindedness based on their own perceptions.

The development of the scale was based on the coding guide for parent-child mind-mindedness by Meins and Fernyhough (2015), which identifies the core dimensions of parent-child mind-mindedness. As part of the scale development process, a literature review was conducted to identify the dimensions of the parental mind-mindedness perception and to establish an item pool. (e.g., Aldrich et al., 2021; Fishburn et al., 2022; Laranjo et al., 2014; McMahon and Bernier, 2017; Meins, 1997; Meins et al., 2001; Meins and Fernyhough, 2015; Zeegers et al., 2017). Since no parental mind-mindedness perception scales have been developed in this field, the Parent Reflective Functioning Scale (Luyten et al., 2017)—which is one of the parental components closest to the concept of mind-mindedness (Luyten et al., 2020; Sharp and Fonagy, 2008), as well as the Parental Reflective Functioning Scale (Luyten et al., 2017)—which is one of the parental components and the concept closest to "mind-mindedness"—and the Turkish adaptation of this scale, specifically its short-form version, the Parental Internalizing Functioning Scale (Arıkan et al., 2020), were examined. In addition, studies conducted in Turkey related to mind-mindedness were reviewed (Akkor, 2025; Akyüz, 2025; Algan, 2021; Demirkan & Yeşilyaprak, 2023; Gürtunca Hanif, 2023; Karaalioğlu, 2024; Yılmaz, 2017). When conceptualizing the factor structure of the developed scale, the Mind-Mindedness Coding Guide created by Meins and Fernyhough (2015) was used as a basis, and the structure was designed as a three-dimensional model. Although mental references are operationalized in the relevant coding guide primarily into five distinct categories (desires and preferences, cognitions, emotions, epistemic states, and speaking on behalf of the infant), in the present study, this framework has been redefined based on the triadic fundamental classification of the mind—"cognition (knowing), affect (feeling), and volition (desiring/willing)"—as proposed by philosophical and fundamental psychological approaches (Gödelek, 2011). Within the context of this theoretical simplification, "epistemic states"—which include humorous elements such as joking, teasing, or playfulness in the parent's interaction with the child—have been evaluated under the "cognitions" dimension, which serves as a higher-order mental umbrella. On the other hand, the "speaking on behalf of the infant" dimension included in the guide was not treated as an independent factor. The primary rationale for this is that the essence of mind-mindedness lies in the principle that parents accurately read the child's mental state and provide feedback using a mental state language appropriate to that state. Since the scale items are currently structured to encompass the parent's act of speaking on behalf of the child's mind (e.g., "I understand that my child is anticipating something and I tell him/her so"), it was decided to conceptualize this form of interaction not as a separate dimension but as a fundamental expression mechanism that cuts across all subdimensions. For content validity, 8 experts evaluated the 50 items, and as a result of the comparison conducted according to the coverage validity criterion proposed by Lawshe, the CVR critical value was determined to be .75 at the α=.05 significance level for the 8 experts in this study; based on this critical value, the 19 items for which the experts indicated they were "inappropriate" were removed. Additionally, based on feedback from the experts, 7 items from the remaining 31 that were deemed to measure the same or similar characteristics were removed from the draft form; the CVI value for the remaining 24 items was calculated as .83, resulting in a 24-item form for the pilot study. Subsequently, the 24-item pilot form was administered online to 67 parents via Google Forms. Based on the analysis results of the pilot study, it was observed that the difference between the cross-factor loadings on 4 items was insufficient—that is, the items showed "overlapping" , and in light of feedback from face-to-face interviews with parents regarding the clarity of these items, these items were removed from the scale, resulting in the final 20-item version to be used in the main study. Data were collected from five different study groups in conjunction with the pilot study to assess the scale's validity and reliability. The normality, KMO, and Bartlett's test values of the EFA and CFA data sets were examined, and the data were found to be suitable for factor analysis.

The Tukey ANOVA test for nonadditivity, conducted using the EFA dataset, showed that while total scores could not be derived from the scale, analysis and evaluation could be performed using the scores obtained from the factors. According to Hotelling's T2 test, it was found that the items were perceived differently by a heterogeneous group.

The EFA conducted using data collected from the first study group, consisting of 380 participants, revealed a three-factor structure with 20 items, all with eigenvalues greater than 1. Based on the literature, the factors were named "Desires and Preferences," "Cognitive Processes," and "Emotions." This three-factor structure explained 54.1% of the total variance. To determine whether this structure was valid, a CFA was conducted on a second study group consisting of 461 participants. When the goodness-of-fit indices (χ^2/df ratio, CFI, GFI, RMSEA, RMR, and SRMR) obtained from the CFA were compared with those of the revised model—which excluded item 5—it was observed that it was determined that the χ^2/df ratio was 3.010 and that this value met the cutoff criterion of $2 < \chi^2/df \leq 3$—which indicates the model demonstrates an acceptable level of fit—albeit by a small margin (Kline, 2016; Schermelleh-Engel et al., 2003). Additionally, the RMSEA was calculated as .066 and the SRMR as .057; it was found that these values fall within the "acceptable fit range" as defined in the literature and indicate the model's validity (Browne and Cudeck, 1993; Hu and Bentler, 1999; Schermelleh-Engel et al., 2003). Furthermore, the GFI (.916) and AGFI (.886) values also meet the recommended acceptable fit criteria. Although the CFI value obtained (.920) falls slightly below the acceptable fit threshold of .95, the literature emphasizes that one should not strictly adhere to a single fit index; rather, indices should be evaluated as a whole (Hu and Bentler, 1999; Kline, 2016). To assess criterion validity, the correlation between the PMMPS and the Parent-Child Communication Scale was examined, and it was found that the correlation coefficients between the subdimensions of these scales ranged from .03 to .40. The positive correlation between these two scales can also be considered an indicator of concurrent validity.

To determine the discriminant validity of the scale items, a 27% lower and upper group analysis was conducted. The results of the 27% lower and upper group analysis for all scale items showed that the t-values were significant and the discriminant validity values were high. These results indicate that, since the PMMPS's item discrimination values and all items yielded significant results within the 27% lower and upper groups, the scale can be used to assess parents' perceived levels of mind-mindedness according to its subdimensions.

The test-total and test-residual correlation coefficients for the items demonstrate that the scale items are important and necessary for measuring the construct. To determine the scale's reliability, the reliability coefficient was calculated using Cronbach's alpha, and it was concluded that the PMMPS is reliable for assessing parents' perceived mind-mindedness. In conclusion, this study has contributed a valid and reliable scale to the field for assessing parents' perceived levels of mind-mindedness. The PMMPS, with its proven validity and reliability, can be used by practitioners and researchers in various applications and in studies involving different variables.

To ensure the scale can be used throughout Türkiye and internationally, future studies could test its validity through confirmatory factor analysis and calculate the reliability coefficient to provide evidence of measurement consistency. This scale will enable the identification of parents' levels of parental mind-mindedness based on its subdimensions; it will serve as a fundamental data collection tool for both screening studies and intervention programs aimed at enhancing parenting skills.

Declarations

Declaration of Generative AI and AI Assisted Technologies: During the preparation of this manuscript, the author(s) used [Tool Name and Version] to improve language quality, grammar, readability, and/or text organization. All AI generated outputs were carefully reviewed, revised, and verified by the author(s). The author(s) take full responsibility for the accuracy, integrity, and originality of the content presented in this manuscript.

Ethical approval: The authors obtained ethical approval for the study from Fatih Sultan Mehmet Vakıf University (Paper No: 2024-41/01 L Date: 07/11/2024), the Ethics Committee Graduate Education Institute. The research was conducted in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all student participants as well as their parents. Additionally, necessary permissions were secured from school administrators and classroom teachers prior to data collection.

Conflict of interest: The authors declare that there is no conflict of interest.

Consent for publication: Written informed consent for publication was obtained from all participants and/or their legal guardians.

Availability of data and materials: The datasets generated and analyzed during the current study are not publicly available due to institutional policies and participant confidentiality. However, they are available from the corresponding author upon reasonable request.

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Authors' contributions: S.Ş. conducted the research and was responsible for data collection, data analysis, and manuscript preparation. F.A. provided supervision and guidance throughout the research process and critically reviewed the manuscript. Both authors approved the final version of the manuscript.

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