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The Psychometric Properties of Parental Stress Scale-Turkish Form

*Ebeveyn Stres Ölçeği Türkçe Formu'nun Psikometrik Özellikleri*Meltem Aslan Gördesli , Zeynep Aydın Sünbül **Authors Information****Meltem Aslan Gördesli**

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ABSTRACT

The aim of this study is to adapt the Parental Stress Scale developed by Berry and Jones (1995) to Turkish parents. The study was carried out with 534 parents. The scale's validity was examined with exploratory and confirmatory factor analysis. The discrimination, difficulty, and informativeness of the items were examined using the Item Response Theory. Independent samples t-test between the lower and upper 27% scores was performed to test the discrimination of the scale. It has been found that there was a negative relationship between the Parental Stress Scale and the Satisfaction with Life Scale scores, and a positive relationship between the Parental Stress Scale and the Perceived Stress Scale scores. The internal consistency coefficient of the scale and subscales were found to be between .70 and .81 respectively. The results showed that Parental Stress Scale is a valid and reliable tool for measuring parental stress level of Turkish parents.

Article Information**Keywords**

Parental Stress Scale
Validity
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ÖZET

Bu çalışmanın amacı, Berry ve Jones (1995) tarafından geliştirilen Ebeveyn Stres Ölçeği'nin Türk ebeveynlere uyarlanmasıdır. Çalışma 534 ebeveyn ile gerçekleştirilmiştir. Ölçeğin geçerliliği, açımlayıcı ve doğrulayıcı faktör analizi ile incelenmiştir. Maddelerin ayırt ediciliği, güçlüğü ve bilgilendiriciliği Madde Cevap Kuramı kullanılarak incelenmiştir. Ölçeğin ayırt ediciliği, ayrıca alt ve üst % 27 puanları arasındaki fark bağımsız gruplar t-testi yapılarak sınanmıştır. Ebeveyn Stres Ölçeği ile Yaşam Doyumu Ölçeği puanları arasında negatif, Ebeveyn Stres Ölçeği ile Algılanan Stres Ölçeği puanları arasında pozitif yönde ilişki olduğu bulunmuştur. İç tutarlılık katsayısının ölçeğin tamamı ve alt ölçekler için .70-.81 arasında olduğu gözlenmiştir. Bu bulgular, Ebeveyn Stres Ölçeği'nin Türk ebeveynlerin stres düzeyini ölçmek için geçerli ve güvenilir bir araç olduğunu göstermektedir.

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Ethical Statement: This study was completed in accordance with the Helsinki Declaration. In line with this, the study was permitted by Istanbul Medipol University, Social Sciences Ethics Committee (Date: 07/01/2020, Ref: 21).

INTRODUCTION

Lazarus and Folkman (1984) defined stress as the negative effect of the well-being when the resources are forced or exceeded in a relationship between the individual and his/her environment. When the stress is evaluated in context of parent-child relationships, the parents who have high stress levels have problems in their communication with their children and use inappropriate education methods, which leads to the deterioration of communication within the family (Gabriel et. al., 2006; Webster-Stratton, 1990). Stress is considered as a risk factor for psychological disorders, especially for children, in addition to its negative effects on family life (Cina et.al., 2009, p.40).

Being a parent is desired by many adults. Even though parenting is often a conscious choice, there are dramatic changes that come with parenting. One of these changes is the perceived stress that parents have to cope with. Family stress can be defined as pressure, tension and feeling stressed in the face of parenting duties (Rao & Beidel, 2009). Not only changes the relationship between spouses, but also add parenting roles in their life (Glading, 2002). According to the Parental Role Development Model (Mowder, 1996), parenting roles are defined as commitment (approaching the child with care and compassion), education (being a guide and model to the child), protecting with general welfare (meeting the basic needs of children), responsibility (being ready for meeting the needs of children in time) and sensitivity (overlapping of parenthood perceived by children with responsibilities fulfilled by parents). It is a fact that all these parental roles/duties can effect other areas of life as well. In the Parental Stress Model developed by Abidin (2012), parental stress is analyzed under two headings as a child area and a parent area. In this proposed model, attention deficit/hyperactivity, supported parent, mood, acceptability, compatibility and demanding are factors in children's area; competence, attachment, role restriction, depression, partner relationship, isolation, health are factors in the parental area.

However, parents' beliefs about the personality of the child also affect their expectations towards the child (Hortaçsu, 1997, p.71). As a result of studies on the causes of parental stress, the child's disruptive behaviors (Crnic & Low, 2002), child characteristics such as difficult temperature and emotion dysregulation (Chang et. al., 2004; Ostberg & Hagekull, 2000) are predictors of parenting stress. According to some researchers, the effect of parenting stress on parenting role and child behavior is stronger than work stress or other stresses of life (Deater-Deckard et al., 1998). Generally, parents of young children report higher levels of stress, depression, and anxiety than their childfree counterparts, although this is also an area of life many parents find ultimately meaningful and rewarding (Abidin, 1990; Deater-Deckard et al., 1998; Henderson & Uecker, 2016; Ostberg et al., 1997; Umberson et al., 2010). There is also a growing body of literature on parental health and well-being in midlife and later life (Fingerman et al., 2016; Pillemer et al., 2017; Smith & Grzywacz, 2014). In addition to this, high parental stress level negatively affects the self-efficacy of the parent (Petermann et al., 2006, p. 5). Gabriel and Bodenmann (2006) regard parent's ability to cope with stress as an important part of parental competencies.

When studies on parental stress are examined, it is understood that the stress experienced by parents is important for the development of both parents and children. Therefore, studies on parental stress are considered to be very important. In Turkey, it was seen that there are two instruments for measuring parenting stress directly. One of them is the Parental Stress Index-Short Form developed by Abidin (1990, 2012) and the Turkish adaptation study of the scale carried out by Çekiç et al. (2015). The other tool is the Parenting Stress Scale developed by Özmen and Özmen (2012).

The first measurement tool for measuring parenting stress was developed by Abidin (1990). The Parental Stress Index-Short Form was developed to reveal dysfunctional parent-child relationships. This measurement tool with 36 items consists of Parental Distress, Dysfunctional Interaction, and Difficult Child subscales. Later on, the number of items in the scale was increased and revised (Abidin, 2012). The sub-subscales of the revised form are included in the Parental Domain and Child Domain representing parent and child characteristics. Child Domain includes the subscales of Distractibility/Hyperactivity, Child's Reinforcement of the Parent, Acceptability of the Child, Mood, Adaptability, and Demandingness; while the subscales of the Parental Domain consist of Sense of Competence, Attachment to the Child, Role Restrictions, Parental Depression, Spouse Relationship, Social Isolation, and Health. The test-retest reliability of the scale for Total Stress, Child Domain and Parental Domain is .96, .63, and .91 respectively. The Turkish adaptation study of the Parent Stress Scale-Short Form (Abidin, 2012) was carried out by Çekiç et al. (2015). The construct validity of the Turkish form of the scale was tested by confirmatory factor analysis (CFA). Goodness of fit indices as a result of CFA for Child Domain found to be $\chi^2/df=1.693$, GFI = 0.84, AGFI = 0.82, CFI = 0.85, SRMR = 0.056 and RMSEA = 0.042; while for the Parental Domain as $\chi^2/df = 1.720$, GFI = 0.82, AGFI = 0.80, CFI = 0.88, SRMR = 0.052 and RMSEA = 0.043. Within the scope of validity studies, the scores of the psychiatry group and the parents in the normal group were compared. As a result of the analyses, significant relationships were found between the scores of those two groups. Test-retest reliability of the scale for subscales and total score was observed to range from .56 to .92.

Another instrument used to measure the stress level of parents in Turkey is the Parenting Stress Scale developed by Özmen and Özmen (2012). As a result of the exploratory factor analysis (EFA), it was observed that the scale showed a single factor structure that explained 32.20% of the total variance, while the goodness of fit values were acceptable as a result of the CFA ($X^2 / df = 252.98 / 104 = 2.43$, RMSEA = 0.05, RMR = 0.03, RMS = 0.04, GFI = 0.93, AGFI = 0.91 and CFI = 0.91). Factor loadings of the 16 items ranged between .34 and .58. The internal consistency coefficient of the scale was .85, and the split-half reliability was calculated as .82.

When those two research instruments measuring parenting stress in Turkey are examined, it is observed that the validity and reliability analyses of both scales yield very good results. However, it is assumed that the development or adaptation of new instruments to measure parenting stress will contribute to further new studies. Thus, in this study, psychometric properties of the Parental Stress Scale developed by Berry and Jones (1995) were examined in Turkish parents.

METHOD

This study aims to determine the psychometric properties of Parental Stress Scale in a Turkish sample. In this section, the participants, data collection procedure, data collection tools, and the data analysis were described.

Participants

The participants consisted of a total of 534 parents whose children continue to formal education, of whom 369 were mothers (69.1%) and 165 were fathers (30.9%). The age of the participants ranged from 23-62 and the mean age was found 38.14 for the whole sample.

Ethical Statement

This study was completed in accordance with the Helsinki Declaration. In line with this, the study was permitted by Istanbul Medipol University, Social Sciences Ethics Committee (Date: 07/01/2020, Ref: 21).

Data Collection Tools

Parental Stress Scale (PSS). The instrument developed by Berry and Jones (1995) is a 5-point Likert scale consisting of 16 items. The internal consistency coefficient of the original scale was found to be .83, the mean of item-total correlations to be .23, and the mean of item remainder correlations to be .43. The test-retest correlation applied with an interval of six weeks was calculated as .81. For the validity analysis of the scale, Parenting Stress Index (Abidin, 1990), Perceived Stress Scale (Cohen et al., 1983), UCLA Loneliness Scale (Russell et al., 1980), Marital Satisfaction and Loyalty Scale (Monroe & Jones, 1990), Guilt Inventory (Kugler & Jones, 1992), and Social Support Questionnaire were used. Significant relationships were found between the Parental Stress Scale and the scores obtained from these scales. The construct validity of the scale was performed by exploratory factor analysis. The EFA was carried out with 18 items, two items (items 2 and 4) with factor loadings below .40 were excluded from the scale. It was observed with EFA that the scale was composed of 4-factors that explained 53.8% of the total variance and whose eigenvalue was greater than 1. These factors included parental rewards (items 1, 5, 6, 7, 8, 18), parental stressors (items 3, 9, 10, 11, 12, 16), lack of control (items 14, 15, 16), and parental satisfaction (items 13, 17, 18). Since items 16 and 18 took a factor load of over .40 on two different factors, these items were placed on both factors.

Satisfaction With Life Scale (SWLS). In this study, the Satisfaction with Life Scale (Diener et al., 1985) was used to test the convergent and discriminant validity of the Parental Stress Scale. The SWLS is used to measure the satisfaction of the person as a whole. The scale is Likert-type and consists of 5 items. SWLS has a single-factor structure that explains 66% of the total variance. The internal consistency coefficient of the original scale is .87, and in Turkish form, this coefficient was determined as .89 (Köker, 1991).

Perceived Stress Scale (PSS). The Perceived Stress Scale (PSS- Cohen et al., 1983) is another instrument that is used in the validity study of the Parent Stress Scale. Turkish adaptation study of the PSS was conducted by Eskin et al. (2013). The scale is a Likert-type scale consisting of 14 items and 2 factors. The internal consistency coefficient of the Turkish form of the scale was found to be .84, and test-retest reliability as to be .87. The highest score that can be obtained from the scale is 70, and the lowest score is 14.

Data Collection Procedure

The data collection procedure has been started with the ethical approval. After Istanbul Medipol University Institute of Social Sciences Ethics Committee has decided that the study is ethically appropriate (in 07/01/2020, decision number:21), measurement instruments were delivered to parents by using online forms. The participants of the study were determined based on a snowball sampling method on a voluntary basis. Snowball sampling is a recruitment method that employs research into participants' social networks to access specific populations (Browne, 2005).

Data Analysis

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were utilized to validate the factor structure of the Parental Stress Scale. As being reported in the literature (e.g., Hu & Bentler, 1999; Kline, 2015), for the CFA; GFI, AGFI, and CFI $\geq .90$ and SRMR and RMSEA $\leq .08$ were considered an indication of the acceptable fit. After establishing the factorial structure of the Parental Stress Scale, the discrimination, difficulty, and informativeness of the scale were examined using the Item Response Theory (IRT; Chalmers, 2012). The basic aspects of the IRT parameters can be described by the item characteristic curve (ICC), which is a curve shaped like an “S” and an α value > 1.0 is considered as highly discriminant (Baker, 2001). And for discriminant validity lower and upper 27% cut-off points of the scale are examined with an independent samples t-test. The correlations between the Parental Stress Scale, satisfaction with life and perceived stress were examined to establish the concurrent validity of the scale. Cronbach’s alpha and composite reliability were examined for the reliability of the Parental Stress Scale. Furthermore, corrected item-total correlation coefficients for each item were also examined. The analyses of the present study were run using IBM SPSS Statistics 22.0, Amos Graphics 23 and Stata 16.

RESULTS

Validity Results

The original English version of the scale was translated into Turkish by the authors and five Ph. D. experts in the field. In the EEF, evaluations regarding the appropriateness of the translations of the items were carried out with a 5-point Likert scale (1= Absolutely not suitable, 5= Exactly appropriate). After this stage, an opinion was obtained from a Turkish linguistics expert about the compatibility of the items with Turkish. In addition, two measurement and evaluation experts stated their opinions for the overall form, item structure, and rating. The Turkish scale was finalized considering the data and the suggestions obtained by the utilization of these forms.

To determine whether the structure obtained from the scale is appropriate for exploratory factor analysis, firstly Kaiser-Meyer-Olkin (KMO) coefficient and Barlett test were performed. The KMO value of the 16-item scale was found to be significant at the level of .82 and the Barlett Test at the level of $p < .001$. These findings showed that there is a sufficient correlation between the items to perform factor analysis on the current sample. By the factor analysis, it was aimed to determine whether the items in the scale would be separated into fewer factors that exclude each other and to determine the dimensions of the scale. In EFA, principal axis factoring and varimax axis rotation technique were chosen in the same way as the original scale. According to the first EFA findings, it was found that the scale's Turkish form has an eigenvalue greater than 1 and consists of 3 factors explaining 39% of the total variance. Then, the number of factors was determined as 4-factors as in the original scale and a second EFA findings were generated. It was observed that the four-factor structure explained 56.23% of the total variance. According to EFA, eigenvalue and explained variance values were found to be 4.49 and 28.04% for Factor 1, 2.22 and 13.85% for Factor 2, 1.20 and 8.14% for Factor 3, .99, and 6.21% for Factor 4. Factors and item factor loadings are shown in Table 1.

Table 1. Factors and factor loadings of PSS resulting from the EFA.

Original item no	New item no	1. Factor	2. Factor	3. Factor	4. Factor
10	8	.72			
11	9	.61			
16	14	.61			
12	10	.59			
9	7	.55			
3	2	.43			
6	4		.78		
7	5		.61		
5	3		.48		
1	1		.48		
8	6		.40		
15	13			.75	
13	11			.69	
14	12			.47	
17	15				.61
18	16				.53

As a result of EFA, it was seen that the Parental Stress Scale was divided into factors similar to the original scale in the Turkish sample. However, it was found that the 11th item was in the 3rd Factor, unlike the original scale. After the EFA, the validity of the scale was also examined with a CFA. Initially, the first model, in which the 11th item was in the 4th factor as in the original scale, was tested. Goodness of fit values of the first model were found to be $\chi^2/df = 2.20$, RMSEA = .063, GFI = .92, AGFI = .89, CFI = .90 SRMR = .07 (In figure 1). Item factor loadings were significant and above .30. After examining the first model, the second model in which the 11th item was placed in the 3rd factor as in the EFA result of the Turkish sample, was tested. The goodness of fit values of second model were found to be $\chi^2/df = 1.92$, RMSEA = .055, GFI = .93, AGFI = .90, CFI = .92 and SRMR = .06 (In figure 2). The factor loadings of all items were significant and were between .38 and .91. Because the goodness of fit indices of these two confirmatory models were very close, the chi-square difference test was performed and results showed that there is a statistical difference between the two models at $p < .001$ level.

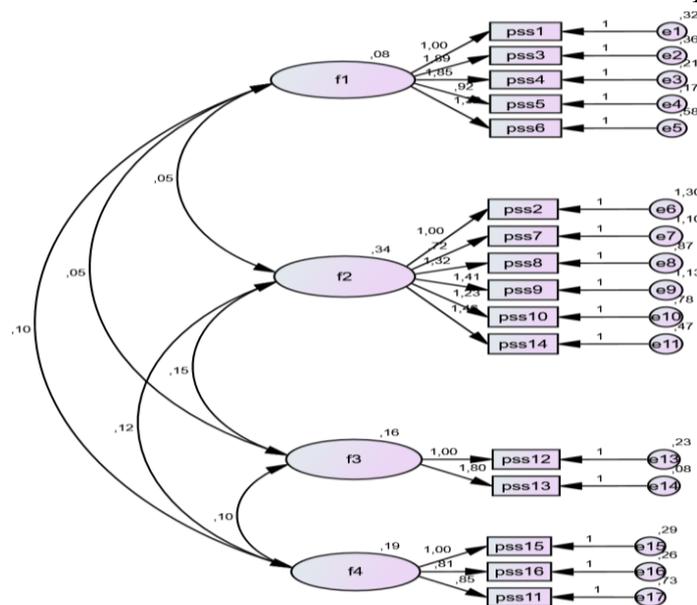


Figure 1. Standardized estimates for Model 1.

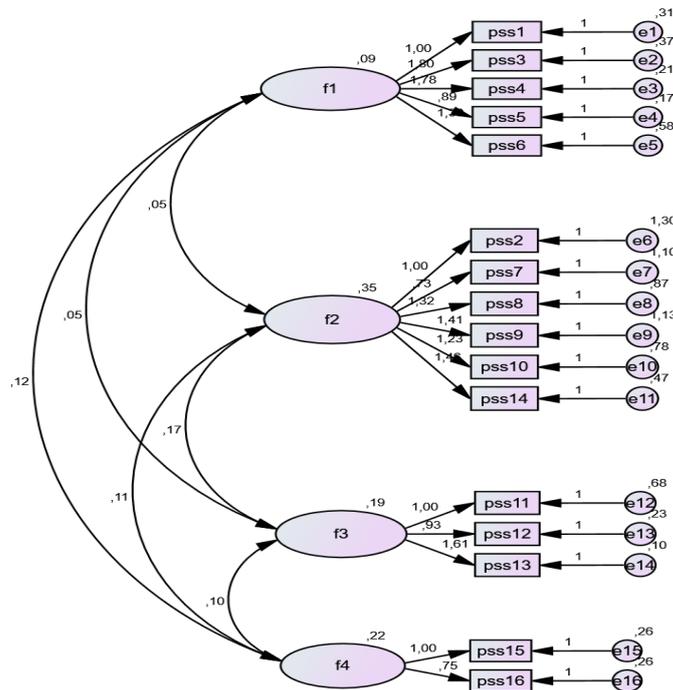


Figure 2. Standardized estimates for the proposed model.

Table 2. Item response theory parameter estimates for the Parental Stress Scale-Turkish Form

Item	Item parameter estimates				
	<i>a</i>	<i>b</i> ₁	<i>b</i> ₂	<i>b</i> ₃	<i>b</i> ₄
1	1.44	.77	2.95	3.39	4.05
2	.92	-2.57	-1.00	-.33	1.83
3	.88	.81	3.34	4.08	4.81
4	1.16	1.35	2.88	3.53	4.42
5	.91	2.58	4.50	5.45	6.67
6	1.00	.34	2.08	3.79	5.04
7	1.23	.35	1.60	2.18	2.83
8	1.25	-.93	.41	1.10	3.20
9	1.20	-1.00	.41	.85	2.30
10	1.50	-1.16	.47	1.24	2.51
11	1.32	.65	2.02	2.54	3.36
12	2.65	1.19	1.91	2.35	2.87
13	3.31	.55	1.51	1.98	2.64
14	2.08	-.36	.94	1.38	2.47
15	1.11	.39	3.21	4.12	4.34
16	1.13	.47	3.27	4.55	5.53

The discriminant validity of the Turkish form of the Parental Stress Scale was performed by Item Response Theory and we conducted a t-test to examine the difference between the mean scores of the upper and lower 27% groups of the Parental Stress Scale. According to Item Response Theory (IRT), as displayed in Table 2, 13 items of the 16 items' α values were higher than 1.0 and 3 items' (2,3 and 5) α values were between .88 and .92. In addition, t-test results showed that between the upper and lower 27% groups of the total scale there was a statistically significant difference ($t = 40.84, df = 31, r = .000, p < .01$).

Satisfaction with Life Scale and Perceived Stress Scale were used for the convergent-divergent validity of the Parental Stress Scale Turkish form. There was a positive correlation between the Parental Stress Scale and the Perceived Stress Scale ($r = .34, p < .01$). As a result of the divergent validity analysis, it was found that there was a negative correlation between the Parental Stress Scale and the Satisfaction with Life Scale ($r = -.37, p < .01$).

Reliability Results

The internal consistency coefficients of the Parental Stress Scale were calculated separately for the 4 factors emerged in the validity studies and also calculated for the entire scale. As a result of the analysis, it was found that the Cronbach alpha internal consistency coefficient was to be .76 for Factor 1, .72 for Factor 2, .70 for Factor 3, .71 for Factor 4, and .81 for the whole scale. Corrected item correlations varied between .36 and .63.

DISCUSSION, CONCLUSION & SUGGESTIONS

In this study, the psychometric properties of the Parental Stress Scale developed by Berry and Jones (1995) were examined in a sample of Turkish parents. The adaptation process of the original scale to the Turkish sample started with the linguistic equivalence study. The construct validity was examined with EFA and CFA analyses; while criterion validity was tested with the Satisfaction with Life Scale and Perceived Stress Scale. After that, Cronbach alpha internal consistency coefficients between the upper and lower 27% groups were calculated.

According to the results obtained from EFA conducted to test the construct validity, the scale gave the best values in a 4-factor construct similar to the original scale. These factors and the variances explain 14.88% of the parental rewards subscale, 12.96% of the parental stressors subscale, 9.83% of the lack of control subscale, 5.56% of the parental satisfaction subscale, and 43.2% of the total variance. In social sciences, multi-factor scales are expected to explain 40% to 60% of the variance (Büyüköztürk, 2002; Çokluk et al., 2010). In the light of this information, it is seen that the scale adequately explains this variance. The 11th item (my child's behavior is often stressful for me) that is under the parent satisfaction subscale in the original scale, was placed in the lack of control subscale in the Turkish sample model (Model 2). It was observed that this replacement increased the factor loading and led to the better goodness of fit values of this model (Model 2) than the Model 1. (Goodness of fit values for Model 1: $\chi^2/df = 2.258$, RMSEA = .06, GFI = .93, AGFI = .90, CFI = .91 SRMR = .072; Goodness of fit values for Model 2: $\chi^2/df = 1.562$, RMSEA = .04, GFI = .94, AGFI = .93, CFI = .96 and SRMR = .046). Based on obtained results, the scale appeared to fit well in Turkish parents (Hu & Bentler, 1999; Kline, 2015). It is assumed that this finding has links to the fact that Turkish parents mostly feel responsible for their child's behavior. Especially in societies where self-construal is relational, such as the Turkish society, the behavior of the child is not separate from the parent, rather it is thought that it is an expected result to be regarded as a reflection of parental behavior.

The discriminant validity of the scale was studied for each item with IRT, and for whole scale comparing upper and lower 27% groups. According to IRT results, 13 items' α values were above 1 which is accepted as 'discriminant' (Baker, 2001). The other three items' α values were between .88 and .92. Basic aspects of the IRT parameters can be described by the item characteristic curve (ICC), which is a curve shaped like an "S" was used in ICC analysis and was carried out using the Graded Response Model (GRM). The ICC's of the items are showed in Appendix A. T-test results between the upper 27% and lower 27% groups showed a significant difference. Although 3 items' α values were lower than 1, they were very

close to 1 and the difference between upper and lower %27 cut-off points was significant. Thus, Parental Stress Scale has discriminant validity for Turkish parents.

Reliability analysis of the 4-factor structure of the Parent Stress Scale Turkish Form was performed with the Cronbach alpha internal consistency coefficient. As a result of the analysis, the Cronbach alpha internal consistency coefficients were found to be .76, .72, .70, .71 and .81 respectively. The internal consistency coefficient of the scales used in social sciences above .70 indicates that the scale is reliable (Büyüköztürk, 2010). And corrected item-total correlations were above .30 for each item. Findings of this study showed that the Parental Stress Scale Turkish Form is also reliable.

All these findings demonstrate that the Parent Stress Scale Turkish Form is a valid and reliable tool for Turkish parents. However, this study also has some limitations. In this research, the sample was composed of parents selected with a snowball sampling method. Similar studies to be carried out in the future are suggested to be designed with random sampling method. Besides, parents whose children do not attend formal education, such as parents with adult children, are suggested to be involved in similar studies. By including these participants, it is thought that the examination of validity and reliability will contribute both to the generalizability of the results and to the relevant literature. It is hoped that the scale will be used in further studies of parental stress in Turkish context.

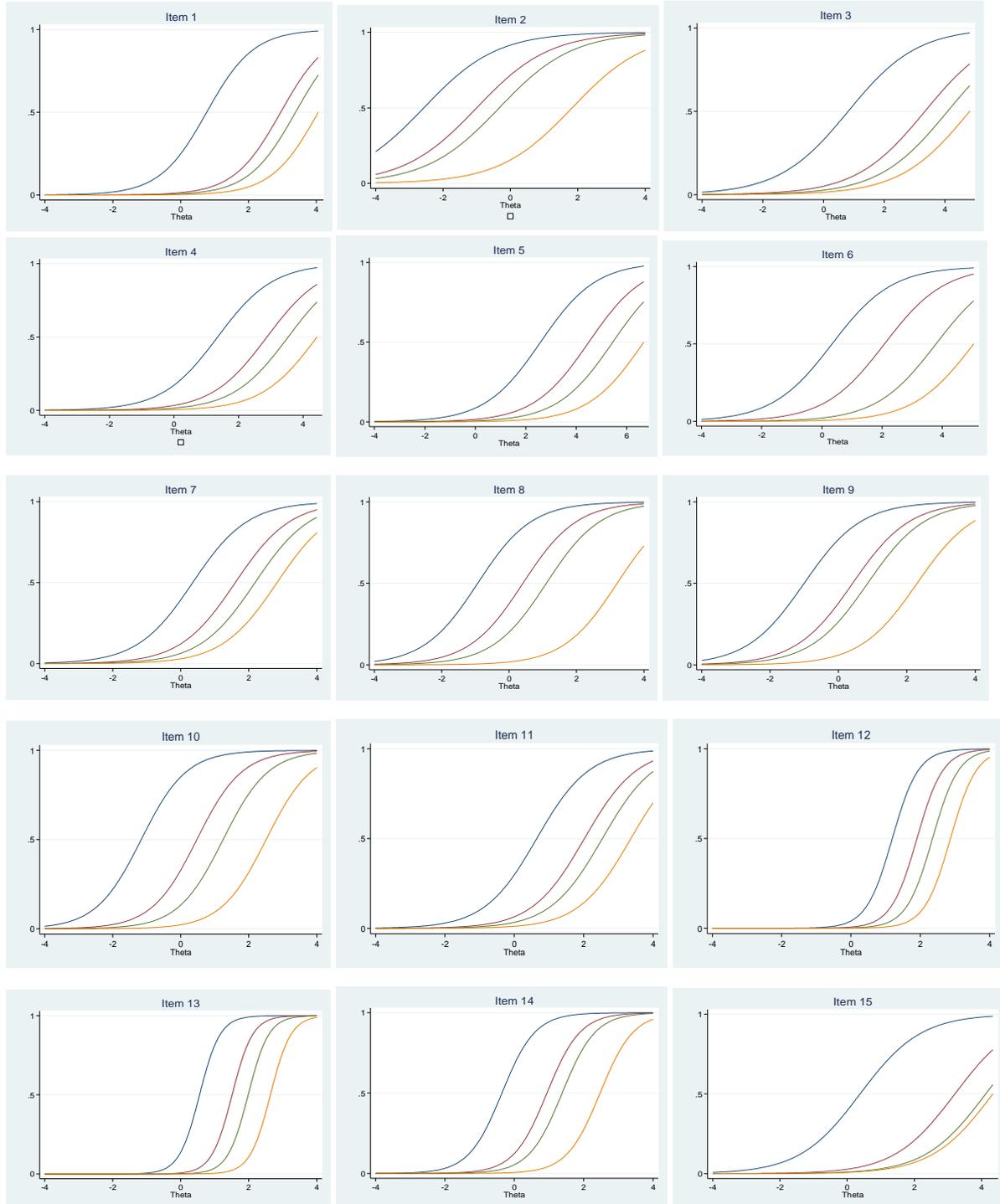
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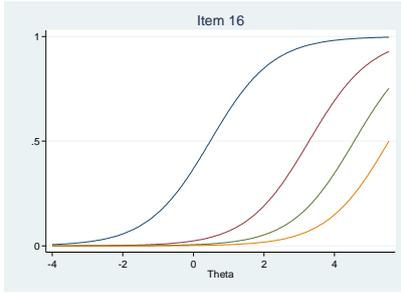
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Appendices

Appendix I. Item characteristic curves (ICC) of Parental Stress Scale Turkish Form





Appendix II. Parental Stress Scale Turkish Form

1*	Bir ebeveyn olarak bu rolden mutluyum
2	Çocuğuma bakmak bazen gerektiğinden çok daha fazla zaman ve enerjimi alıyor.
3*	Çocuğuma oldukça yakın hissediyorum.
4*	Çocuğumla vakit geçirmekten hoşlanıyorum.
5*	Çocuğum benim için önemli bir mutluluk kaynağıdır.
6*	Çocuğumun olması bana gelecek hakkında daha net ve daha iyimser bir bakış açısı sağlıyor.
7	Hayatımdaki en büyük stres kaynağım çocuğumdur.
8	Çocuk sahibi olmak hayatımda çok az zaman ve hareket alanı bırakır.
9	Çocuk sahibi olmak maddi açıdan büyük bir yüküdür.
10	Çocuğumla hayattaki diğer sorumluluklarım arasında denge kurmak zordur.
11	Çocuğumun davranışları benim için çoğu zaman utandırıcı ve stres verici oluyor.
12	Geriye dönebilseydim çocuk sahibi olmamaya karar verebilirdim.
13	Ebeveyn olma sorumluluğum bana boğulmuş hissettiriyor.
14	Çocuk sahibi olmak hayatım hakkında daha az seçenek ve daha az kontrol anlamına geliyor.
15*	Ebeveynliğimden memnunum.
16*	Çocuğumu eğlenceli buluyorum.

*These items should be coded as reversed.

Parental rewards: 1,3,4,5,6

Parental stressors: 2,7,8,9,10,14

Lack of control: 11,12,13

Parental satisfaction: 15, 16

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Author Contributions

This study was conducted by all the authors working together and cooperatively. All of the authors substantially contributed to this work in each step of the study.

Conflict of Interest

It has been reported by the authors that there is no conflict of interest.

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Ethical Statement

This study was completed in accordance with the Helsinki Declaration. In line with this, the study was permitted by Istanbul Medipol University, Social Sciences Ethics Committee.

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