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Measurement of parent–child quality time: psychometric properties, measurement invariance, and demographic differences

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This study aims to develop valid and reliable instruments for measuring parent–child quality time from both parent and children's perspectives, and to examine differences across demographic variables using these scales. Two versions of the Parent–Child Quality Time Scale (PCQTS) were developed for parents and children. The sample comprised 1971 children and 1684 parents who participated across three administrations in 2025. Exploratory and confirmatory factor analyses indicated a two-factor structure for both forms: "Quality of Time Spent Together" and "Planning Time and Doing Activities Together". Item response theory analyses showed that items had high level of discrimination. In addition, measurement invariance was supported across gender and school level. Demographic comparisons revealed statistically significant differences in perceived quality time associated with parental education, household income, child's school level, and number of siblings. These findings suggest that the PCQTS instruments make a useful contribution to the literature and can be employed effectively in family-focused intervention programs.

Keywords Parent–child quality time, Scale development, Item response theory, Measurement invariance

Parent–Child Quality Time is a construct that prioritizes not only the quantitative amount of time spent together but also the extent to which that time is emotionally enriching, grounded in reciprocal interaction, and supportive of developmental processes. Such interactions foster children's cognitive, emotional, and social development, strengthen the parent–child bond, and enhance self-esteem[1], and children of parents who spend quality time with them show higher self-regulation, stronger emotional intelligence, and superior academic achievement[2,3]. Children who feel unconditionally accepted and listened to by their parents express their emotions more freely and develop greater self-confidence[4], and parental engagement in quality time positively influences children's emotional expression[5]. These interactions also reinforce social competencies such as empathy and cooperation[6], and support language development, problem-solving abilities, and attentional capacity[7], underscoring the vital role of early parent–child interactions in cognitive growth[8].

Several instruments have been developed to measure parent–child interaction, such as the Child-Parent Relationship Scale (CPRS) and the Mothers Object Relations Scales (MORS)[9], the Helicopter Parenting Attitude Scale (HPAS)[10], the Self-Regulation Skills Scale[3], and the Emotional Intelligence Scale[2]. However, these tools mainly focus on attachment styles or socio-emotional development rather than the operational behavioral patterns of quality time, and they either approach parent–child interaction entirely quantitatively or correlate it with parenting attitudes rather than addressing family time as a unique, multidimensional construct. To fill this gap, we developed the Parent–Child Quality Time Scale in child and parent forms, aiming to objectively measure not only the level of interaction between them, but also the two-way emotional depth and structural planning of the time spent together from the perspectives of both the child and the parent.

Drawing on Bronfenbrenner's Ecological Systems Theory, Vygotsky's Sociocultural Theory of Cognitive Development, and Landry's Responsive Parenting framework, quality time was hypothesized to comprise a

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two-dimensional structure: an "affective-interactional" dimension, encompassing emotional closeness, mutual enjoyment, and open communication, and a "structural-behavioral" dimension, encompassing the active organization of activities, daily routines, and collaborative planning.

This study was conducted in Türkiye, and both scale forms were developed and administered in Turkish with Turkish-speaking children and parents. Accordingly, the primary aim of the present study is to determine the psychometric properties of two newly developed measurement tools: the Parent–Child Quality Time Scale-Child Form (PCQTS-C) and the Parent–Child Quality Time Scale-Parent Form (PCQTS-P). that assess not only the level of child-parent interaction, but also the emotional richness, mutual interaction, and developmental support of this shared time from both perspectives. The scales are intended for use by academicians, researchers, family therapists, and psychological counselors within family-focused intervention programs and developmental research. This study also compares scores obtained by children and parents across various demographic variables, such as the child's gender, parents' education level, household income, and number of siblings, and examines the predictive value of these variables for the scores obtained from the child and parent forms.

Methods

Participants

The participants consisted of children aged 7–14 attending primary and lower-secondary (middle) school, and their parents (defined strictly as mother or father, rather than a generalized caregiver). Data were collected in three phases: April 2025 for exploratory factor analysis (EFA), the first half of May 2025 for confirmatory factor analysis (CFA), and the second half of May 2025 for item response theory (IRT) analyses, measurement invariance (MI) testing, and demographic group comparisons. Descriptive statistics for participants across all three phases are presented in Table 1.

The research was conducted in the Edremit and Havran districts of Balıkesir province, with a total student population of 16,955 across primary and middle schools; the parent population consisted of these students' mothers and fathers, although data were not collected as matched parent–child dyads. Sampling maintained the

Child participants (n = 387; 399; 1185)					Parent participants (n = 317; 347; 1020)				
Variable		First round — for EFA	Second round — for CFA	Third round — for IRT, MI & group comparisons	Variable		First round — for EFA	Second round — for CFA	Third round — for IRT, MI & group comparisons
		n(%)	n(%)	n(%)			n(%)	n(%)	n(%)
School Attended	Primary school	178(46)	184(46.1)	551(46.5)	Child's school attended	Primary school	203(64.0)	227(65.4)	597(58.5)
	Lower secondary (middle) school	209(54)	215(53.9)	634(53.5)		Lower secondary (middle) school	114(36.0)	120(34.6)	423(41.5)
Gender	Girl	187(48.3)	190(47.6)	571(48.2)	Gender	Woman	214(67.5)	239(68.9)	685(67.2)
	Boy	200(51.7)	209(52.4)	614(51.8)		Man	103(32.5)	108(31.1)	335(32.8)
Mother's education	Primary education	131(33.9)	137(34.3)	432(36.5)	Education level	Primary education	81(25.6)	95(27.4)	284(27.8)
	High School	160(41.3)	164(41.1)	432(36.5)		High School	97(30.6)	108(31.1)	288(28.2)
	Higher Education	96(24.8)	98(24.6)	320(27.0)		Higher Education	139(43.8)	144(41.5)	448(43.9)
Mother's occupation	Homemaker (not employed)	225(58.1)	233(58.4)	664(56.0)	Occupation	Homemaker (not employed)	143(45.1)	159(45.8)	414(40.6)
	Farmer	7(1.8)	7(1.8)	15(1.3)		Not employed-other	22(6.9)	23(6.6)	74(7.3)
	Civil servant	47(12.1)	48(12.0)	159(13.4)		Farmer	3(0.9)	5(1.4)	10(1.0)
	Private-sector employee	68(17.6)	69(17.3)	207(17.5)		Civil servant	63(19.9)	65(18.7)	214(21.0)
	Self-employed	33(8.5)	34(8.5)	116(9.8)		Private-sector employee	44(13.9)	48(13.8)	166(16.3)
	Retired	7(1.8)	8(2.0)	24(2.0)		Self-employed	31(9.8)	36(10.4)	95(9.3)
						Retired	11(3.5)	11(3.2)	47(4.6)
Father's education	Primary education	106(27.4)	108(27.1)	335(28.3)	Household income	Less than expenses	58(18.3)	66(19.0)	194(19.0)
	High School	169(43.7)	175(43.9)	467(39.4)		Equal to expenses	222(70.0)	239(68.9)	687(67.4)
	Higher Education	112(28.9)	116(29.1)	383(32.3)		Greater than expenses	37(11.7)	42(12.1)	139(13.6)
Father's occupation	Not employed	19(4.9)	20(5.0)	58(4.9)	Number of children	Only child	70(22.1)	75(21.6)	202(19.8)
	Farmer	17(4.4)	18(4.5)	36(3.0)		Two or more siblings	247(77.9)	272(78.4)	818(80.2)
	Civil servant	70(18.1)	71(17.8)	238(20.1)	**Total**		317(100)	347(100)	1020(100)
	Private-sector employee	105(27.1)	109(27.3)	348(29.4)					
	Self-employed	146(37.7)	150(37.6)	412(34.8)					
	Retired	30(7.8)	31(7.8)	93(7.8)					
Total		387(100)	399(100)	1185(100)					

Table 1. Distribution of child and parent participants by demographic characteristics. *EFA* exploratory factor analysis, *CFA* confirmatory factor analysis, *IRT* item response theory, *MI* measurement invariance. Percentages are column percentages within each phase.

approximate 5:1 ratio between the two districts and a balanced grade-level distribution, and no student or parent participated in more than one phase (EFA, CFA, or IRT).

Development of the draft forms of the PCQTS (child and parent forms)

Three complementary strategies were used to develop the draft PCQTS forms. First, a literature review generated candidate items. Second, open-ended responses were elicited from 23 children and 21 parents, recruited to represent the target population and districts, by asking what comes to mind when thinking of parent–child quality time; responses were content-analyzed to generate additional items. Third, five academic experts in psychology, family therapy, and counseling reviewed the resulting item pools (29 items for the parent form, 28 for the child form), after which unsuitable items were removed, yielding pilot versions of 17 items (Parent Form) and 15 items (Child Form). No items were reverse-scored. A 5-point Likert format was adopted (strongly disagree to strongly agree), consistent with evidence that five-category formats perform well[11] and to maximize categorical discrimination in IRT analyses. A Turkish-language specialist reviewed the wording of all items, and a pilot study with 83 children and 74 parents checked the comprehensibility of items and response options.

Process

The study was completed by following the procedural steps illustrated in Fig. 1.

As shown in the figure, the process began with candidate item generation through a literature review and open-ended responses from children and parents, followed by expert panel review and linguistic editing, and a pilot study to check item comprehensibility. The finalized forms were then administered across three separate phases: the first for exploratory factor analysis (EFA), the second for confirmatory factor analysis (CFA), and the third for item response theory (IRT) analyses, measurement invariance testing, and demographic group comparisons.

Data analysis

All statistical analyses were conducted in JAMOVI and R. The datasets were checked to ensure there were no missing values due to strict field controls during face-to-face administrations.

In each data file multivariate normality was evaluated using the Henze-Zirkler, Mardia, and Doornik-Hansen methods. To identify outliers, Mahalanobis distance (D^2) values were calculated. Multicollinearity among scale items was evaluated using variance inflation factors (VIF).

Sample adequacy and factorability of the correlation matrices were verified using the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity. Explanatory Factor Analysis (EFA) was subsequently executed using the Principal Axis Factoring (PAF) extraction method. The number of factors in the EFA was determined

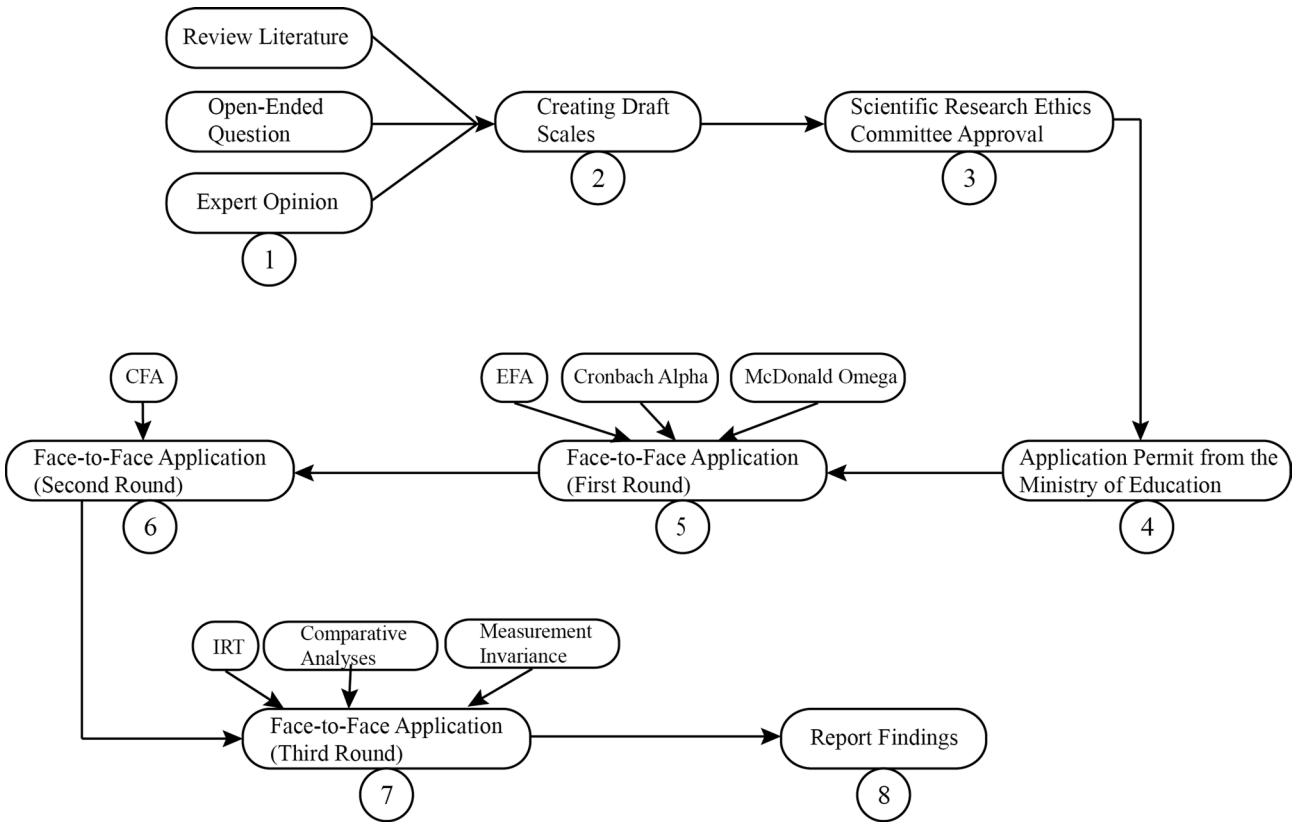


Fig. 1. Procedural steps of the study.

using the "Eigenvalue" criterion; the reference value was taken as "1". Following extraction, an oblique (oblimin) rotation method was applied to optimize the factor structure. Items demonstrating weak factor loadings (< 0.30) were systematically removed from the final structures.

Confirmatory Factor Analysis (CFA) was then conducted on a separate sample to cross-validate the EFA-derived structures. Model adequacy was evaluated using the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), and the chi-square to degrees-of-freedom ratio (χ^2/df). Internal consistency and scale reliability were evaluated using Cronbach's alpha, McDonald's omega, and Marginal Reliability coefficients. Regarding CFA model fit, values of $0.90 \leq CFI/TLI \leq 0.94$ and $0.05 \leq RMSEA \leq 0.08$ were accepted as acceptable limits, following established guidelines in the literature[12–14].

Item Response Theory (IRT) analyses were implemented using the Generalized Partial Credit Model (GPCM), and for each scale item the discrimination and difficulty values were examined. Local independence was tested using the Q3 statistic[15], and IRT calibrations were performed in R v.4.1.2 using the mirt v1.30 package[16]. A critical value of 0.20 was adopted for the local-dependence check.

MI was examined across gender and school level, and convergent and discriminant validity were evaluated as follows. For the Child Form (PCQTS-C), the Alabama Parenting Questionnaire-Child Form (APQ-CF) was used as the criterion tool. This scale was developed by Frick[17] to evaluate the attitudes and behaviors exhibited in parenting roles from the perspective of children, and it was adapted into Turkish culture by İspenoğlu and Çekiç[18]. It is a 5-point Likert-type measurement tool consisting of 35 items applicable to children at the primary and middle school levels, comprising five sub-dimensions—Parental Involvement and Positive Parenting, which predict positive parenting patterns, and Poor Monitoring/Supervision, Inconsistent Discipline, and Corporal Punishment, which measure negative processes. For the Parent Form (PCQTS-P), the Parent–Child Relationship Scale (PCRS) was used as the criterion tool. This scale was developed by Hetherington and Clingempeel[19] to measure the quality of the parent–child relationship along its positive and negative aspects, and it was adapted into Turkish culture by Aytaç et al.[20]. It consists of 15 items in a 5-point Likert format, comprising two sub-dimensions, Positive and Negative Parent–Child Relationship; in the Turkish form, internal consistency coefficients were reported as 0.81 for the positive relationship dimension and 0.80 for the negative relationship dimension.

Finally, utilizing the validated scale forms, group-based comparative analyses were conducted via independent-samples t-tests and one-way ANOVAs. Concurrently, multivariate multiple regression analyses were performed to simultaneously evaluate the controlled predictive levels of the categorical demographic variables (dummy-coded as independent variables) on the multiple subfactor dimensions of the parent and child quality time scales.

Results

First round

Data file screening

Missing-data analyses were conducted across six datasets (child and parent samples for EFA, CFA, and IRT). No missing data were identified. Multivariate normality was examined using the Henze-Zirkler, Mardia, and Doornik-Hansen procedures; multivariate normality was not satisfied (p<.05). Outlier screening indicated that 12 cases in the child dataset and 30 cases in the parent dataset were extreme values; these observations were removed prior to analysis. In the multicollinearity assessment, variance inflation factor (VIF) values in the child dataset ranged from 1.53 to 2.31 and in the parent dataset from 2.31 to 3.82. As all VIF values were below 10, no multicollinearity problem was indicated[21]. KMO and Bartlett's test of sphericity results were as follows:

- Child EFA dataset: KMO = 0.927; Bartlett's χ^2 = 1899, p<.05.
- Parent EFA dataset: KMO = 0.955; Bartlett's χ^2 = 4140, p<.05.

These values indicate adequate sample adequacy and factorability for EFA[22–24].

Factor retention

Eigenvalues from the PAF, EFA indicated two candidate factors (Eigenvalue > 1) for both the child and parent forms. For the Child Form, the first factor had an eigenvalue of 5.06 (explained variance 32.6%) and the second factor 1.01 (21.7%). For the Parent Form, the first factor's eigenvalue was 8.79 (41.3%) and the second 1.32 (28.0%). In total, the proportions of variance explained fall within commonly accepted ranges in the literature[25,26].

In the two-factor Child Form, items 5, 13, and 14 exhibited factor loadings < 0.30 and were removed, leaving 12 items. In the two-factor Parent Form, items 1 and 15 had loadings < 0.30 and were removed, yielding 15 items in the final version. To determine the factor of the remaining items in both forms, an oblimin rotation was applied. The item-factor pattern resulting from this rotation, including item wording, factor loadings, and communalities, is presented in Supplementary Table S1.

Following oblimin rotation for the Child Form, eight items loaded on Factor 1 (Quality of Time Spent Together) and four items on Factor 2 (Planning Time and Doing Activities Together). Post-rotation factor loadings ranged from 0.426 to 0.824. The factors were named based on the content of their constituent items. For the Parent Form, oblimin rotation indicated nine items on Factor 1 (Quality of Time Spent Together) and six items on Factor 2 (Planning Time and Doing Activities Together). Post-rotation loadings ranged from 0.627 to 0.953. The factors were named after reviewing the item content under each factor.

Although the number of items differed between forms, both the child and parent factors received the same names based on item content, suggesting that quality time is perceived similarly from both perspectives.

Scale or Sub-Factor		Cronbach Alpha	McDonalds Omega	Marjinal
PCQTS-C	Scale Total Score	0.891	0.896	–
	Quality of Time Spent Together (F1)	0.880	0.883	0.799
	Planning Time and Doing Activities Together (F2)	0.761	0.762	0.742
PCQTS-P	Scale Total Score	0.950	0.955	–
	Quality of Time Spent Together (F1)	0.954	0.956	0.901
	Planning Time and Doing Activities Together (F2)	0.917	0.917	0.893

Table 2. Reliability Coefficients for the Child and Parent Forms.

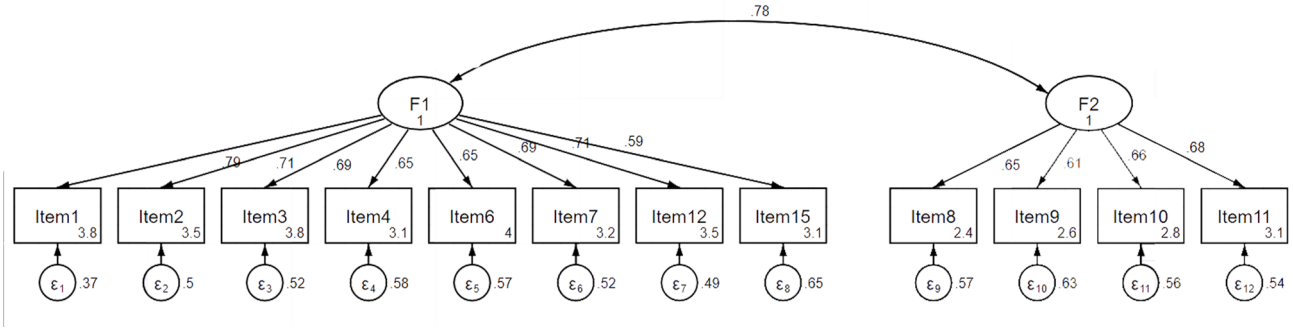


Fig. 2. CFA path diagram for the two-factor structure of the Child Form.

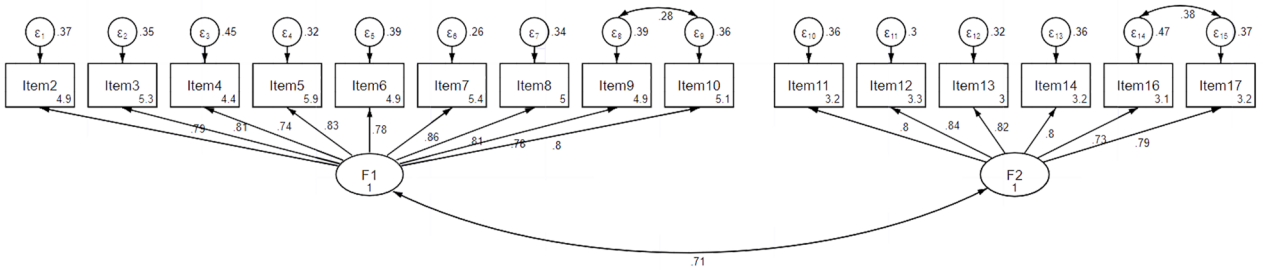


Fig. 3. CFA path diagram for the two-factor structure of the Parent Form.

Reliability analysis

The reliability analysis of the Child and Parent Forms was conducted using Cronbach's alpha and McDonald's omega. The 14 items were subjected to reliability analyses both as if constituting a single-factor scale and separately under a two-factor structure (Table 2).

The reliability coefficients obtained for the Child and Parent Forms were 0.70 or higher. According to Nunnally and Bernstein[27], adequate reliability should be at least 0.70.

Second round

Confirmation of the factor structure of the child and parent forms

As a result of the EFA, the Child Form was found to consist of a total of 12 items, with eight items loading on Subfactor 1 and four items on Subfactor 2. Likewise, EFA indicated that the Parent Form comprised 15 items in total, with 9 items loading on Subfactor 1 and 6 items on Subfactor 2. The CFAs conducted in this round utilized independent samples applying the revised instruments, which included reduced pool of items obtained immediately after the exploratory factor analyses from Round 1. The path diagrams obtained for the Child Form are presented in Figs. 2 and 3.

CFA fit indices for the Child Form were: CFI = 0.950, TLI = 0.937, RMSEA = 0.066, SRMR = 0.044, and $\chi^2(53) = 145.848$, $p<.05$. For the Parent Form, the fit indices were: CFI = 0.946, TLI = 0.935, RMSEA = 0.079, SRMR = 0.045, and $\chi^2(87) = 301.854$, $p<.05$. Based on the acceptable-fit criteria specified in the Methods section, the TLI and RMSEA values for the Child Form, and the CFI, TLI, and RMSEA values for the Parent Form are within acceptable limits. All other values fell within excellent model fit limits[12–14,21,28–31]. Overall, the CFA results support the confirmation of the EFA-derived factor structures for both the Child and Parent Forms. When Fig. 3 is examined, it will be seen that two modifications were made between items 9 and 10, and items 16 and 17. These

Child Form*			Parent Form**		
Items	Factor 1	Factor 2	Items	Factor 1	Factor 2
1	0.791		2	0.793	
2	0.706		3	0.805	
3	0.693		4	0.741	
4	0.649		5	0.826	
6	0.654		6	0.781	
7	0.689		7	0.863	
12	0.713		8	0.811	
15	0.589		9	0.779	
8		0.655	10	0.799	
9		0.612	11		0.799
10		0.663	12		0.838
11		0.679	13		0.822
			14		0.798
			16		0.731
			17		0.792

Table 3. Factor Loadings for the Child and Parent Forms in the CFA Results. Factor covariances *Child Form F1-F2: 0.778. **Parent Form F1-F2: 0.710.

Child Form						Parent Form					
Measurement invariance		RMSEA	CFI	TLI	ΔCFI	Measurement invariance		RMSEA	CFI	TLI	ΔCFI
Gender	Configural	0.063	0.958	0.949		Gender	Configural	0.080	0.935	0.927	
	Metric	0.061	0.957	0.946	0.000		Metric	0.079	0.935	0.927	0.000
	Scalar	0.060	0.956	0.945	0.001		Scalar	0.077	0.932	0.925	0.001
	Strict	0.058	0.957	0.947	0.005		Strict	0.076	0.933	0.926	0.007
Level	Configural	0.068	0.951	0.940		Child's Educ. Level	Configural	0.079	0.936	0.927	
	Metric	0.065	0.953	0.942	0.000		Metric	0.078	0.935	0.927	0.000
	Scalar	0.062	0.954	0.943	0.001		Scalar	0.076	0.939	0.932	0.001
	Strict	0.061	0.953	0.942	0.005		Strict	0.074	0.941	0.934	0.006

Table 4. MI results.

modifications were based on the semantic proximity and shared variance of the affected items and improved model fit. The factor loadings of the items obtained as a result of the CFA are presented in Table 3.

When Table 4 is examined, it is seen that the factor loadings of the Child form range between 0.589 and 0.791 for F1, and between 0.612 and 0.679 for F2; while the factor loadings of the Parent form range between 0.741 and 0.863 for F1, and between 0.731 and 0.838 for F2. The inter-factor covariances were determined as 0.778 for the Child form and 0.710 for the Parent form.

Third round

IRT analyses: evidence for validity and reliability

In the third phase, the items retained after the CFA were administered to 1185 participants for the Child Form and to 1020 participants for the Parent form. These datasets were then analyzed within the IRT framework. For IRT scale analyses, the assumptions of unidimensionality and local independence were examined[32]. In this study, unidimensionality was investigated via EFA; the factor-analytic results indicated a two-factor structure for both the Child and Parent forms. Accordingly, in the IRT analyses the two subfactors in each form were treated as independent latent dimensions. Local independence was tested using the Q3 statistic, and IRT calibrations were performed. No items were found to violate local independence in the IRT analyses. Item calibrations within the IRT framework were performed using the Generalized Partial Credit Model (GPCM). Item-level discrimination and difficulty parameters, item fit statistics, and log-likelihood values for both forms are presented in Supplementary Table S2.

Within the IRT framework, item fit was evaluated using RMSEA, with values ≤ 0.080 interpreted as indicative of acceptable fit[33]. The RMSEA values for items on both the child and parent forms indicated adequate item-level fit in the IRT analyses. The Scaled Pearson Chi-square Index (S_χ^2) was also used to assess how well the IRT model fit each item[34]; the associated significance values (p>.05) supported item fit. Based on GPCM estimations (LogLikelihood, p<.05), overall model-item fit was achieved. For item parameter interpretation, discrimination (a) values in the range of 0.75–2.50 are considered acceptable[35], and difficulty (b) values between − 1.00 and 1.00

indicate desirable item difficulty[36]. The IRT results showed that the discrimination levels of some items exceeded 2.50; likewise, several items exhibited difficulty parameters outside the ideal [−1.00, 1.00] range.

Item information functions and item response functions for the child and parent forms are presented in the Supplementary File. The item information function is a graphical depiction of the range of the latent trait (the construct assessed by the scale) over which an item best discriminates among respondents[37]. The item response function—also called the item response curve—expresses, for a given level of ability (θ), the probability that a respondent will endorse a particular response category (or answer correctly in dichotomous items)[38]. In Likert-type items, the item response function shows how the response options operate across the trait continuum.

Inspection of the plots indicated that, for both the child and parent forms, items provide high information about the target construct (parent–child quality time). In the Parent Form Factor 1, Items 4, 6, 9, and 10 yield high information but, relative to the remaining items in that factor, provide comparatively less information. When the item characteristic curves are examined, the "disagree" option did not perform as well as other options for most items. Therefore, individuals with negative opinions regarding these items are more likely to directly choose the most negative option. Of course, the fact that there is no point where the "agree" option is most likely to be chosen does not mean that participants will never choose this option. However, participants with negative opinions are more likely to express their negative opinion by giving the most extreme answer. Nevertheless, the graphs also show that, overall, the items operate coherently with the response set.

Evidence for measurement invariance (MI)

MI constitutes a fundamental prerequisite for meaningful group comparisons within the structural equation modeling (SEM) framework. This analytical approach systematically evaluates whether a MI maintains consistent construct validity and equivalent factor structure across distinct demographic groups (e.g., gender, age, cultural backgrounds). Its primary goal is to determine whether observed group differences reflect true differences in the latent construct rather than systematic bias in the scale. MI is typically evaluated sequentially as configural, metric, scalar, and strict invariance[39,40].

The measurement models in Figs. 2 and 3 were tested via CFA across separate groups as follows: among child participants, girls vs. boys and primary vs. lower-secondary (middle) school; among parent participants, women vs. men and child in primary vs. lower-secondary school. CFA fit indices: Child form female için; $X^2/df = 2.01$, RMSEA = 0.061, CFI = 0.943 ve TLI = 0.928,

- Child Form-female; X2/df = 2.01, RMSEA = 0.061, CFI = 0.943 ve TLI = 0.928.
- Child Form-boys: $\chi^2/df = 2.13$, RMSEA = 0.063, CFI = 0.930, TLI = 0.916.
- Child Form-primary school: $\chi^2/df = 2.71$, RMSEA = 0.069, CFI = 0.932, TLI = 0.917.
- Child Form-middle school: $\chi^2/df = 2.63$, RMSEA = 0.066, CFI = 0.922, TLI = 0.903.
- Parent Form-women: $\chi^2/df = 2.55$, RMSEA = 0.071, CFI = 0.929, TLI = 0.916.
- Parent Form-men: $\chi^2/df = 2.58$, RMSEA = 0.073, CFI = 0.925, TLI = 0.909.
- Parent Form-child in primary school: $\chi^2/df = 2.14$, RMSEA = 0.064, CFI = 0.941 TLI = 0.926.
- Parent Form-child in lower-secondary (middle) school: $\chi^2/df = 2.38$, RMSEA = 0.068 CFI = 0.931, TLI = 0.918.

The two-factor structure identified in the EFA and confirmed for the full sample in the CFA showed acceptable CFA fit indices and operated equivalently across subgroups in the Child Form—namely, boys vs. girls and primary vs. lower-secondary (middle) school—indicating that the same structure holds in these groups. Likewise, for the Parent Form, the two-factor structure established in the EFA and confirmed in the full-sample CFA exhibited acceptable CFA fit for women vs. men and for parents of children in primary vs. lower-secondary (middle) school, supporting the same underlying structure across these groups. MI for both the Child and Parent forms was then tested across gender and school level. Configural, metric, scalar, and strict invariance were evaluated sequentially. Model fit indices and ΔCFI values were examined; the results are summarized in Table 4.

The Child Form operates with the same factor structure across both genders and among students in primary and lower-secondary (middle) school. The Parent Form likewise operates with the same factor structure across both genders and among parents whose children are in primary or lower-secondary (middle) school. For metric, scalar, and strict invariance, the findings showed ΔCFI < 0.01. In MI testing, Cheung and Rensvold[41] and Chen[42] indicate that the criterion for ΔCFI should be ≤ 0.01; this study accordingly adopted ΔCFI≤0.01 as the threshold.

Evidence for convergent and discriminant validity: child form

For the criterion-related convergent and divergent validity evidence of the Child Form (PCQTS-C), the Alabama Parenting Questionnaire-Child Form (APQ-CF) was also administered to 75 students who participated in the 3rd application. (The APQ-CF is described in the Methods section.) Based on the data obtained from the participating children, the correlation coefficients between the PCQTS-C sub-dimensions and the Parental Involvement and Positive Parenting sub-dimensions of the APQ-CF were first examined for convergent validity evidence. The Quality of Time Spent Together dimension (F1) showed positive, high, and significant correlations with the Parental Involvement, Mother ($r = .81$, $p < .01$), Parental Involvement-Father ($r = .78$, $p < .01$), and Positive Parenting ($r = .72$, $p < .01$) sub-dimensions of the APQ-CF. The Planning Time and Doing Activities Together dimension (F2) showed a highly positive and significant correlation with the Parental Involvement, Mother/Father, dimensions of the APQ-CF ($r = .79$ and $r = .71$, $p < .01$).

For the divergent validity evidence of the child form, the relationship between the PCQTS-C sub-dimensions and the negative sub-dimensions in parenting of the APQ-CF, Poor Monitoring/Supervision, Inconsistent Discipline, and Corporal Punishment dimensions, was examined. A moderate, negative, and significant relationship was detected between the Poor Monitoring/Supervision sub-dimension and the Quality of Time Spent Together dimension (F1) ($r = -.64$, $p < .01$), and the Planning Time and Doing Activities Together

dimension (F2) ($r = -.59$, $p < .01$). While a moderate, negative, and significant relationship was detected between the Inconsistent Discipline and Corporal Punishment dimensions and PCQTS-C/F1 ($r = -.44$ and $r = -.47$, $p < .01$), no statistically significant relationship was found between Corporal Punishment and PCQTS-C/F2 ($r = -.08$, $p > .05$).

Evidence for convergent and discriminant validity: parent form

For the relational convergent and divergent validity evidence of the Parent Form (PCQTS-P), the Parent–Child Relationship Scale (PCRS) was used as the criterion tool, and it was administered to 71 parents who participated in the 3rd application. (The PCRS is described in the Methods section.)

To test the criterion-related convergent validity of the Quality of Time Spent Together (F1) and Planning Time and Doing Activities Together (F2) dimensions of the developed PCQTS parent form, correlation coefficients were calculated between them and the Positivity sub-dimension of the Parent–Child Relationship Scale, and the Negativity sub-dimension for divergent validity evidence, based on the data obtained from the parent sample. As a result of the analysis, it was determined that both sub-dimensions of the Parent form had a positive and highly significant relationship with the Positivity sub-dimension ($r = .82$ and $r = .73$, $p < .01$, respectively), and a negative, moderate, and significant relationship with the Negativity sub-dimension ($r = -.42$ and $r = -.38$, $p < .01$, respectively). These findings support convergent validity with established measures of positive parent–child interaction, and divergent validity from measures of its negative aspects.

Comparison of scores from the child and parent forms across variables

In the third phase, the items retained after the CFA were administered to 1185 participants for the Child Form and to 1020 participants for the Parent form; item-level descriptive statistics (mean, SD, median, min-max) for both forms are presented in Supplementary Table S5.

Based on the third phase applications, comparative analyses were also conducted. For two-group comparisons, the independent-samples t-test was used andfor comparisons involving three or more groups, one-way ANOVA was employed. The significance level was set at $p < .05$. The results of the casual comparison analysis are presented in Supplementary Table S3 and S4.

Full descriptive statistics for the child form comparisons across all demographic variables are presented in Supplementary Table S3.

For the Quality of Time Spent Together subfactor, comparative analyses showed no significant difference by child's gender ($p > .05$); school level, parental education, household income, and number of siblings were all significant ($p < .05$). Primary-school children reported higher perceived quality time than middle-school children; children of less-educated or lower-income parents reported lower perceived quality time than those of more educated or higher-income parents; and children with one sibling reported higher perceived quality time than those with two or more siblings. For the Planning Time and Doing Activities Together subfactor, the same pattern held for school level, parental education, and household income (all $p < .05$), while child's gender again showed no significant difference ($p > .05$).

Full descriptive statistics for the parent form comparisons across all demographic variables are presented in Supplementary Table S4.

For the Quality of Time Spent Together subfactor (Parent Form), comparative analyses showed that parent's gender, parent education level, and number of children were significant ($p < .05$), while child's school level and household income were not ($p > .05$). Women reported higher perceived quality time than men; parents with primary education reported lower perceived quality time than those with higher education; and parents of one child reported higher perceived quality time than those with two or more children. For the Planning Time and Doing Activities Together subfactor (Parent Form), parent education level, household income, and number of children were significant ($p < .05$-parents with lower education or income, or with two or more children, reported less perceived planning and activities), while parent's gender and child's school level were not ($p > .05$).

The impact of various demographic variables on parent–child quality time

The predictive effect of demographic variables (child's school type, gender, parental education, household income, and number of children) on the two subfactors of the parent and child forms was tested using multivariate regression analysis, with all predictors dummy-coded as categorical variables[26,43].

Predictors of parent–child quality time from the children's perspective

Estimations regarding the predictors of parent–child quality time from the children's perspective are shown in Table 5.

From the child's perspective, the regression model for the quality of time spent together sub-factor was significant (F test, $p < .05$), explaining 5% of the variance. School level, father's education, and household income were significant predictors ($p < .05$); other variables were not. Children attending middle school reported lower quality time than those in primary school, children of higher-education fathers reported higher quality time than those of primary-education fathers, and higher household income was associated with higher quality time relative to income below expenses.

The regression model for the planning time and doing activities together sub-factor was likewise significant ($p < .05$), explaining 6% of the variance. School level, mother's education, and household income were significant predictors ($p < .05$); other variables were not. Children attending middle school reported lower planning and shared activities than those in primary school, children of higher-education mothers reported higher levels than those of primary-education mothers, and higher household income was associated with higher levels relative to income below expenses.

Sub factor	Variable	B	Standard Error	t	*p* (t)	R^2	F	*p* (f)
QTST_Child	School Level (Middle School)	−1.83	0.40	−4.54	<0.001	0.05	6.43	<0.001
	Gender (Male)	0.55	0.40	1.38	0.167			
	Mother's Education (High School)	−0.01	0.50	−0.03	0.978			
	Mother's Education (Higher Education)	0.22	0.64	0.35	0.729			
	Father's Education (High School)	0.98	0.52	1.87	0.061			
	Father's Education (Higher Education)	1.43	0.64	2.22	0.026			
	Household income (Equal to expenses)	2.39	0.78	3.06	0.002			
	Household income (Greater than expenses)	3.11	0.83	3.75	<0.001			
	Number of siblings (One sibling)	0.23	0.60	0.38	0.706			
	Number of siblings (Two or more siblings)	−0.88	0.61	−1.42	0.154			
PTDAT_Child	School Level (Middle School)	−0.72	0.23	−3.11	0.002	0.06	7.45	<0.001
	Gender (Male)	−0.08	0.23	−0.34	0.731			
	Mother's Education (High School)	0.70	0.29	2.43	0.015			
	Mother's Education (Higher Education)	0.83	0.37	2.27	0.024			
	Father's Education (High School)	0.36	0.30	1.21	0.226			
	Father's Education (Higher Education)	0.65	0.37	1.77	0.077			
	Household income (Equal to expenses)	1.69	0.45	3.79	<0.001			
	Household income (Greater than expenses)	2.40	0.47	5.07	<0.001			
	Number of siblings (One sibling)	0.08	0.34	0.23	0.815			
	Number of siblings (Two or more siblings)	−0.12	0.35	−0.34	0.737			

Table 5. Predictors of Parent–Child Quality Time from the Children's Perspective (Multivariate Regression Analysis). While creating the dummy variable in the analysis, primary school was accepted as the reference group in the variable of the education level the child attends, and children studying in middle school were interpreted compared to those studying in primary school. For the gender variable, girls, for the mother education level, those whose mothers are primary education graduates, for the father education level, those whose fathers are primary education graduates, for the family income-expense status, those whose income is less than their expenses, and for the number of siblings, being an only child with no siblings are the reference groups. The results were interpreted accordingly.

Predictors of parent–child quality time from the parents' perspective

Estimations made regarding the predictors of parent–child quality time from the parents' perspective are shown in Table 6.

From the parents' perspective, the regression model for the quality of time spent together sub-factor was significant ($p<.05$), explaining 2% of the variance. Gender and household income (equal to expenses) were significant predictors ($p<.05$); other variables, including number of children, were not ($p>.05$). Fathers reported lower quality time than mothers, and households whose income equaled expenses reported lower quality time than those whose income was below expenses; the positive coefficient for two or more siblings did not reach statistical significance.

The regression model for the planning time and doing activities together sub-factor was also significant ($p<.05$), explaining 3% of the variance. Gender and parental (mother's and father's) higher education were significant predictors ($p<.05$); household income and number of children were not ($p>.05$). Fathers reported higher planning and shared activities than mothers, while having a higher-education mother or father was associated with lower levels than having a primary-education parent.

Discussion

This study aimed to develop an instrument assessing parent–child quality time from both parent and child perspectives, addressing the need to move beyond global attachment constructs to evaluate the specific operational dimensions of shared time. Consistent with the hypothesized two-dimensional structure, the resulting instruments for children and parents comprised two factors—quality of time spent together and planning of joint activities—that yielded valid and reliable data: both forms showed good CFA fit, satisfactory reliability (Cronbach's alpha, McDonald's omega), adequate item discrimination under IRT, and measurement invariance across gender and school level, and convergent and discriminant validity evidence based on correlations with the APQ-CF and PCRS further supported the scales' validity. Perceptions of quality time also varied significantly with several demographic variables, including parent gender, parental education, household income, the child's school level, and number of siblings[44,45].

From the child's perspective, the absence of significant gender differences suggests that the need for quality time is universal. School level emerged as a salient determinant: primary-school children reported higher-quality time than middle-school children, consistent with increased peer orientation and autonomy-seeking during the transition to adolescence[46,47]. Socioeconomic status also played a role, with higher parental education and income associated with higher perceived quality time, plausibly reflecting greater access to resources and

Sub factor	Variable	B	Standard Error	t	*p* (t)	R^2	F	*p* (f)
QTST_Parent	School Level (Middle School)	0.05	0.42	0.12	0.907	0.02	2.64	< 0.001
	Gender (Male)	−0.96	0.44	−2.20	0.028			
	Mother's Education (High School)	0.96	0.55	1.75	0.081			
	Mother's Education (Higher Education)	0.82	0.52	1.58	0.115			
	Father's Education (High School)	0.43	0.54	0.79	0.428			
	Father's Education (Higher Education)	0.99	0.75	1.32	0.187			
	Household income (Equal to expenses)	−1.16	0.52	−2.22	0.026			
	Household income (Greater than expenses)	−0.54	0.36	−1.50	0.134			
	Number of siblings (One sibling)	−0.34	0.38	−0.91	0.362			
	Number of siblings (Two or more siblings)	0.43	0.47	0.90	0.366			
PTDAT_Parent	School Level (Middle School)	0.52	0.45	1.16	0.246	0.03	4.60	< 0.001
	Gender (Male)	0.95	0.47	2.04	0.042			
	Mother's Education (High School)	1.13	0.65	1.73	0.083			
	Mother's Education (Higher Education)	−1.81	0.45	−3.99	< 0.001			
	Father's Education (High School)	0.05	0.42	0.12	0.907			
	Father's Education (Higher Education)	−0.96	0.44	−2.20	0.028			
	Household income (Equal to expenses)	0.96	0.55	1.75	0.081			
	Household income (Greater than expenses)	0.82	0.52	1.58	0.115			
	Number of siblings (One sibling)	0.43	0.54	0.79	0.428			
	Number of siblings (Two or more siblings)	0.99	0.75	1.32	0.187			

Table 6. Predictors of Parent–Child Quality Time from the Parents' Perspective (Multivariate Regression Analysis). See the notes under Table 5 for the reference-group definitions used in this regression analysis.

economic security[48,49]. In line with the resource dilution perspective, increases in sibling number were linked to lower perceived quality time specifically for the Quality of Time Spent Together (F1) dimension, most clearly between children with one sibling and those with two or more[50].

Findings from the parent perspective reflect the continuing influence of gender roles: mothers reported feeling more adequate on the quality-of-time dimension than fathers, consistent with traditional divisions of emotional labor[51,52]. Parental education emerged as a strong determinant across both dimensions, and lower income was associated with less favorable perceptions of planning and activities, likely reflecting economic constraints on shared outings[53,54].

Regression analyses extended these findings. From the children's perspective, the transition to middle school negatively predicted both quality dimensions, while parental education and income were strong positive predictors, consistent with the Family Stress Model[55]. From the parents' perspective, gender and household income predicted the quality of time spent together, while parental education predicted planning and activities; notably, the number of children did not significantly predict either dimension once these variables were controlled for, suggesting a less robust association than observed from the child's perspective. Together, these results indicate that parent–child quality time is shaped not only by individual preferences but also by structural factors such as socioeconomic conditions and family composition.

In summary, parent–child quality time is a complex phenomenon shaped by sociodemographic context and gender norms. These findings point to the value of supportive interventions for families with lower socioeconomic status, lower educational attainment, and more children, as well as policies encouraging fathers' engagement and gender equity in caregiving.

Limitations and future research directions

This study has several limitations that suggest directions for future research. First, the sample was drawn from a geographically limited region of Türkiye (Balıkesir province), which constrains generalizability; although the included districts differ in socioeconomic profile, they may not capture the full sociocultural diversity of the country, and future studies should recruit broader, more diverse samples. Second, due to logistical constraints, child and parent samples were collected independently rather than as matched dyads, preventing analysis of intra-familial or household-level effects; future research should adopt matched dyadic sampling, which would also enable Hierarchical Linear Modeling to account for scores nested within family units. Third, the cross-sectional design limits inferences about developmental change, and longitudinal research is needed to capture temporal effects. Fourth, reliance on self-report measures introduces potential social desirability bias; multi-method approaches such as behavioral observation or daily diary studies could help address this in future work. Fifth, IRT analyses indicated that some items fell outside commonly preferred discrimination ($a > 2.50$) and difficulty ($[-1.00, 1.00]$) ranges, likely due to response clustering in the "strongly agree" category; these items were retained since response probabilities for other categories were not zero, but their removal may be considered if similar patterns recur in future studies. Finally, the age range was restricted to primary and lower-secondary (middle) school children and their parents; developing parallel instruments for older adolescents would be a valuable extension.

Data availability

The datasets used and analysed during the current study are available from the corresponding author upon reasonable request.

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References

1. Wu, X. et al. The effect of parenting quality on child development at 36–48 months in China's urban area: Evidence from a birth cohort study. *Child Youth Serv. Rev.* **119**, 105662. https://doi.org/10.3390/ijerph17238962 (2020).
2. Ekinci Vural, D. & Kocabaş, A. Developing emotional intelligence scale for students age group seven. *Eğitim ve Bilim*. **36** (160), 1–11 (2011).
3. Erol, A. & İvrendi, A. 4–6 yaş çocuklarına yönelik öz-düzenleme becerileri ölçeğinin geliştirilmesi (anne formu). *Eğitim ve Bilim*. **43** (193), 137–151 (2018).
4. Thompson, R. A. Early attachment and later development. In *Handbook of attachment: Theory. research. and clinical applications* (eds Cassidy, J. & Shaver, P. R.) 265–286 (Guilford Press, 1999).
5. Tasnim, S. Exploring parental perception on the importance of quality time in shaping children's wellbeing [Master's thesis. BRAC University]. BRAC University Institutional Repository (2024).
6. Lamb, M. E. & Lewis, C. The role of parent-child relationships in child development. In *The role of the father in child development* 5th ed (ed. Lamb, M. E.) 94–153 (Wiley, 2010).
7. Vygotsky, L. S. *Mind in society: The development of higher psychological processes* (Harvard University Press, 1978).
8. Landry, S. H., Smith, K. E. & Swank, P. R. Responsive parenting: Establishing early foundations for social, communication, and independent problem-solving skills. *Dev. Psychol.* **42**(4), 627–642. https://doi.org/10.1037/0012-1649.42.4.627 (2006).
9. Simkiss, D. E. et al. Validation of the mothers object relations scales in 2–4 year old children and comparison with the Child-Parent Relationship Scale. *Health Qual. Life Outcomes* **11**(1), 49. https://doi.org/10.1186/1477-7525-11-49 (2013).
10. Yılmaz, H. A good parent is not always the parent who does everything. every time for his/her child: A study to develop Helicopter Parent Attitude/s Scale (HPAS). *J. Child Fam. stud.* **28** (9), 2549–2561. https://doi.org/10.24130/eccd-jecs.1967201931114 (2019).
11. Aybek, E. C. & Toraman, Ç. How many response categories are sufficient for Likert type scales? An empirical study based on the Item Response Theory. *Int. J. Assess. Tools Educ.* **9**(2), 534–547. https://doi.org/10.21449/ijate.1132931 (2022).
12. Anderson, J. C. & Gerbing, D. W. The effect of sampling error on convergence. Improper solutions. And goodness of fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika* **49**(2), 155–173. https://doi.org/10.1007/BF02294170 (1984).
13. Bentler, P. M. Comparative fit indexes in structural models. *Psychol. Bull.* **107** (2), 238–246. https://doi.org/10.1037/0033-2909.107.2.238 (1990).
14. Vieira, A. L. *Interactive LISREL in practice. getting started with a SIMPLIS Approach* (Springer, 2011). https://doi.org/10.1007/978-3-642-18044-6.
15. Yen, W. M. Scaling performance assessments: Strategies for managing local item dependence. *J. Educ. Meas.* **30** (3), 187–213. https://doi.org/10.1111/j.1745-3984.1993.tb00423.x (1993).
16. Chalmers, R. P. mirt: A multidimensional item response theory package for the R environment. *J. Stat. Softw.* **48** (6), 1–29. https://doi.org/10.18637/jss.v048.i06 (2012).
17. Frick, P. J. The Alabama parenting questionnaire. Unpublished rating scale. *Univ. Alabama*. https://doi.org/10.1037/t58031-000 (1991).
18. İspenoğlu, F. N. & Çekiç, A. Adaptation of the Alabama Parenting Questionnaire–Child Form into Turkish: A study of validity and reliability. *Inonu Univ. J. Fac. Educ.* **24**(3), 1968–1989. https://doi.org/10.17679/inuefd.1171665 (2023).
19. Hetherington, E. & Clingempeel, W. Coping with marital transitions: A family systems perspective. *Monogr. Soc. Res. Child Dev.* **57**, 1–242. https://doi.org/10.1111/j.1540-5834.1992.tb00300.x (1992).
20. Aytaç, A. B., Çen, S. & Yüceol, G. P. Ebeveyn-çocuk ilişkisi ölçeği geçerlik ve güvenirlik çalışması. Çocuk ve Gençlik. *Ruh Sağlığı Dergisi*. **25** (3), 209–221 (2018).
21. Tabachnick, B. G. & Fidell, L. S. *Using multivariate statistics* 6th ed. (Pearson Education, 2013).
22. Kaiser, H. F. & Rice, J. Little jiffy mark IV. *Educ. Psychol. Meas.* **34**(1), 111–117. https://doi.org/10.1177/001316447403400115 (1974).
23. Field, A. *Discovering statistics using IBM SPSS statistics* 5th ed. (SAGE Publications, 2018).
24. Pett, M. A., Lackey, N. R. & Sullivan, J. J. Making sense of factor analysis: The use of factor analysis for instrument development in health care research. SAGE Publications. https://doi.org/10.4135/9781412984898 (2003).
25. Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. *Multivariate data analysis* 7th ed. (Pearson Education Limited, 2014).
26. Warner, R. M. *Applied statistics: From bivariate through multivariate techniques* 2nd ed. (SAGE Publications, 2013).
27. Nunnally, J. C. & Bernstein, I. H. *Psychometric theory* 3rd ed. (McGraw-Hill, 1994).
28. Hooper, D., Coughlan, J. & Mullen, M. R. Structural equation modelling: Guidelines for determining model fit. *Electron. J. Bus. Res. Methods*. **6** (1), 53–60 (2008).
29. Hu, L. T. & Bentler, P. M. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Struct. Equ. Model.* **6**(1), 1–55. https://doi.org/10.1080/10705519909540118 (1999).
30. Kline, T. J. B. *Psychological testing: A practical approach to design and evaluation* (SAGE Publications, 2005).
31. Marsh, H. W., Balla, J. R. & McDonald, R. P. Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychol. Bull.* **103**(3), 391–410. https://doi.org/10.1037/0033-2909.103.3.391 (1988).
32. Zhao, Y. Approaches for addressing the fit of item response theory models to educational test data [Doctoral dissertation. University of Massachusetts Amherst]. ProQuest Dissertations and Theses Global (2008).
33. Stout, W. F. A new item response theory modeling approach with applications to unidimensionality assessment and ability estimation. *Psychometrika* **55** (2), 293–325. https://doi.org/10.1007/BF02295289 (1990).
34. Orlando, M. & Thissen, D. Likelihood-based item-fit indices for dichotomous item response theory models. *Appl. Psychol. Meas.* **24** (1), 50–64. https://doi.org/10.1177/01466216000241003 (2000).
35. Flannery, W. P., Reise, S. P. & Widaman, K. F. An item response theory analysis of the general and academic scales of the self-description questionnaire II. *J. Res. Pers.* **29**(2), 168–188. https://doi.org/10.1006/jrpe.1995.1010 (1995).
36. Hambleton, R. K. Guidelines for adapting educational and psychological test: A progress report. *Eur. J. Psychol. Assess.* **10** (3), 229–244 (1994).
37. Edelen, M. O. & Reeve, B. B. Applying item response theory (IRT) modeling to questionnaire development, evaluation, and refinement. *Qual. Life Res.* **16**(1), 5–18. https://doi.org/10.1007/s11136-007-9198-0 (2007).
38. de Ayala, R. J. *The theory and practice of item response theory* (Guilford Press, 2009).
39. Meredith, W. Measurement invariance, factor analysis and factorial invariance. *Psychometrika* **58** (4), 525–543. https://doi.org/10.1007/BF02294825 (1993).
40. Putnick, D. L. & Bornstein, M. H. Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Dev. Rev.* **41**, 71–90. https://doi.org/10.1016/j.dr.2016.06.004 (2016).

41. Cheung, G. W. & Rensvold, R. B. Evaluating goodness-of-fit indexes for testing measurement invariance. *Struct. Equ. Model.* **9** (2), 233–255. https://doi.org/10.1207/S15328007SEM0902_5 (2002).
42. Chen, F. F. Sensitivity of goodness of fit indexes to lack of measurement invariance. *Struct. Equ. Model. Multidiscip. J.* **14**(3), 464–504. https://doi.org/10.1080/10705510701301834 (2007).
43. Keith, T. Z. *Multiple Regression and Beyond. an Introduction to Multiple Regression and Structural Equation Modeling* (Routledge, 2019).
44. Dereli, E. & Dereli, B. M. Ebeveyn-çocuk ilişkisinin okul öncesi dönem çocukların psikososyal gelişimlerini yordaması. *Yuzunci Yil Univ. Egitim Fak. Derg.* **14**(1), 227–258 (2017).
45. Li, D. & Guo, X. The effect of the time parents spend with children on children's well-being. *Front. Psychol.* **14**, 1096128. https://doi.org/10.3389/fpsyg.2023.1096128 (2023).
46. Larson, R. W., Richards, M. H., Moneta, G., Holmbeck, G. & Duckett, E. Changes in adolescents' daily interactions with their families from ages 10 to 18: Disengagement and transformation. *Dev. Psychol.* **32** (4), 744–754. https://doi.org/10.1037/0012-1649.32.4.744 (1996).
47. Milkie, M. A., Nomaguchi, K. M. & Denny, K. E. Does the amount of time mothers spend with children or adolescents matter?. *J. Marriage Fam.* **77**(2), 355–372. https://doi.org/10.1111/jomf.12170 (2015).
48. Hoff, E., Laursen, B. & Tardif, T. Socioeconomic status and parenting. In *Handbook of parenting: Vol. 2. Biology and ecology of parenting* 2nd ed. (ed. Bornstein, M. H.) 231–252 (Lawrence Erlbaum Associates Publishers, 2002).
49. Kalil, A., Ryan, R. & Corey, M. Diverging destinies: Maternal education and the developmental gradient in time with children. *Demography* **49** (4), 1361–1383. https://doi.org/10.1007/s13524-012-0129-5 (2012).
50. Downey, D. B. When bigger is not better: Family size parental resources and children's educational performance. *Am. Sociol. Rev.* **60**(5), 746–761. https://doi.org/10.2307/2096320 (1995).
51. Craig, L. Does father care mean fathers share? A comparison of how mothers and fathers in intact families spend time with children. *Gend. Soc.* **20** (2), 259–281. https://doi.org/10.1177/0891243205285212 (2006).
52. Craig, L. & Mullan, K. How mothers and fathers share childcare: A cross-national time-use comparison. *Am. Sociol. Rev.* **76**(6), 834–861. https://doi.org/10.1177/0003122411427673 (2011).
53. Davis-Kean, P. E. The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *J. Fam. Psychol.* **19** (2), 294–304. https://doi.org/10.1037/0893-3200.19.2.294 (2005).
54. Conger, R. D. & Donnellan, M. B. An interactionist perspective on the socioeconomic context of human development. *Annu. Rev. Psychol.* **58**, 175–199. https://doi.org/10.1146/annurev.psych.58.110405.085551 (2007).
55. Nomaguchi, K. & Milkie, M. A. Parenthood and well-being: A decade in review. *J. Marriage Fam.* **82**(1), 198–223. https://doi.org/10.1111/jomf.12646 (2020).

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Author contributions
ÇÇT and EB conceived the study design and coordinated data collection. HFÖ and ÇT performed the statistical analyses. All authors contributed to data acquisition. interpretation of findings. and critical revision of the manuscript. All authors read and approved the final version of the manuscript for submission.

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Declarations

Competing interests
Çetin Toraman is an Editorial Board member at Scientific Reports but was not involved in the handling or decision-making of their own submission. The other authors declare no competing interests.

Ethical approval and consent to participate
This study was conducted with approval from the Social and Human Sciences Ethics Committee of Çanakkale Onsekiz Mart University (Decision No. 18/57. March 7. 2025) and with permission from the Ministry of National Education (MEB.TT.2025.020882. March 18. 2025). All participants were included in the study after obtaining the informed consent form. Our research was conducted in accordance with the Declaration of Helsinski.

Additional information
Supplementary Information The online version contains supplementary material available at https://doi.org/10.1038/s41598-026-64429-4.

Correspondence and requests for materials should be addressed to Ç.T.

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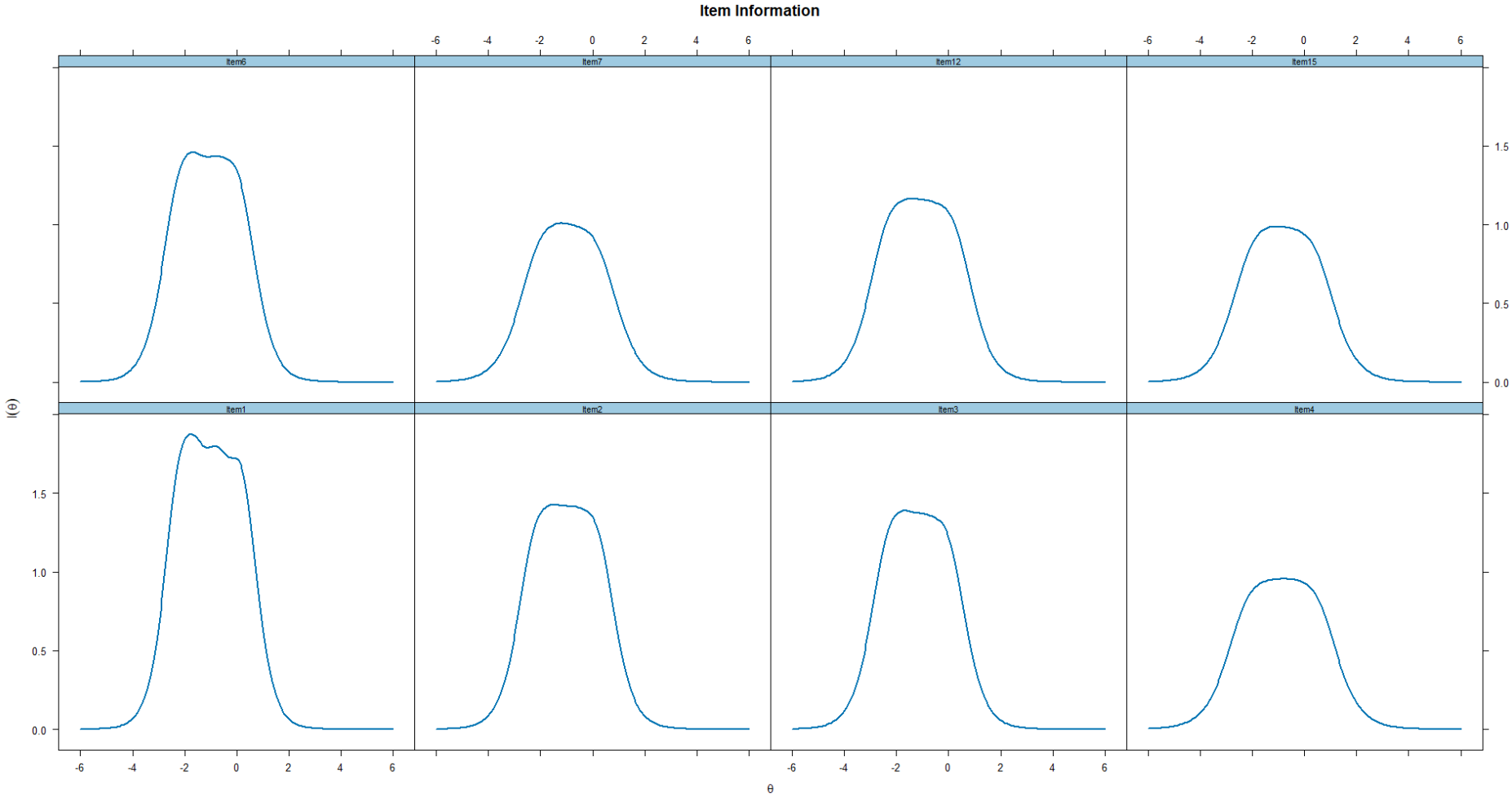
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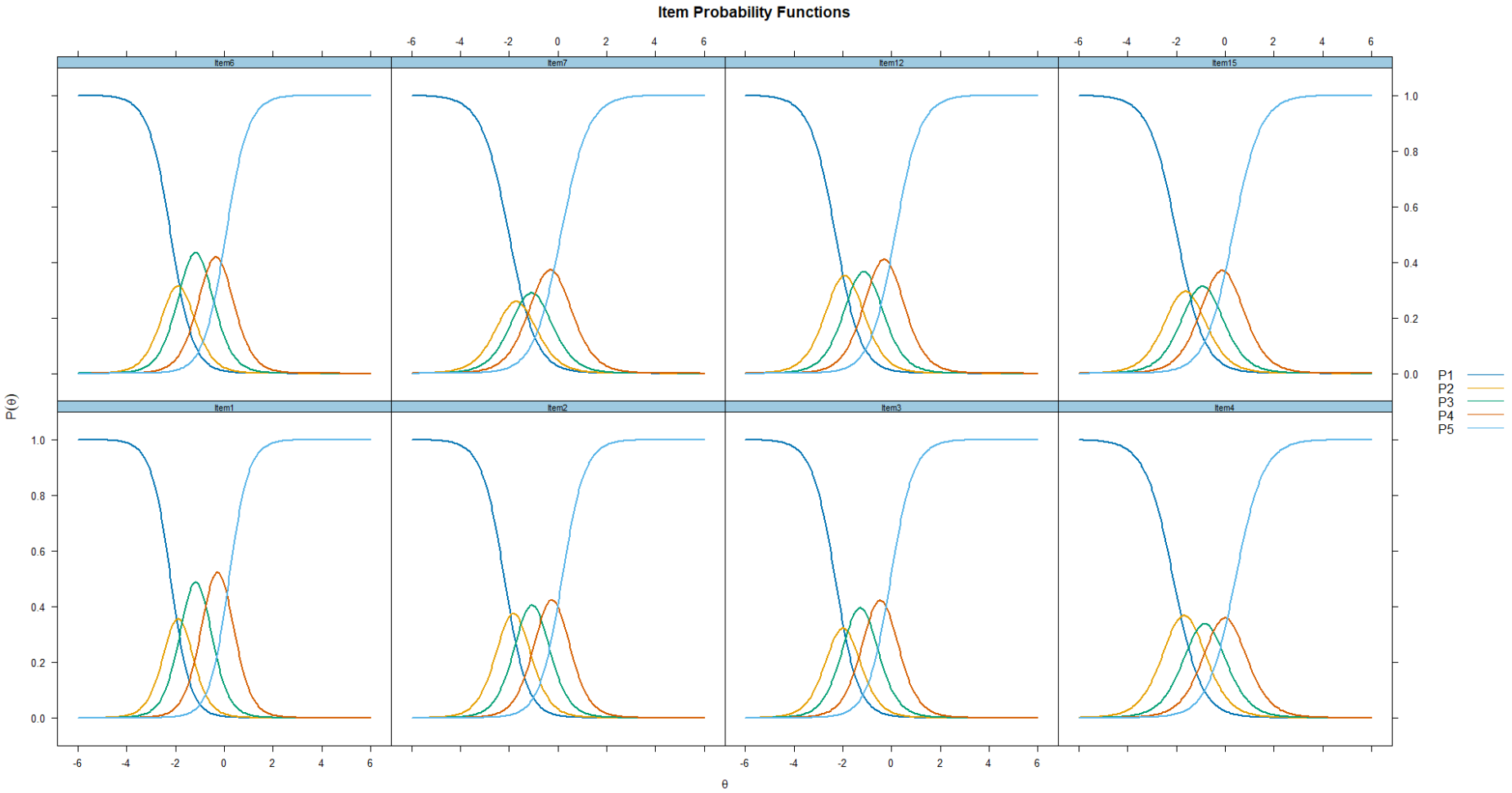
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Supplementary File

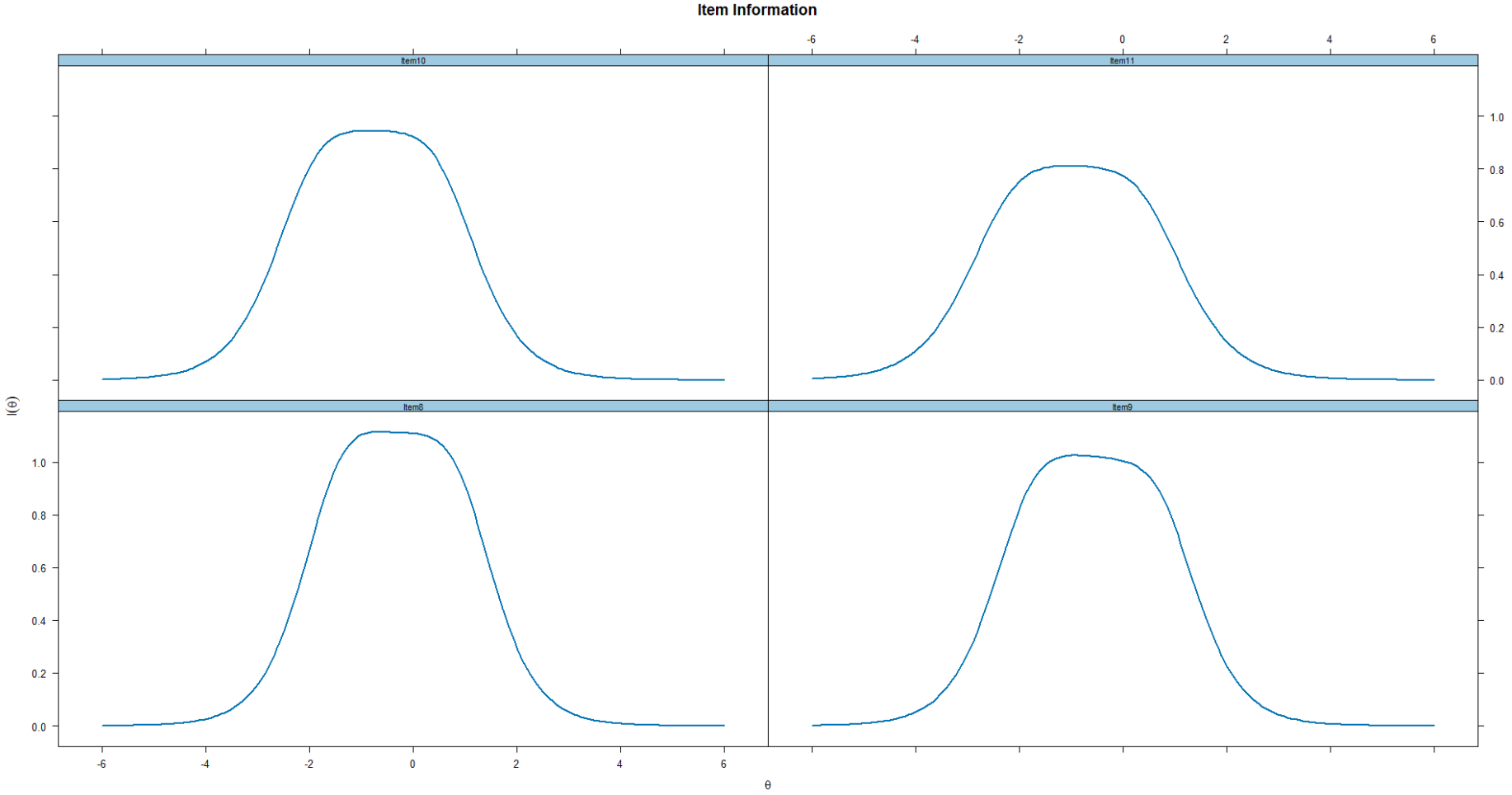
Child Form Factor 1 Item Information



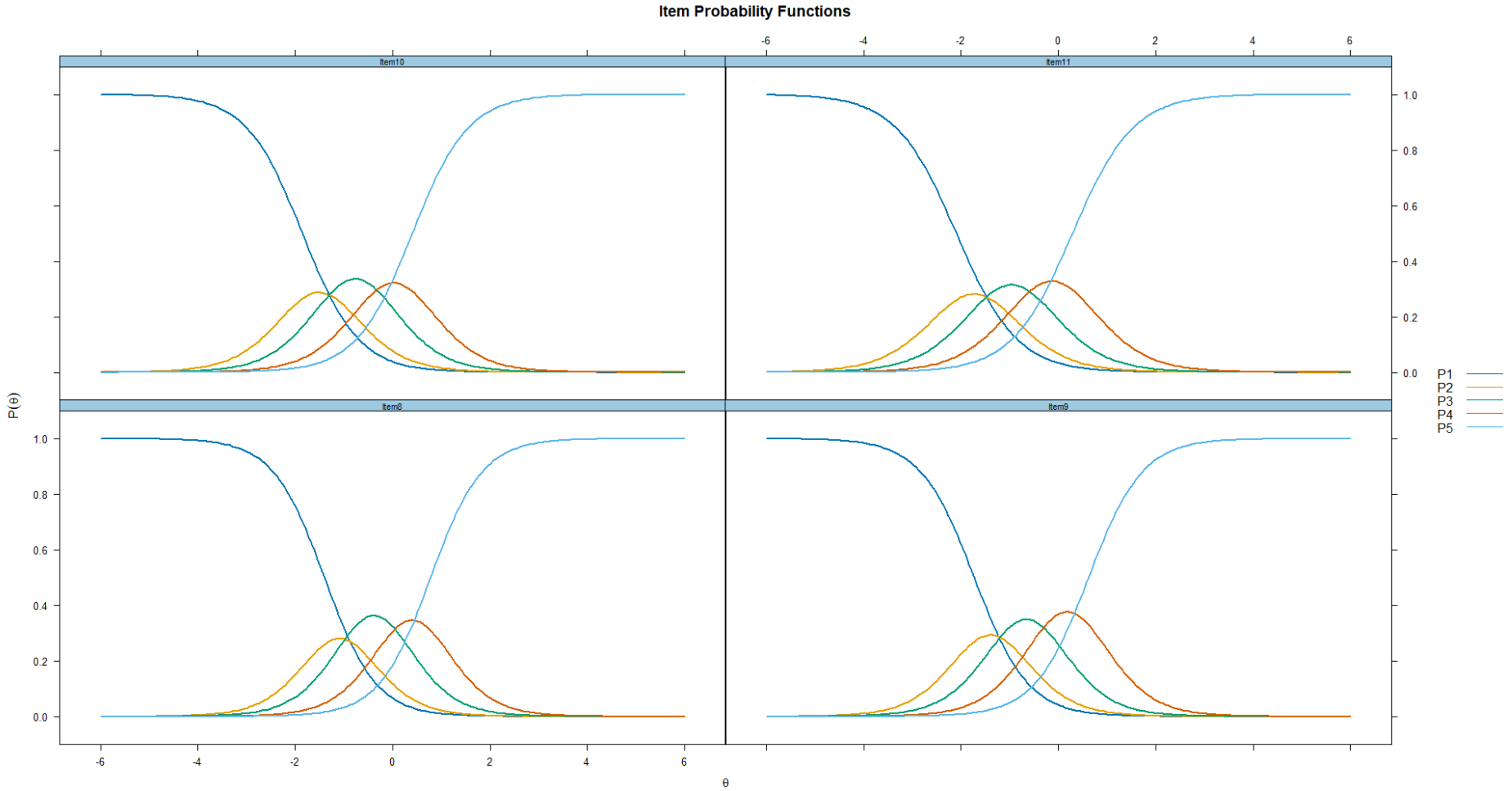
Child Form Factor 1 Item Probability Functions



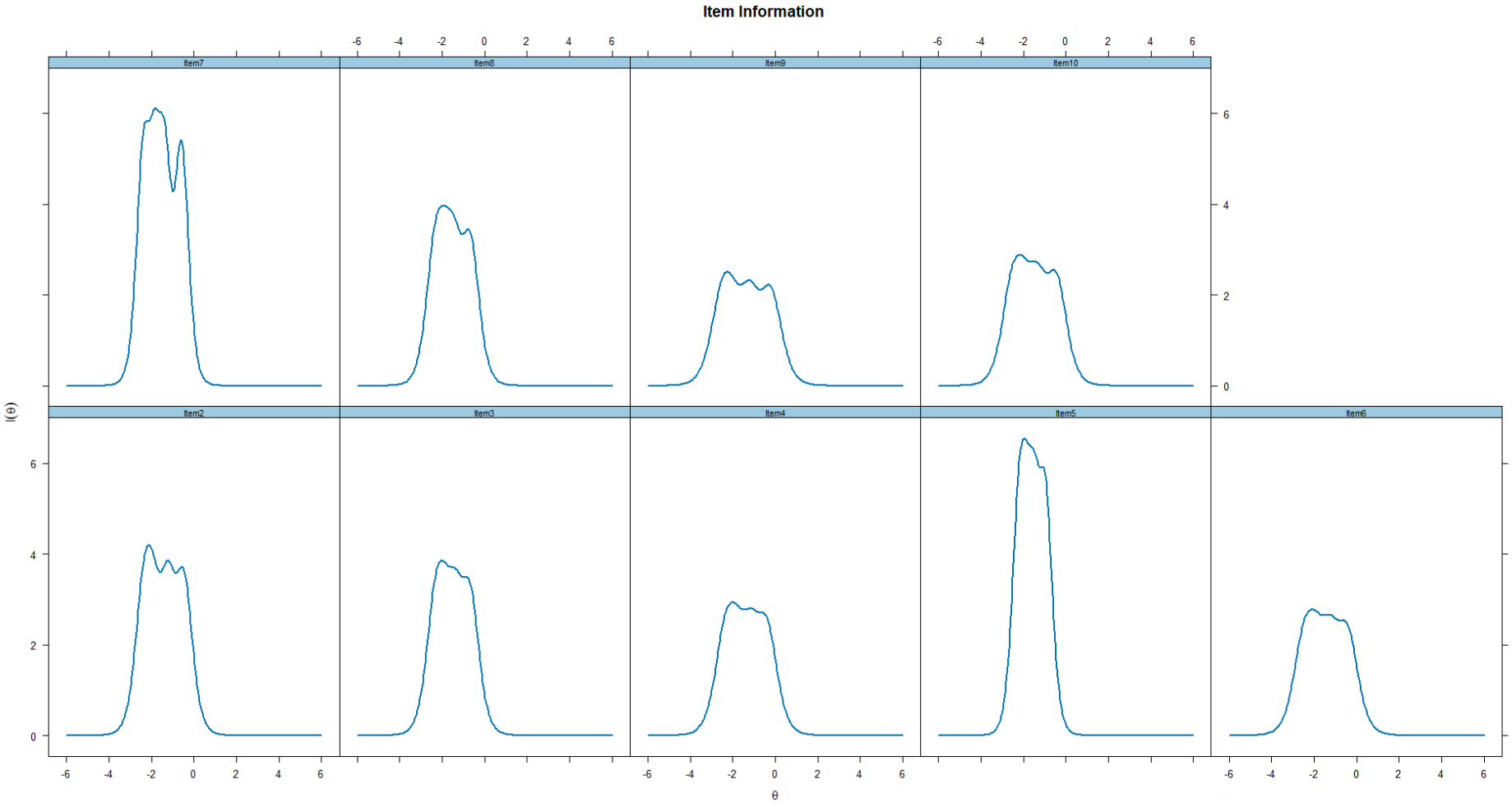
Child Form Factor 2 Item Information



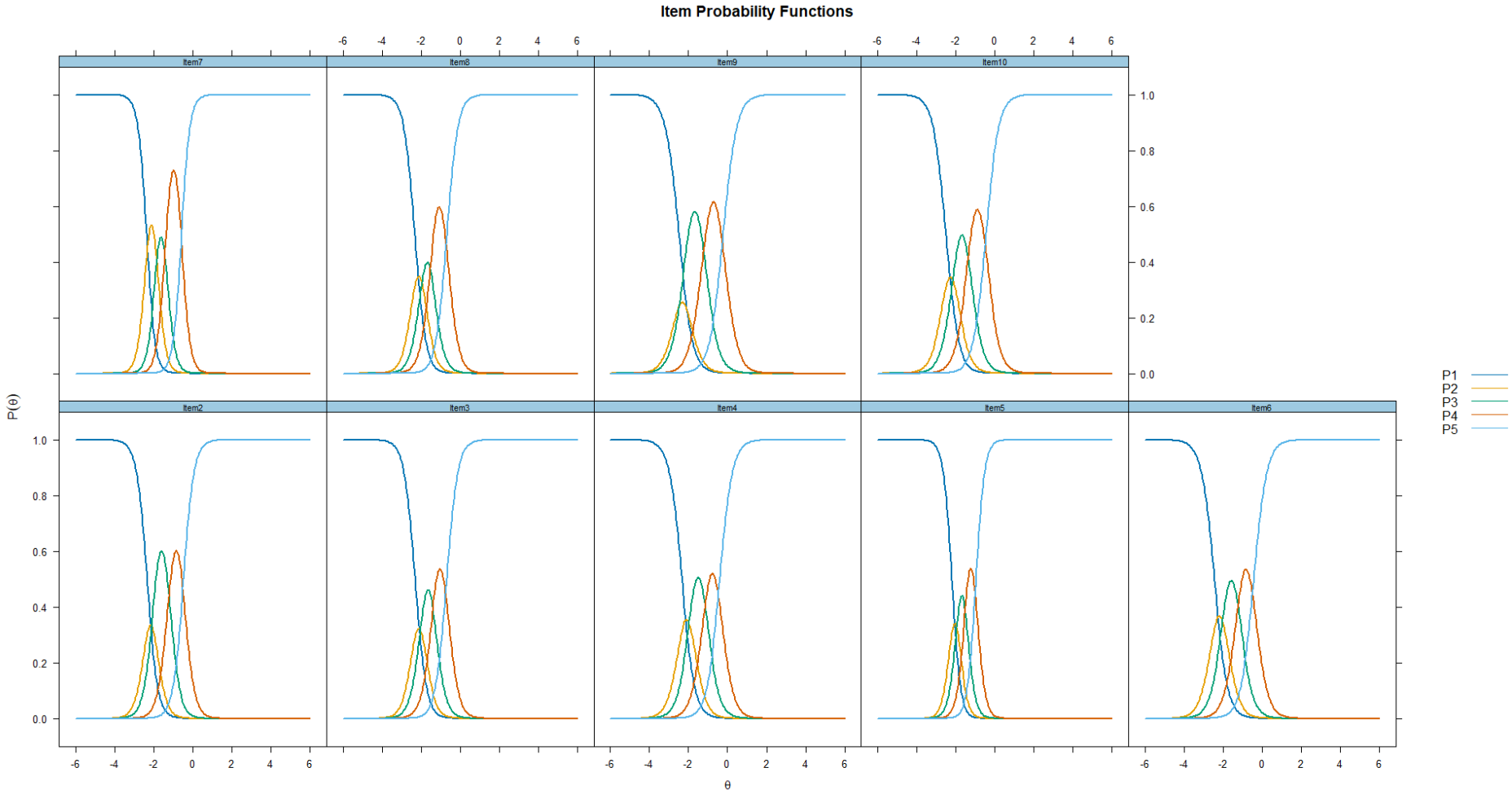
Child Form Factor 2 Item Probability Functions



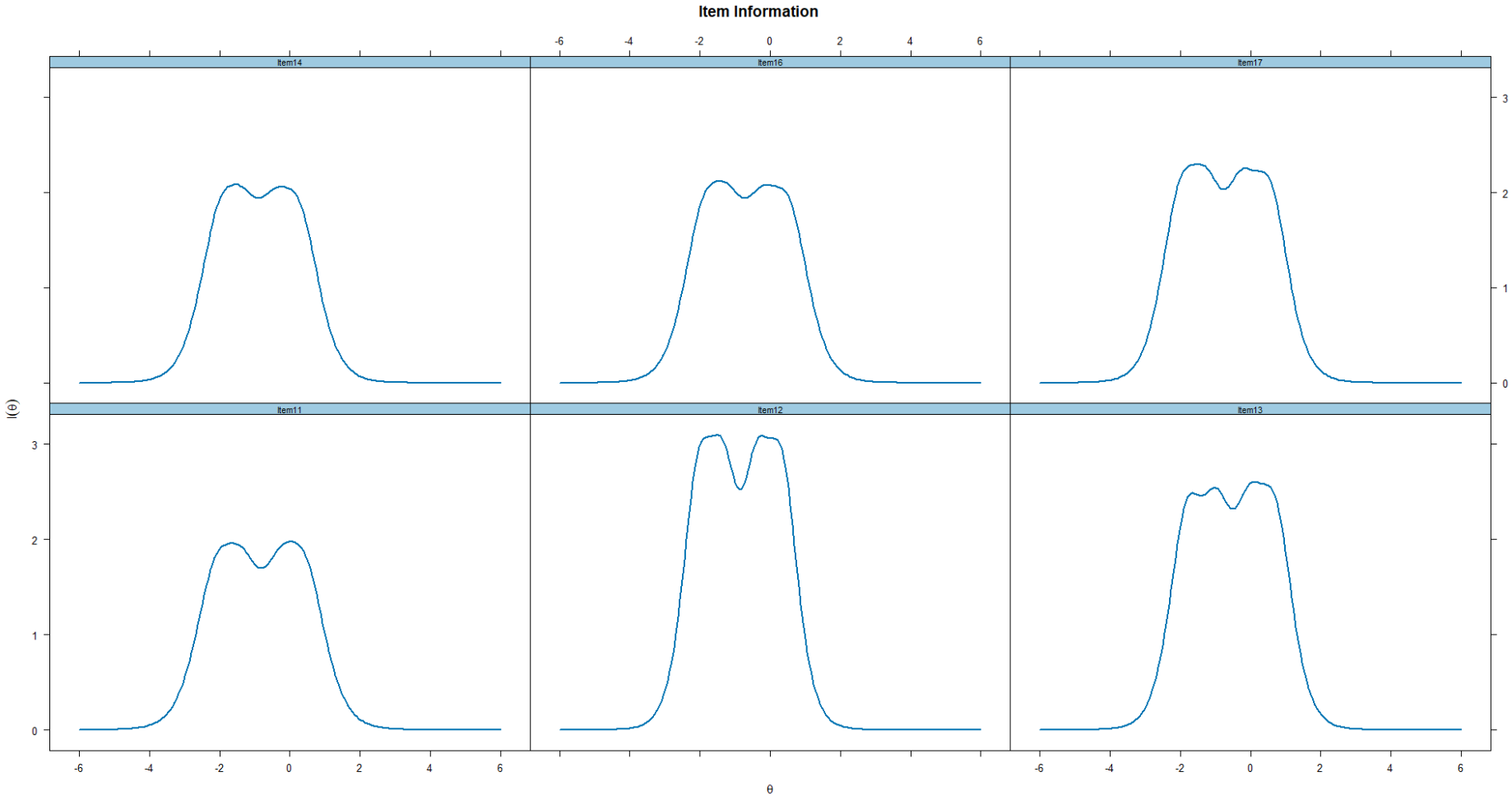
Parent Form Factor 1 Item Information



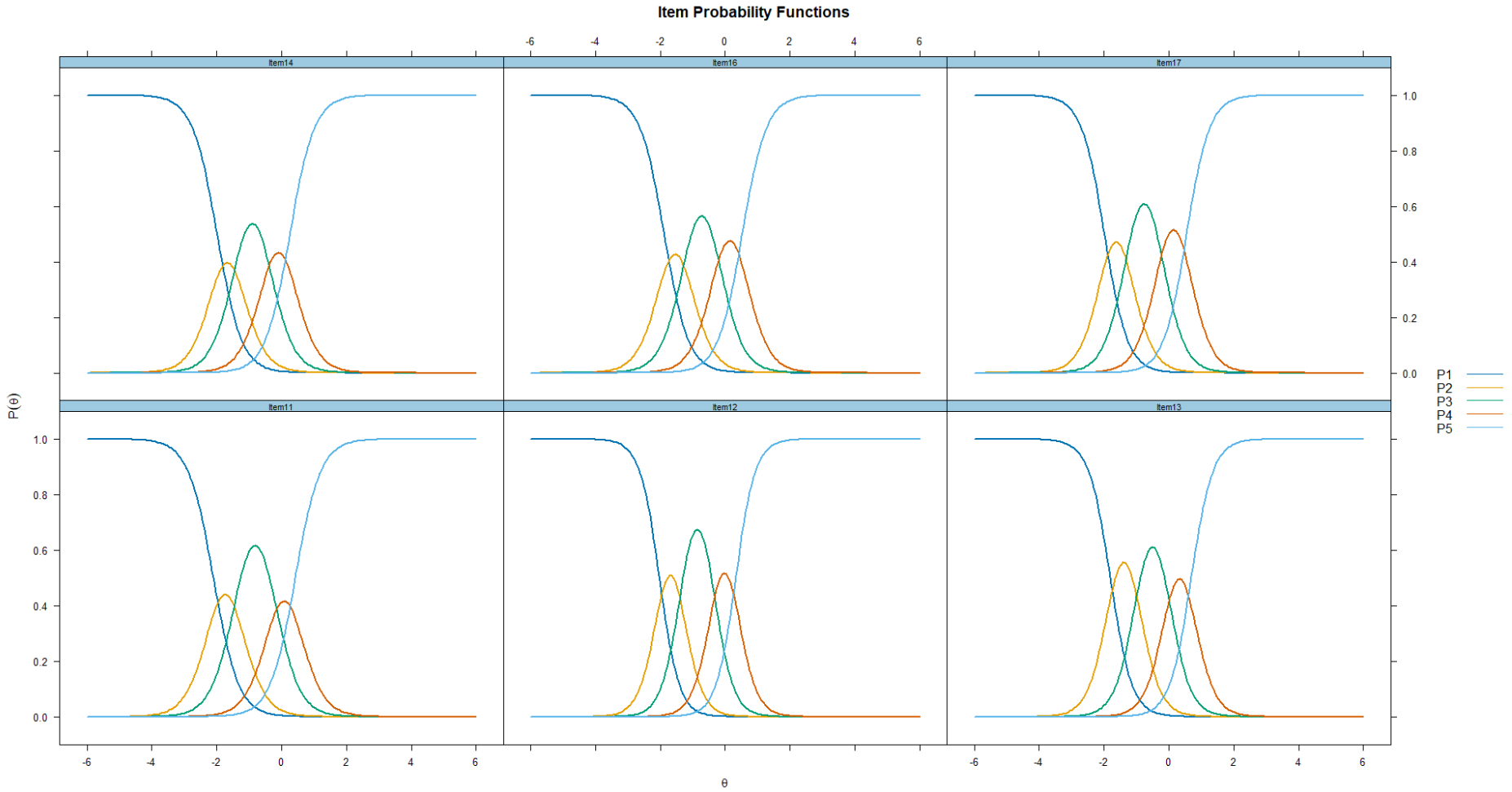
Parent Form Factor 1 Item Probability Functions



Parent Form Factor 2 Item Information



Parent Form Factor 2 Item Probability Functions



Supplementary Table S1. EFA results-oblimin-rotated factor loadings for the Child and Parent Forms

Child Form (PCQTS-C)				Parent Form (PCQTS-P)			
Items	**Factors**		**Characteristics of the subfactor**	**Items**	**Factors**		**Characteristics of the subfactor**
	1	**2**			**1**	**2**	
Item 3. When I feel lonely or worthless, my parent makes me feel that they are there for me.	0.824			**Item 7.** I listen carefully to what my child says and allow them to express themselves.	0.953		
Item 2. When I feel sad or stressed, my parent sets aside time for me and pays attention to me.	0.785			**Item 5.** When my child feels lonely or worthless, I try to make them feel that I am there for them.	0.937		
Item 1. When spending time with me, my parent tries to understand me.	0.713		Quality of Time Spent Together	**Item 8.** When speaking with my child, I make an effort to maintain eye contact and keep my body language open.	0.856		Quality of Time Spent Together
Item 6. My parents are patient and understanding when we communicate.	0.688		No reverse-scored items.	**Item 3.** When my child feels sad or stressed, I always set aside time for them.	0.845		No reverse-scored items.
Item 7. When I'm speaking, my parents let me finish without interrupting.	0.591		Possible score range: 8-40.	**Item 10.** When my child is telling me something, I listen without interrupting until they finish and take it seriously.	0.829		Possible score range: 9-45.
Item 4. My parent and I regularly share our feelings and thoughts.	0.583			**Item 9.** When communicating with my child, I try to be patient and understanding.	0.820		
Item 12. My parent makes sure that the time we spend together is productive and meaningful.	0.576			**Item 2.** When spending time with my child, I make an effort to understand their emotions and empathize with them.	0.705		

Item 15. My parents sets aside time for me and do not let me feel lonely.	0.510		**Item 4.** I create time for my child and me to share our feelings and thoughts.	0.631	
			Item 6. My child and I regularly share our feelings and thoughts.	0.627	
Item 9. My parent introduces me to new activities related to my interests.	0.712	Planning Time and Doing Activities Together No reverse-scored items. Possible score range: 4-20.	**Item 13.** I make an effort to do a different activity with my child each week.	0.845	Planning Time and Doing Activities Together No reverse-scored items. Possible score range: 6-30.
Item 8. I regularly do different types of activities (sports, games, arts, etc.) with my parent.	0.699		**Item 17.** I establish daily routines to spend time with my child and stick to them.	0.836	
Item 10. My parent and I do outdoor activities together.	0.572		**Item 16.** I make schedules to ensure that the time we spend together is sufficient.	0.817	
Item 11. My parent and I plan the time we will spend together.	0.426		**Item 11.** I regularly do different types of activities (sports, games, arts, etc.) with my child.	0.780	
			Item 12. I discover new activities we can do together based on my child's interests.	0.750	
			Item 14. I create opportunities to participate in outdoor activities with my child.	0.700	
KMO = 0.927 Bartlett's Test of Sphericity = 1899 (df=66, p<.05) RMSEA = 0.053 TLI = 0.961 X^2 = 89.2 (df=43, p<.05)			KMO = 0.955 Bartlett's Test of Sphericity = 4140 (df=105, p<.05) RMSEA = 0.068 TLI = 0.962 X2 = 186 (df=76, p<.05)		

Supplementary Table S2. Item Parameters and Item Fit Indices for the PCQTS-Child and Parent Forms

Child Form (PCQTS-C)										Parent Form (PCQTS-P)									
Factors		GPCM			Item Difficulty and Discrimination Values					Factors		GPCM			Item Difficulty and Discrimination Values				
		S_χ2	df	RMSEA	a	b1	b2	b3	b4			S_χ2	df	RMSEA	a	b1	b2	b3	b4
Item 3		91.409	66	0.018	2.123	-2.311	-1.681	-0.893	-0.043	Item 7		23.186	24	0.000	4.601	-2.378	-1.860	-1.393	-0.586
Item 2		50.833	66	0.000	2.163	-2.192	-1.463	-0.668	0.169	Item 5		40.067	23	0.027	4.636	-2.205	-1.898	-1.489	-0.969
Item 1		61.012	58	0.007	2.490	-2.196	-1.597	-0.740	0.193	Item 8		27.298	27	0.003	3.598	-2.326	-1.921	-1.452	-0.686
Item 6		127.591	67	0.028	2.184	-2.197	-1.603	-0.752	0.065	Item 3		26.116	28	0.000	3.559	-2.307	-1.930	-1.369	-0.696
Item 7		97.684	73	0.017	1.787	-2.011	-1.419	-0.751	0.124	Item 10		34.305	26	0.018	3.088	-2.506	-2.039	-1.333	-0458
Item 4		108.935	71	0.021	1.751	-2.127	-1.244	-0.441	0.418	Item 9		46.190	23	0.031	2.900	-2.493	-2.133	-1.217	-0.227
Item 12		101.952	70	0.020	1.941	-2.302	-1.545	-0.755	0.143	Item 2		28.061	24	0.013	3.741	-2.348	-1.973	-1.228	-0.481
Item 15		76.130	71	0.008	1.773	-1.985	-1.299	-0.566	0.313	Item 4		51.758	31	0.026	3.119	-2.336	-1.860	-1.145	-0.403
	Item 9	69.972	29	0.035	1.813	-1.730	-1.063	-0.257	0.618	Item 6		36.459	31	0.013	3.036	-2.449	-1.940	-1.224	-0.435
	Item 8	44.718	28	0.022	1.892	-1.399	-0.789	0.016	0.781		Item 13	49.073	34	0.021	3.023	-1.805	-0.975	-0.034	0.687
	Item 10	58.716	30	0.028	1.736	-1.851	-1.170	-0.363	0.404		Item 17	55.689	38	0.021	2.822	-1.987	-1.263	-0.262	0.545
	Item 11	43.671	29	0.021	1.605	-2.096	-1.374	-0.561	0.287		Item 16	55.479	41	0.019	2.682	-1.883	-1.202	-0.249	0.523
											Item 11	33.141	38	0.000	2.591	-2.101	-1.371	-0.263	0.423
											Item 12	40.912	34	0.014	3.315	-2.029	-1.353	-0.369	0.322
											Item 14	59.473	40	0.022	2.644	-1.988	-1.354	-0.446	0.256

GPCM: Generalized Partial Credit Model

RMSEA: Root Mean Square Error of Approximation

S_χ2: Scaled Pearson Chi-square Index

df: Degree of Freedom

a: Item Discrimination

b: Item Difficulty

IRT of Calibration Values for Child Form Factor 1: Log Likelihood = - 11009.668, p<.05 Iteration=56

IRT of Calibration Values for Child Form Factor 2: Log Likelihood = - 6588.595, p<.05 Iteration=18

IRT of Calibration Values for Parent Form Factor 1: Log Likelihood = - 5834.149, p<.05 Iteration=123

IRT of Calibration Values for Parent Form Factor 2: Log Likelihood = - 6911.721, p<.05 Iteration=63

Supplementary Table S3. Comparison of children's perceived parent-child quality time across variables (Child Form)

Child Form						
Sub factor		**Variable**	**N**	**Mean (S. Deviation)**	**Test (p)**	**Significant Difference**
The Quality of Time Spent Together	Gender	1. Girl	571	31.49(7.25)	-1.425[1](0.154)	
		2. Boy	614	32.07(6.75)		
	School level	1. Primary	551	32.79(6.69)	4.629[1](<0.001)	1>2
		2. Middle school	634	30.92(7.15)		
	Mother's Education	1. Primary education	432	30.97(7.09)	6.235[2](0.002)	1<3
		2. High School	433	31.89(6.67)		
		3. Higher Education	320	32.77(7.18)		
	Father's Education	1. Primary education	335	30.46(7.42)	10.589[2](<0.001)	1<2 1<3
		2. High School	467	31.89(6.86)		
		3. Higher Education	383	32.84(6.59)		
	Household income	1. Less than expenses	87	29.28(8.37)	9.345[2](<0.001)	1<2 1<3 2<3
		2. Equal to expenses	714	31.60(6.82)		
		3. Greater than expenses	384	32.71(6.84)		
	Number of siblings	1. Only child	179	32.36(7.38)	6.297[2](0.002)	2>3
		2. One sibling	518	32.41(6.74)		
		3. Two or more siblings	488	30.93(7.05)		
Planning Time and Doing	Gender	1. Girl	571	14.45(4.01)	-0.052[1](0.958)	
		2. Boy	614	14.47(4.03)		
	School level	1. Primary	551	14.87(3.86)	3.269[1](0.001)	1>2
		2. Middle school	634	14.11(4.12)		

Activities Together	Mother's Education	1. Primary education	432	13.64(3.99)	15.858[2](<0.001)	1<2 1<3
		2. High School	433	14.73(3.88)		
		3. Higher Education	320	15.20(4.06)		
	Father's Education	1. Primary education	335	13.62(4.17)	13.694[2](<0.001)	1<2 1<3 2<3
		2. High School	467	14.47(3.87)		
		3. Higher Education	383	15.18(3.93)		
	Household income	1. Less than expenses	87	12.54(4.64)	18.010[2](<0.001)	1<2 1<3 2<3
		2. Equal to expenses	714	14.28(3.87)		
		3. Greater than expenses	384	15.22(3.97)		
	Number of siblings	1. Only child	179	14.69(4.32)	2.963[2](0.052)	
		2. One sibling	518	14.70(3.96)		
		3. Two or more siblings	488	14.12(3.95)		

[1]Independent Sample T-Test

[2]One-Way ANOVA Test

Supplementary Table S4. Comparison of parents' perceived parent-child quality time across variables (Parent Form)

Parent Form						
Sub factor		**Variable**	**N**	**Mean (S. Deviation)**	**Test (p)**	**Significant Difference**
The Quality of Time Spent Together	Gender	1. Woman	685	41.02(6.26)	2.213[1](0.027)	1>2
		2. Man	335	40.06(7.03)		
	Child's School Level	1. Primary School	597	40.71(6.72)	0.033[1](0.974)	
		2. Middle School	423	40.70(6.27)		
	Education Level	1. Primary education	284	39.86(8.24)	3.296[2](0.037)	1<3
		2. High School	288	40.96(6.18)		
		3. Higher Education	448	41.07(5.39)		
	Household Income	1. Less than expenses	194	40.07(7.36)	1.520[2](0.219)	
		2. Equal to expenses	687	40.76(6.61)		
		3. Greater than expenses	139	41.29(4.62)		
	Number of Children	1. One child	202	41.84(5.99)	2.775[1](0.006)	1>2
		2. Two or more children	818	40.42(6.63)		
Planning Time and Doing Activities Together	Gender	1. Woman	685	22.61(5.65)	1.099[1](0.272)	
		2. Man	335	22.20(5.76)		
	Child's School Level	1. Primary School	597	22.75(5.58)	1.798[1](0.072)	
		2. Middle School	423	22.10(5.80)		
	Education Level	1. Primary education	284	21.83(6.32)	3.036[2](0.048)	1<3
		2. High School	288	22.47(5.55)		
		3. Higher Education	448	22.89(5.31)		

	Household Income	1. Less than expenses	194	21.47(6.15)	3.901[2](0.021)	1<2 1<3
		2. Equal to expenses	687	22.67(5.59)		
		3. Greater than expenses	139	22.92(5.29)		
	Number of Children	1. One child	202	24.12(5.09)	4.677[1](<0.001)	1>2
		2. Two or more children	818	22.07(5.75)		

[1]Independent Sample T-Test

[2]One-Way ANOVA Test

Supplementary Table S5. Descriptive Statistics (Mean/SD-Median/Min-Max) of Child and Parent Form Items

Child Form*				Parent Form**			
Items	**N**	**Mean (S. Deviation)**	**Median (Min-Max)**	**Items**	**N**	**Mean (S. Deviation)**	**Median (Min-Max)**
1	1185	4.04(1.09)	4(1-5)	2	1020	4.49(0.88)	5(1-5)
2		3.98(1.17)	4(1-5)	3		4.58(0.86)	5(1-5)
3		4.15(1.11)	5(1-5)	4		4.41(0.94)	5(1-5)
4		3.78(1.26)	4(1-5)	5		4.71(0.79)	5(1-5)
6		4.07(1.13)	4(1-5)	6		4.46(0.90)	5(1-5)
7		3.96(1.26)	4(1-5)	7		4.58(0.82)	5(1-5)
8		3.35(1.39)	3(1-5)	8		4.59(0.85)	5(1-5)
9		3.59(1.32)	4(1-5)	9		4.38(0.88)	5(1-5)
10		3.70(1.33)	4(1-5)	10		4.50(0.86)	5(1-5)
11		3.83(1.28)	4(1-5)	11		3.79(1.13)	5(1-5)
12		4.02(1.16)	4(1-5)	12		3.86(1.11)	4(1-5)
15		3.81(1.29)	4(1-5)	13		3.53(1.18)	4(1-5)
				14		3.89(1.16)	4(1-5)
				16		3.69(1.18)	4(1-5)
				17		3.73(1.13)	4(1-5)

EBEVEYN ÇOCUK NİTELİKLİ ZAMAN GEÇİRME ÖLÇEĞİ
(Çocuk Formu)

1: Kesinlikle Katılmıyorum 2: Katılmıyorum 3: Kısmen Katılıyorum 4: Katılıyorum 5: Kesinlikle Katılıyorum						
Madde Numarası	**Maddeler**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
1	Annem/babam benimle zaman geçirirken beni anlamaya çalışır.	(1)	(2)	(3)	(4)	(5)
2	Üzgün veya stresli hissettiğimde annem/babam bana zaman ayırır, benimle ilgilenir.	(1)	(2)	(3)	(4)	(5)
3	Kendimi yalnız veya değersiz hissettiğimde annem/babam bana yanımda olduğunu hissettirir.	(1)	(2)	(3)	(4)	(5)
4	Annem/babamla düzenli olarak duygu ve düşüncelerimizi paylaşırız.	(1)	(2)	(3)	(4)	(5)
6	Annem/babamla iletişim kurarken bana karşı sabırlı ve anlayışlıdırlar.	(1)	(2)	(3)	(4)	(5)
7	Annem/babam ben bir şey anlatırken sözümü kesmeden sonuna kadar dinler.	(1)	(2)	(3)	(4)	(5)
8	Annem/babamla farklı türdeki aktiviteleri (spor, oyun, sanat vb.) düzenli olarak yaparım.	(1)	(2)	(3)	(4)	(5)
9	Annem/babam, benim ilgimi çeken konularda bana yeni aktiviteler yaptırır.	(1)	(2)	(3)	(4)	(5)
10	Annem/babamla açık hava etkinlikleri yaparız.	(1)	(2)	(3)	(4)	(5)
11	Annem/babamla geçireceğimiz zamanı birlikte planlarız.	(1)	(2)	(3)	(4)	(5)
12	Annem/babam, birlikte geçirdiğimiz zamanın verimli ve anlamlı geçmesine özen gösterir.	(1)	(2)	(3)	(4)	(5)
15	Annem/babam bana zaman ayırıp kendimi yalnız hissetmeme izin vermezler.	(1)	(2)	(3)	(4)	(5)

Ölçek iki alt faktörden (alt boyuttan) oluşmaktadır.

Faktör 1: Madde 1, 2, 3, 4, 6, 7, 12 ve 15'ten oluşmaktadır. Bu alt faktörün adı "Birlikte Geçirilen Zamanın Kalitesi"dir. Bu alt faktördeki maddeler çocukların gözünden ebeveynlerle birlikte geçirilen zamanın kalitesi hakkında bilgi vermektedir. Bu alt faktörde tersten kodlanan madde bulunmamaktadır. Bu alt faktörden alınabilecek en düşük puan 8, en yüksek puan 40'tır. Bu alt faktörden alınan yüksek puan çocukların gözünden ebeveynleri ile yüksel kaliteli zaman geçirdiği anlamına gelmektedir. Bu alt faktörden alınacak puanlar için herhangi bir kesim noktası belirlenmemiştir.

Faktör 2: Madde 8, 9, 10 ve 11'den oluşmaktadır. Bu alt faktörün adı "Zamanı Planlama ve Birlikte Aktivite Yapma"dır. Bu alt faktördeki maddeler çocukların gözünden ebeveynlerle birlikte zaman geçirip aktiviteler yapma ve bu zamanı birlikte planlama hakkında bilgi vermektedir. Bu alt faktörde tersten kodlanan madde bulunmamaktadır. Bu alt faktörden alınabilecek en düşük puan 4, en yüksek puan 20'tır. Bu alt faktörden alınan yüksek puan çocukların gözünden ebeveynleri ile bol aktivite yaptıkları ve bu zamanı birlikte planlamaya çalıştıkları anlamına gelmektedir. Bu alt faktörden alınacak puanlar için herhangi bir kesim noktası belirlenmemiştir.

Detaylı bilgi ve ölçeği geliştirenlere atıf yapmak için bakınız;

Çalışkan-Toraman, Ç., Bostancı, E., Özdemir, H. F., & Toraman, Ç. (2026). Measurement of parent–child quality time: Psychometric properties, measurement invariance, and demographic differences. Scientific Reports, 16, 39422. https://doi.org/10.1038/s41598-026-64429-4

EBEVEYN ÇOCUK NİTELİKLİ ZAMAN GEÇİRME ÖLÇEĞİ
(Ebeveyn Formu)

1: Kesinlikle Katılmıyorum 2: Katılmıyorum 3: Kısmen Katılıyorum 4: Katılıyorum 5: Kesinlikle Katılıyorum						
Madde Numarası	**Maddeler**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
2	Çocuğumla zaman geçirirken onun duygularını anlamaya ve onunla empati kurmaya özen gösteririm.	(1)	(2)	(3)	(4)	(5)
3	Çocuğum kendini üzgün veya stresli hissettiğinde mutlaka ona zaman ayırırım.	(1)	(2)	(3)	(4)	(5)
4	Çocuğumla duygu ve düşüncelerimizi paylaşabileceğimiz zaman yaratırım.	(1)	(2)	(3)	(4)	(5)
5	Çocuğum kendini yalnız veya değersiz hissettiğinde onun yanında olduğumu hissettirmeye çalışırım.	(1)	(2)	(3)	(4)	(5)
6	Çocuğumla düzenli olarak duygu ve düşüncelerimizi paylaşırız.	(1)	(2)	(3)	(4)	(5)
7	Çocuğumun söylediklerini dikkatle dinler ve onun kendini ifade etmesine fırsat tanırım.	(1)	(2)	(3)	(4)	(5)
8	Çocuğumla konuşurken göz teması kurmaya ve beden dilimi açık tutmaya özen gösteririm.	(1)	(2)	(3)	(4)	(5)
9	Çocuğumla iletişim kurarken ona karşı sabırlı ve anlayışlı olmaya çalışırım.	(1)	(2)	(3)	(4)	(5)
10	Çocuğum bana bir şey anlatırken onun sözünü kesmeden sonuna kadar dinler ve ciddiye alırım.	(1)	(2)	(3)	(4)	(5)
11	Çocuğumla farklı türdeki aktiviteleri (spor, oyun, sanat vb.) düzenli olarak yaparım.	(1)	(2)	(3)	(4)	(5)
12	Çocuğumun ilgi alanlarına göre birlikte zaman geçirebileceğimiz yeni aktiviteler keşfederim.	(1)	(2)	(3)	(4)	(5)
13	Çocuğumla birlikte her hafta farklı bir aktivite yapmaya özen gösteririm.	(1)	(2)	(3)	(4)	(5)
14	Çocuğumla birlikte açık hava etkinliklerine katılmak için fırsatlar yaratırım.	(1)	(2)	(3)	(4)	(5)
16	Çocuğumla geçirdiğimiz zamanın yeterli olduğundan emin olmak için program yaparım.	(1)	(2)	(3)	(4)	(5)
17	Çocuğumla vakit geçirmek için günlük rutinler oluşturur ve bunlara sadık kalırım.	(1)	(2)	(3)	(4)	(5)

Ölçek iki alt faktörden (alt boyuttan) oluşmaktadır.

Faktör 1: Madde 2, 3, 4, 5, 6, 7, 8, 9 ve 10'dan oluşmaktadır. Bu alt faktörün adı "Birlikte Geçirilen Zamanın Kalitesi"dir. Bu alt faktördeki maddeler ebeveynlerin gözünden çocuklarla birlikte geçirilen zamanın kalitesi hakkında bilgi vermektedir. Bu alt faktörde tersten kodlanan madde bulunmamaktadır. Bu alt faktörden alınabilecek en düşük puan 9, en yüksek puan 45'tir. Bu alt faktörden alınan yüksek puan ebeveynlerin gözünden çocuklarıyla yüksel kaliteli zaman geçirdiği anlamına gelmektedir. Bu alt faktörden alınacak puanlar için herhangi bir kesim noktası belirlenmemiştir.

Faktör 2: Madde 11, 12, 13, 14, 16 ve 17'den oluşmaktadır. Bu alt faktörün adı "Zamanı Planlama ve Birlikte Aktivite Yapma"dır. Bu alt faktördeki maddeler ebeveynlerin gözünden çocuklarıyla birlikte zaman geçirip aktiviteler yapma ve bu zamanı birlikte planlama hakkında bilgi vermektedir. Bu alt faktörde tersten kodlanan madde bulunmamaktadır. Bu alt faktörden alınabilecek en düşük puan 6, en yüksek puan 30'dur. Bu alt faktörden alınan yüksek puan ebeveynlerin gözünden çocuklarıyla bol aktivite yaptıkları ve bu zamanı birlikte planlamaya çalıştıkları anlamına gelmektedir. Bu alt faktörden alınacak puanlar için herhangi bir kesim noktası belirlenmemiştir.

Detaylı bilgi ve ölçeği geliştirenlere atıf yapmak için bakınız;

Çalışkan-Toraman, Ç., Bostancı, E., Özdemir, H. F., & Toraman, Ç. (2026). Measurement of parent–child quality time: Psychometric properties, measurement invariance, and demographic differences. Scientific Reports, 16, 39422. https://doi.org/10.1038/s41598-026-64429-4