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ABSTRACT

The purpose of this study was to develop and test the psychometric properties of the Maternal Role Perception Scale, a measure of motherhood, based on the perceptions of women. The 5-point Likert draft scale with 61 items was used. The data of 610 mothers were analyzed in the study. In the validity–reliability analysis of the scale, exploratory factor analysis and Cronbach's alpha coefficients were used. As a result of the factor analysis, the scale consists of 28 items and two factors explaining 55.741% of the total variance. The internal consistency coefficient (Cronbach's alpha) of the scale was calculated as 0.952. The Maternity Role Perception Scale (MRPS) is a reliable and valid scale developed for Turkish women. Maternal role is affected by physical, psychological, social status and the life of the woman. It is recommended to apply MRPS on different samples.

The role of maternity, one of the developmental life events, requires the woman to adapt to new roles and responsibilities. A woman's perception of maternity role is crucial to her skill and competence to meet baby care and other needs. Therefore, social workers and health care professionals in the field of female reproductive health should examine postpartum women's maternal role perceptions (Barkin & Wisner, 2013; Meighan, 2014). In this study, the researchers provided evidence for the psychometric properties of the Maternity Role Perception Scale (MRPS), which is used to measure both the physical and psychological status of women in the postpartum period.

One of the most important role of women is maternity. The role of maternity is defined as the process of learning and performing motherhood behavior. This process is a developmental process that starts in pregnancy and continues after birth (Mercer, 2004, 2006). The maternity role process of a women is a dynamic and a two-component (mechanical/practical and cognitive/motor skill) process consisting of social roles, behaviors and attitudes. The first component of the process includes activities related to the

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physical care of the baby (such as feeding, dressing, keeping clean and safe), whereas the second component includes cognitive and emotional skills (Meighan, 2014; Nelson, 2003).

The maternity role of women, which consists of a wide variety of activities and requires serious responsibility, is influenced by various factors. These factors are the mother's educational level, working status, income status, family functions, social support status, infant characteristics, sociocultural environment and health policies (Laney et al., 2015; Ozkan & Polat, 2011). The presence of any problem and stress may also affect the role perception and success of mothers (Barkin & Wisner, 2013).

In the literature, it was found that those who were mothers for the first time and did not feel ready for motherhood experienced intense stress in motherhood. Gameiro et al. (2009) determined that women with multiple pregnancies experienced more anxiety and adjustment problems. Holub et al. (2007) reported that the adaptation of adolescent mothers to the role of motherhood was lower (Gameiro et al., 2009; Holub et al., 2007). It was also observed that the maternity perceptions of pregnant women who were hospitalized because of their risk were negatively affected (Ha & Kim, 2013). Shorey et al. (2014) stated that the perception of parental adequacy was higher in multiparous women than in primiparous women (Shorey et al., 2014). On the other hand, social support adequacy was reported to have a positive effect on maternal performance (Barkin & Wisner, 2013).

The process of learning and realizing motherhood behavior, which starts with the dream of motherhood, continues after birth, requires psycho-social preparation, having cognitive and behavioral aspects and is perceived positively by most women, may be defined as the maternity role. Mercer's theory of motherhood and becoming a mother is related to the pregnancy process and the first year of the baby's life. Mercer's maternity role model serves as a framework for women's realization of their maternal roles and for creating a strong bond with their children. Mercer's theory specifically helps nontraditional mothers to be successful parents (Mercer & Walker, 2006). Rubin's theory of attaining maternal role was defined as the process of a woman gaining her maternal identity and success. It was stated that the maternal identity in women begins during pregnancy and is shaped by imitation, role-playing and internalizing expectations (Meighan, 2014). Although motherhood is a universal experience, it is influenced by the social-cultural values of the individual and the society. In particular, the value placed on the status of motherhood by cultural and social elements in any society has an important effect on postnatal maternity perceptions (Barkin & Wisner, 2013; Mercer, 2006). In the Turkish society, the role of maternity is perceived by women as the most important task and constitutes an important part of women's daily activities. However, women

experience insufficiency in maternity roles due to their individual and obstetric characteristics, psychological and socioeconomic status. This situation affects the child's life, physical and cognitive development. According to maternity theory, nurses and midwives are health care professionals who help women adapt to maternal/maternity roles (Mercer & Walker, 2006; Parratt & Fahy, 2011). Nurses and midwives should be able to identify and measure maternal role perceptions to provide adequate physical, psychosocial and self-care support for mothers.

Studies in the field of maternity globally usually focus on concepts which define the psychological dimension of maternity rather than the concept of motherhood role. When the literature is reviewed, it may be seen that none of the selected scales has turned out to be appropriate for measurement of the role of maternity after childbirth. Maternal adjustment measures, such as the Postpartum Adjustment Questionnaire (O'Hara et al., 1992), Maternal Adjustment and Maternal Attitudes questionnaire (Kumar et al., 1984), Inventory of Functional Status After Childbirth (IFSAC) (Fawcett et al., 1988) and Barkin Index of Maternal Functioning (BIMF), have been developed so far (Barkin et al., 2010). However, these scales are limited in terms of questioning the roles and concepts that are unique to the role of maternity (Barkin & Wisner, 2013; Meighan, 2014). Besides, existing scales are inadequate in measuring maternity role perceptions. To address the gap of maternal role instruments in the psychometric literature, further studies are needed.

To amplify the sense of maternal role women', first of all, care providers need to ascertain the current situation. Then, to overcome existing problems, it is necessary to make improvements by determining the factors affecting women's positive and negative perceptions of maternal role. In this study, researchers were benefited from Mercer's Maternity Theory and Rubin's Maternal Role Acquisition Theory (Meighan, 2014). The results obtained from the study will provide data to make education plans for the solution of problems Turkish women face regarding the role of maternity and contribute to the literature on women's health. As mentioned above, there is no specific measurement tool that determines the role perceptions of mothers in the literature. In this study, researchers aimed to develop a MRPS. The purpose of the researchers in this study has to develop the Maternal Role Perception Scale and test the psychometric properties of the scale among Turkish mothers.

Methods

Design

Researchers have planned a methodological scale development study to determine Turkish women's perceptions of their maternal role. Researchers

in this study provide the psychometric analysis of the Maternal Role Perception Scale, a measure that determines the maternal role perceptions of women.

Scale development plan and stage

Scale development generally consists of the design, pilot implementation and implementation stages. The implementation stage involves: (a) item analysis, (b) reliability and factorial validity (determination of psychometric properties), (c) construct validity (research of relationship with other constructs) (Tezbaşaran, 2008; Yurdagül & Bayrak, 2012).

Preparation

Formation of scale items: preparation of the data collection instrument

The preparation of the scale started with a comprehensive literature review. The search related to the subject was made in the CINAHL, PubMed, Science Direct, Scopus, Wiley and Taylor & Francis databases. In the search, the terms "motherhood," "maternity role," "maternity perception," "validity," "reliability" and "scale" were used. Scales developed for motherhood and motherhood roles were examined. From these scales, IFSAC measures readiness for baby care responsibilities, self-care, housework, social and professional activities. BIMF measures maternal function in terms of not only baby care, housework, self-care and social relations, but also adaptation to motherhood and the psychological state of the mother (Barkin et al., 2010; Fawcett et al., 1988).

Formation of item pool

In the process of developing the MRPS, an item pool of 66 items was created by the researchers in line with the literature.

While preparing the form, dimensions and names were not planned. As a result of the reviews and recommendations of 11 academicians who are experts in the field of drafting scales, the items with the same meanings and those thought not to serve the purpose of the scale were removed from the draft scale. Finally, the draft scale was decided with 61 items. The items composed for the scale form were expressed in such a way that mothers could understand. The items in the scale had a 5-point Likert-type scoring as (1) I do not agree at all, (2) I disagree, (3) I am indecisive, (4) I agree and (5) I strongly agree (Taherdoost, 2017; Watson & Thompson, 2006).

Sampling and permissions

Selection of the sample for implementation of the draft scale

The study was performed at a public hospital (1 June to 30 December 2015) in the city center of Istanbul in Turkey, and this hospital was preferred because of being the center where most births take place. *Inclusion criteria:* Primiparous and multiparous (610 voluntary mothers) mothers between 18 and 45 years of age, with 37–42 weeks of a singleton pregnancy, normal vaginal delivery and who agreed to participate in the study. *Exclusion criteria from the study:* Those who cannot speak and write in Turkish, have any complications and give birth by cesarean section. In general, it is desired that the sample size is 5–10 times the number of items in the scale (Ragab & Arisha, 2017). In this study, the sampling size consisted of 610 mothers who were in their postpartum period. Since the number of the items in the instrument was 61, the sample met the size requirements.

Data collection

The researcher visited the hospital on three working days every week and conducted interviews with the women. The women were invited by the researcher to participate in the study. Then, the researcher introduced the scale form to the participants. Subsequently, the participants who voluntarily agreed read the scale form and marked their answers on the questionnaire.

Ethical considerations

At the stage of developing the MRPS, necessary forms for the scale were sent to 11 experts *via* email, and feedback was received. Ethical approval was obtained from the Ethics Committee of the hospital where the study was conducted (Decision no. 79, Decision date: 22.05.2015). Verbal and written permission (informed consent) was obtained from the hospital and the participants. Additionally, the researcher informed the participants about the study and explained that they could leave the study at any time.

Implementation

Face validity

A scale model that is being developed is required to be evaluated using an experimental approach with analogous sampling according to the scale development literature (Lipovetsky, 2017; Sireci & Faulkner-Bond, 2014). After ensuring the linguistic and content validity, to make the necessary arrangements in the data collection tools, 20 mothers were included in pre-implementation, and the face validity was evaluated. As a result of the evaluation, the 61-item draft form was tested.

Data collection

The data collection instruments consisted of two forms, the participant "Descriptive Information Form" and the "Maternal Role Perception Draft Scale Form." The sample size was calculated based on relative criteria such as the numbers of items or factors. In general, it is desired that the sample size is 5–10 times the number of the items in the scale (Ragab & Arisha, 2017). In the data collection process, which lasted for 7 months (1 June to 30 December 2015), in total, 642 women filled out the printed forms. As a result of the examinations, it was determined that 610 out of the 642 forms were suitable for statistical analysis. The obtained data were used to test the validity and reliability of the scale (Figure 1).

Data analysis

The Number Cruncher Statistical System (NCSS) 2007 software (Kaysville, UT, USA) was used for the statistical analysis of the obtained data (License: 1675948377483; Serial: N7H5-J8E5-D4G2-H5L6-W2R7). The Content Validity Index (CVI) was applied to the experts for opinion assessment. The draft scale was created in line with the opinions and recommendations of 1 statistics, 4 obstetrics nursing, 3 pediatric nursing and 3 midwifery experts (11 academicians). Exploratory factor analysis (EFA) was used to determine the construct validity, Cronbach's alpha was used for the internal consistency, and Spearman's correlation analysis was performed for the parallel form reliability. Spearman–Brown analysis was performed for the reliability coefficient of the whole scale. Descriptive statistics were calculated to determine the means and percentages (Borsboom et al., 2004; Cronbach & Shavelson, 2004; Tavakol & Dennick, 2011).
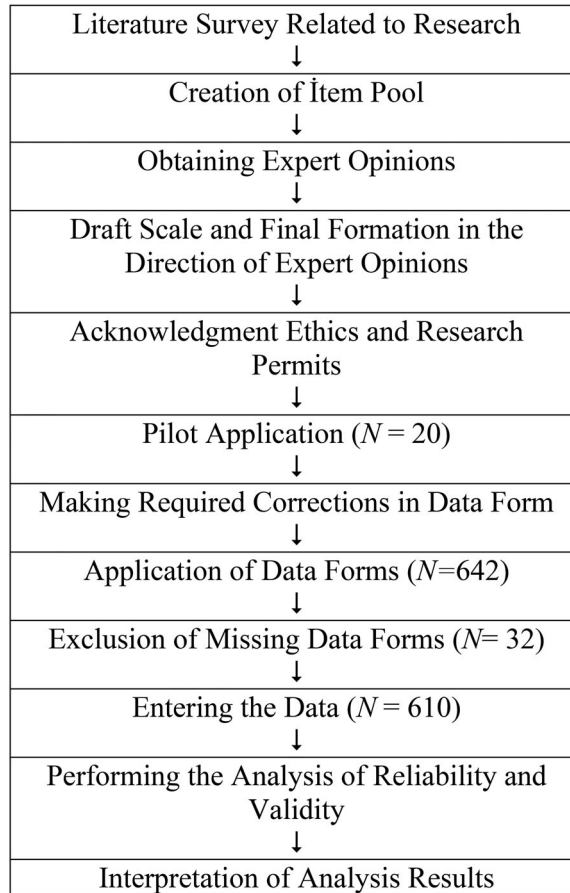
Results

The mean age of the participants was 37.48 ± 7.58 (min: 20, max: 57). Ten percent of the women were above the age of 36, 11.1% were university graduates, 15% were working. The distributions of the descriptive characteristics of the participants are presented in Table 1.

Validity and reliability

Item-total correlation

While developing a measurement instrument that has high validity and reliability, the item-total correlation value is expected to be positive and higher than 0.30 (DeVellis, 2016). If an item's item-total correlation is low, it means that the item is insufficient to measure the variable that should be measured. Thus, while developing a measurement instrument that has high

Literature Survey Related to Research
↓
Creation of İtem Pool
↓
Obtaining Expert Opinions
↓
Draft Scale and Final Formation in the Direction of Expert Opinions
↓
Acknowledgment Ethics and Research Permits
↓
Pilot Application ($N = 20$)
↓
Making Required Corrections in Data Form
↓
Application of Data Forms ($N=642$)
↓
Exclusion of Missing Data Forms ($N= 32$)
↓
Entering the Data ($N = 610$)
↓
Performing the Analysis of Reliability and Validity
↓
Interpretation of Analysis Results

Figure 1. Scale development steps.

validity and reliability, it is recommended to remove the items with low item-total correlation values from the scale (Tezbaşaran, 2008).

In the study, the items with item-total correlation values of lower than 0.40 (33 items) were removed from the draft scale (Borsboom et al., 2004; Lipovetsky, 2017; Watson & Thompson, 2006). The item-total correlations of the maternal role perception scale developed ranged from 0.505 to 0.722 (Table 2). These correlation values are also used as an indicator of internal consistency (Lipovetsky, 2017).

Validity analysis
The content validity and construct validity of the MRPS which was developed based on information in the literature were evaluated (Pituch & Stevens, 2016).

Content validity. Kendall's *W* test was conducted to analyze the content validity, and an agreement rate was found among the expert opinions for the

Table 1. Descriptive characteristics of the participants ($n = 610$).

Participant characteristics	Frequency (n)	Percentage (%)
Mother age (years)		
18–35	549	90.0
≥36	61	10.0
Mean (min–max)	27.24 ± 5.59 (18.0–43.0)	
Education level		
Primary education	412	67.5
High school	130	21.3
University and postgraduate	68	11.1
Mother's work status		
Not working	516	84.6
Working	94	15.4
Income status		
Income > outgoings	99	16.2
Income = outgoings	315	51.6
Income < outgoings	196	32.1
Perceived social support		
Enough	470	77.0
Insufficient	140	23.0
Pregnancy number		
First pregnancy	230	37.7
≥2 pregnancy	380	62.3
Birth number		
First birth	283	46.4
≥2 birth	327	53.6
Receive training/counseling during pregnancy		
Yes	524	85.9
No	86	14.1

MRPS (Kendall's W^a Scale Form $= 0.240$, $df = 65$, $p = .108$). According to the Davis (1992) technique, opinions from experts were analyzed, and the CVI value was found to be 0.80.

Construct validity. One of the technique for testing construct validity is factor analysis. EFA was performed to determine the construct validity of the Maternal Role Perception Draft Scale (61 items). EFA is a technique to determine the number of sub-groups of items in a scale, as well as the relationships between them (Lipovetsky, 2017; Miller et al., 2002). Before the EFA, Kaiser–Mayer–Olkin (KMO) test and Bartlett's test of sphericity were utilized. KMO test is an index comparing observed correlation coefficients to partial correlation coefficients (Hayat et al., 2017; Sireci & Faulkner-Bond, 2014). The KMO coefficient ranges between 0 and 1, and a value of over 0.80 is expected for a successful factor analysis. In Bartlett's test of sphericity, having a p value below .05 indicates an appropriate level of the relationships among variables for factor analysis (Lipovetsky, 2017; Ragab & Arisha, 2017; Watkins, 2018). In the study, the KMO coefficient was computed as 0.956. As a result of the conducted Bartlett's test of sphericity, it was concluded that there were significant and strong relationships among the variables, and these data were suitable for factor analysis ($\chi^2 = 11,037.574$, $p = .000$).

Table 2. Factor characteristics and scale items of the mother role perception scale ($n = 610$).

Item no.	Scale items	First	Second	Item to total correlations
Factor 1: maternity role development and performance				
1	Caressing the baby, embracing and making eye contact affect the development of the role of motherhood.	0.779		0.700
2	Knowing/understanding the needs of the baby is an indicator of motherhood success.	0.755		0.638
3	Being able to meet the needs of the baby is an indicator of motherhood success.	0.743		0.692
4	During pregnancy, preparation for the baby affects the development of the role of motherhood.	0.733		0.631
5	The role of motherhood is a task that requires responsibility.	0.726		0.639
6	Mother–baby interaction affects the development of the role of motherhood.	0.701		0.585
7	Maternity requires compliance with healthy living behaviors.	0.699		0.669
8	Breastfeeding the baby affects the development of the role of motherhood.	0.697		0.617
9	Loving/accepting the baby affects the development of the role of motherhood.	0.690		0.601
10	Success in the role of motherhood affects the development of the baby.	0.689		0.630
11	The support of health care providers is effective in achievement of the role of motherhood.	0.679		0.576
12	An unsafe living environment negatively affects the role of motherhood.	0.632		0.557
13	Being a mother and the role of maternity require emotional preparedness.	0.625		0.505
14	The mother's experience with her mother in childhood is effective in her role of motherhood.	0.609		0.606
15	Parenting education affects motherhood role success.	0.602[a]		0.543
Factor 2: Maternity task and success				
16	The growth and development of the baby are an indicator of the success of the role of motherhood.		0.791[a]	0.701
17	The role of maternity is a task that must be realized.		0.783	0.674
18	The role of motherhood is a task that requires responsibility.		0.779	0.705
19	The most difficult role of the role of motherhood is baby care.		0.775	0.711
20	Preparation for the baby in pregnancy affects the development of the role of motherhood.		0.773	0.711
21	The maternal process and maternity role require sacrifice.		0.766	0.722
22	In the role of motherhood, the social support of family members is important.		0.725	0.677
23	Knowledge and skill are important in the success of the role of motherhood.		0.716	0.691
24	The role of motherhood is a tiring task for women.		0.698	0.584
25	Insufficiency in the role of motherhood causes a feeling of guilt in the mother.		0.686	0.581
26	The interventions of individuals around affect the development of the role of maternity.		0.669	0.577
27	Planning/over-desire pregnancy affects the role performance of the mother.		0.641	0.561
28	Inadequacy in the role of motherhood affects the care of the baby.		0.630	0.567

[a]The load values of the items collected in two factors were 0.602–0.791.

In order to examine the construct of the factors, the principal component analysis and Varimax rotation methods were utilized. As a result of the EFA, it was found that there were two factors with eigenvalues of higher than 1, and these factors explained 55.741% of the total variance (Taber, 2018; Tavakol & Dennick, 2011; DeVellis, 2016). In a multi-factor

structure, an item with high factor loads in two or more factors is called an overlapped item, and it needs to be removed from the scale. If there is a difference of <0.10 between the factor loads of one item in multiple factors, this item is removed from the scale (Cronbach & Shavelson, 2004; Wong et al., 2012). Additionally, if an item forms a factor by itself, this item may be left out. Thus, items that did not belong to one factor in each iteration, those that were overlapped and those with factor loads of <0.40 were removed from the scale (Pituch & Stevens, 2016; Watkins, 2018). The item removal process started based on the ranking in the matrix, and the 33 items, that showed the conditions of overlapping were decided to be removed. Consequently, 28 items remained on the scale. After subjecting these 28 items to EFA, a two-factor structure was revealed. The scree plot illustrates the dimensional distribution of the scale (Figure 2).

It was reported in the literature that a factor load should be equal to or higher than 0.30. Factor loads were defined as perfect ($\geq$0.71), very good (0.63), good (0.55), acceptable (0.45) and weak (0.32) (Strauss & Smith, 2009). Inclusion of items with factor loadings higher than 0.45 for item selection is generally recommended as a reliable criterion (Watkins, 2018; Wong et al., 2012).

The factors that were formed as a result of this analysis and the findings on these factors are given in Table 2. Based on the EFA on the scale, there were two factors with eigenvalues of higher than 1, and these explained 55.741% of the total variance. For the MRPS, the first factor explained 44.223% of the variance, and the second factor explained 11.518%. As shown in Table 2, the factor load values varied in the range 0.505–0.722. The high factor loadings of the developed scale explain the structure of the scale.

Factor 1: Items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 were gathered under this factor. These items were related to maternal role development. Thus, the factor was named *Maternity Role Development and Performance.*

Factor 2: Items 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27 and 28 were gathered under this factor. These items were related to maternal task and success. Hence, the factor was named *Maternity Task and Success.*

Reliability

Reliability deals with to what extent a scale repeatedly measures what it sets out to measure. Reliability emphasizes consistency representing stability, and in turn, validity. A scale's validity criteria involve it passing the reliability test (Heale & Twycross, 2015; Lipovetsky, 2017).
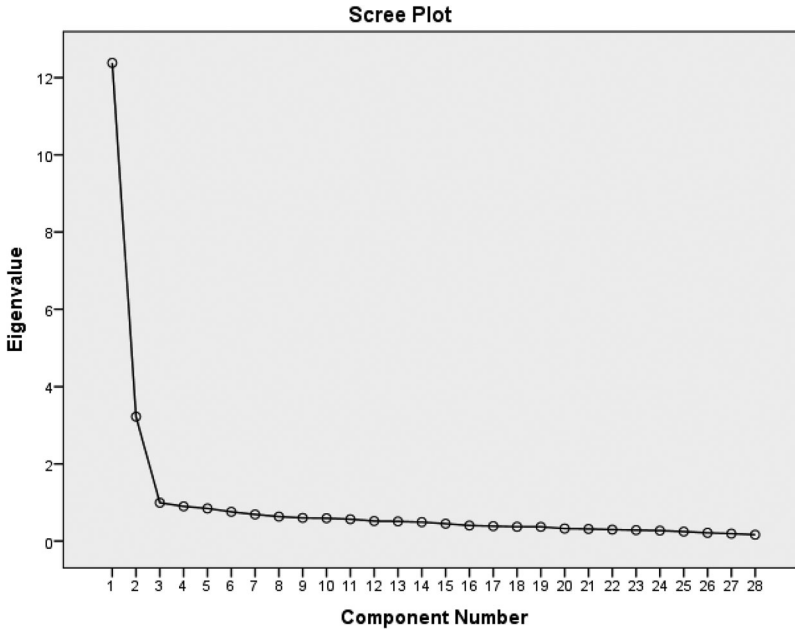
Figure 2. The scree plot.

Internal reliability

The 28-item internal reliability of the Maternal Role Perception Scale developed by the researchers was calculated according to the Cronbach's alpha coefficient. Additionally, Spearman's and Guttman Split-Half coefficients were calculated (Thompson et al., 2010). It is desired that these values are at least 0.70 (Cronbach & Shavelson, 2004). The Cronbach's alpha (α) value of the scale was found as 0.952. The Spearman–Brown coefficient was 0.760, and the Guttman split-half coefficient was 0.756. As $\alpha = 0.952 > 0.70$, the scale was found to be reliable. The Cronbach's alpha reliability coefficients of the dimensions of the scale are given in Table 3. A high level of reliability indicated by this coefficient means that the group is homogenous, the items of the scale are consistent with each other, and the scale has validity (Cronbach & Shavelson, 2004). Besides, the correlation between the Maternity Attachment Scale (Kavlak & Şirin, 2009) and the MRPS Form was examined for the parallel test reliability. The values obtained are given in Table 4.

Scoring of the MRPS

This is a two-factor, 5-point Likert-type scale consisting of 28 items (15 items under the first dimension and 13 items under the second dimension). The two factors in the study were identified as "maternity role development and performance" and "maternity task and success." Accordingly, the minimum scores in the scale are 15 and 13, and the maximum scores are 75

and 65, respectively, for the first and second factors. A higher score indicates that mothers have high perceptions of maternity roles. No item in the scale is scored in reverse. The lowest total score is 28, and the highest total score is 140. The mean total score in the scale was 112.45 ± 17.92 (min: 28, max: 140) in this study. The mean score of the first factor of the scale was 61.17 ± 9.83 (min: 15, max: 75), while the mean score of the second factor was 51.27 ± 10.28 (min: 13, max: 65). Higher scores reflect more positive perceptions of maternal role, while lower scores reflect less positive perceptions of maternal role.

Discussion

In this study, the researchers developed a scale to determine the maternal role perceptions of women. This scale consists of two dimensions. The first dimension of the scale was named "maternity role development and performance." The items in this dimension reflected maternity role development. The second dimension of the scale was named as "maternity task and success." The items in this dimension reflected maternity task and success. International studies in the field of motherhood generally focus on concepts that define the psychological dimension of motherhood, rather than the concept of motherhood. Moreover, these scales are limited in terms of questioning the roles and concepts that are unique to motherhood (Barkin & Wisner, 2013; Meighan, 2014). The MRPS is a specially designed measuring instrument to measure women's perceptions of the role of maternity. The items in the scale were prepared to include various aspects of the role of motherhood.

Validity and reliability

The motherhood role, which requires serious responsibility for women and includes a wide range of activities, is affected by various factors. These factors include the education level of the mother, working status, income status, family functions, social support status, infant characteristics, socio-cultural environment and health policies (Laney et al., 2015; Ozkan & Polat, 2011). Besides, the presence of any problem and stress may affect the role perceptions and success of mothers (Barkin & Wisner, 2013). It was decided to develop this scale based on the assumption that mothers are affected by socio-demographic, obstetric, psychosocial and environmental factors and even health policies.

Reliable, effective and informative measurement tools are needed to determine mothers' perceptions after birth roles. This scale is an effective measurement tool to detect women in need of extra attention and care

Table 3. Factor summary of the Mother Role Perception Scale ($n = 610$).

			Construct validity			
Factor name	Number of items	Item analysis Item-total correlation range	Eigen value	%explained variance	Loading range	Internal reliability Cronbach's α
Maternity role development and performance	15	0.50–0.70	12.38	44.22	0.60–0.77	0.936
Maternity task and achievement	13	0.56–0.72	3.22	11.518	0.63–0.79	0.939

after childbirth. A newly developed scale is required to be valid and reliable (Davis, 1992). Validity indicates whether a scale measures what it aims to measure. Reliability is the measure of measurement consistency and is one of the most important features of a scale. If the measurements are concluded in such a way as to eliminate possible differences in participants' responses, the scale is considered reliable (Lipovetsky, 2017; Louangrath & Sutanapong, 2018). The researchers in this study, factor analysis has conducted to determine the construct validity of the scale. It was observed that the developed scale consisted of 28 items, and these items were under two factors that explained 55.741% of the total variance. The factors were named, respectively, as "Motherhood Role Development and Performance" and "Maternity Task and Success." According to DeVellis (2016), the rate of the total variance that is explained in scale development studies should be at least 0.40 (DeVellis, 2016). In this case, it may be argued that the resulting explained variance value of 55.741% was high. The mean total score of this scale in this study was 112.45 ± 17.92 (min: 28, max: 140). This high mean score reflects the maternity role of the participants. The Cronbach's alpha value was calculated to determine the internal consistency of the developed scale. The Cronbach's alpha value provides information about how consistent the items in the scale are with each other. For this scale, the Cronbach's alpha reliability coefficient was found to be high (0.952). The analyses that were conducted for validity and reliability revealed that the MRPS developed was applicable.

Women spend most of their time in motherhood tasks. Although the perception of motherhood role varies from woman to woman, women with a high perception of motherhood are more willing to fulfill their roles/duties (Meighan, 2014; Nelson, 2003). It is known that there is a positive relationship between the perception of motherhood and success in a maternity role. It is stated in the literature that mothers' roles and role adaptation are affected by various factors. Gameiro et al. (2009) observed that women with multiple pregnancies experienced more anxiety and adjustment problems. Holub et al. (2007) found that adolescent mothers' adaptation to the role of maternity was lower (Gameiro et al., 2009; Holub et al.,

Table 4. Characteristics of subscales of the Mother Role Perception Scale, Cronbach's Alpha and Split-Half test reliability results ($n = 610$).

		Scale form			Parallel test	
			Split-half test reliability			
Subscales	Items	Cronbach's alpha coefficient	Spearman–Brown coefficient	Guttman split-half coefficient	r	p
Factor 1	15	0.93	0.92	0.91	0.03	.43
Factor 2	13	0.93	0.90	0.87	0.14	.73
Total scale	28	0.95	0.76	0.75	0.01	.65

r Spearman's correlation coefficient.

2007). A positive perception on the role of motherhood affects the quality of life of both the mother and the child. The development and health of a child are directly affected by the mother's role perceptions (Barkin & Wisner, 2013). Since the purpose of the researchers in this study was to develop a scale on the role perceptions of mothers, factors affecting the role of a mother were not discussed in this study. Researchers using this scale in the future will have the opportunity to identify all factors that may affect the role of a mother.

In the prenatal and postpartum periods of mothers in Turkey, although various trainings are given, awareness is not on the desired level regarding the role of maternity (Ozkan & Polat, 2011). This scale, which was developed to measure the perceptions of Turkish women regarding the role of maternity may also be applied with mothers from different cultures. With this scale, the role perceptions of mothers may be determined. By providing counseling support for the needs of the mother, a positive contribution can be made to the mother–child relationship and the development of the majority.

Proposed instrument use

Based on the results of the developed "MRPS" measurement tool, health care professionals and health researchers will be able to provide care support and consultancy support to improve perceptions on the role of maternity. Problems with maternity affect women's and children's health in particular and community health in general. Therefore, the MRPS developed may be utilized to answer two questions that attract the attention of researchers: (a) What are the role perceptions of women in the country as mothers? (b) What are the effects of socio-demographic, obstetric, psychosocial and environmental factors on perceptions of maternal role? Besides, other researchers who use this scale as a starting point will be able to work to develop similar scales. Scale use: Health researchers may use "MRPS" to determine the views of mothers with a 0–12-month-old baby on the role of maternity.

Strengths and limitations

It was observed that none of the items in this scale (28 items) were scored in reverse developed by researchers. The results of the study are limited to the features measured by the "MRPS." Since the "MRPS" developed was prepared in Turkish, studies should be conducted to test its validity and reliability in other cultures. Test–retest reliability of scale could not be measured because the mothers participating in the study were discharged from the hospital.

Conclusions

To summarize, there is a strong evidence that this developed scale is valid and reliable, measuring the psychometric properties of the motherhood role. The "MRPS," which is proven to be a valid and reliable tool through analysis, is a measurement tool developed to reveal Turkish women's views on the role of maternity. Although women's role perceptions vary according to the society they are in, this scale may also determine the perceptions of women belonging to other cultures regarding their maternal roles. However, the scale will provide data for determining women's attitudes toward the role of motherhood and for effective nursing and midwifery care. At the same time, this scale is important as it may reveal the motherhood perceptions of women in all countries of the world from a global perspective. Also, this scale will be a reference for different studies with mothers. Finally, it is thought that the scale will contribute to future studies and the literature as there is no similar scale in the literature.

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Disclosure statement

References

Barkin, J. L., & Wisner, K. L. (2013). The role of maternal self-care in new motherhood. *Midwifery*, *29*(9), 1050–1055. https://doi.org/10.1016/j.midw.2012.10.001

Barkin, J. L., Wisner, K. L., Bromberger, J. T., Beach, S. R., Terry, M. A., & Wisniewski, S. R. (2010). Development of the Barkin index of maternal functioning. *Journal of Women's Health*, *19*(12), 2239–2246. https://doi.org/10.1089/jwh.2009.1893

Borsboom, D., Mellenbergh, G. J., & Van Heerden, J. (2004). The concept of validity. *Psychological Review*, *111*(4), 1061–1071. https://doi.org/10.1037/0033-295X.111.4.1061

Cronbach, L. J., & Shavelson, R. J. (2004). My current thoughts on coefficient alpha and successor procedures. *Educational and Psychological Measurement*, *64*(3), 391–418. https://doi.org/10.1177/0013164404266386

Davis, L. L. (1992). Instrument review: Getting the most from a panel of experts. *Applied Nursing Research*, *5*(4), 194–197. https://doi.org/10.1016/S0897-1897(05)80008-4

DeVellis, R. F. (2016). *Scale development: Theory and applications* (26th ed.). Sage Publications.

Fawcett, J., Tulman, L., & Myers, S. T. (1988). Development of the inventory of functional status after childbirth. *Journal of Nurse-Midwifery*, *33*(6), 252–260. https://doi.org/10.1016/0091-2182(88)90080-8

Gameiro, S., Moura-Ramos, M., & Canavarro, M. (2009). Maternal adjustment to the birth of a child: Primiparity versus multiparity. *Journal of Reproductive and Infant Psychology*, *27*(3), 269–286. https://doi.org/10.1080/02646830802350898

Ha, J.-Y., & Kim, Y.-J. (2013). Factors influencing self-confidence in the maternal role among early postpartum mothers. *Korean Society of Women Health Nursing*, *19*, 48–55. https://doi.org/10.4069/kjwhn.2013.19.1.48.

Hayat, M. J., Powell, A., Johnson, T., & Cadwell, B. L. (2017). Statistical methods used in the public health literature and implications for training of public health professionals. *PLoS One*, *12*(6), e0179032. https://doi.org/10.1371/journal.pone.0179032

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence Based Nursing*, *18*(3), 66–67. https://doi.org/10.1136/eb-2015-102129

Holub, C., Kershaw, T., Ethier, K., Lewis, J., Milan, S., & Ickovics, J. (2007). Prenatal and parenting stress on adolescent maternal adjustment: Identifying a high-risk subgroup. *Maternal and Child Health Journal*, *11*(2), 153–159. https://doi.org/10.1007/s10995-006-0159-y

Kavlak, O., & Şirin, A. (2009). Maternal bağlanma ölçeği'nin Türk toplumuna uyarlanması [The Turkish version of maternal attachment inventory]. *Uluslararası İnsan Bilimleri Dergisi*, *6*, 189–202. http://www.insanbilimleri.com.

Kumar, R., Robson, K. M., & Smith, A. M. R. (1984). Development of a self-administered questionnaire to measure material adjustment and material attitudes during pregnancy and after delivery. *Journal of Psychosomatic Research*, *28*(1), 43–51. https://doi.org/10.1016/0022-3999(84)90039-4

Laney, E. K., Hall, M. E. L., Anderson, T. L., & Willingham, M. M. (2015). Becoming a mother: The influence of motherhood on women's identity development. *Identity*, *15*(2), 126–145. https://doi.org/10.1080/15283488.2015.1023440

Lipovetsky, S. (2017). Factor analysis by limited scales: Which factors to analyze. *Journal of Modern Applied Statistical Methods*, *16*(1), 233–245. https://doi.org/10.22237/jmasm/1493597520

Louangrath, P. I., & Sutanapong, C. (2018). Validity and reliability of survey scales. *International Journal of Research Methodology in Social Science*, *4*, 99–114.10.5281/zenodo.2545038

Meighan, M. (2014). Mercer's becoming a mother theory in nursing practice. In M. Alligood (ed.), *Nursing theory, utilization and application* (5th ed., pp. 332–350). Elsevier. https://www.scribd.com/doc/294700400/Nursing-Theory-Utilization-Application-2014-CD-3

Mercer, R. T. (2004). Becoming a mother versus maternal role attainment. *Journal of Nursing Scholarship*, *36*(3), 226–232. https://doi.org/10.1111/j.1547-5069.2004.04042.x

Mercer, R. T. (2006). Nursing support of the process of becoming a mother. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, *35*(5), 649–651. https://doi.org/10.1111/j.1552-6909.2006.00086.x

Mercer, R. T., & Walker, L. O. (2006). A review of nursing interventions to foster becoming a mother. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 35(5), 568–582. https://doi.org/10.1111/j.1552-6909.2006.00080.x

Miller, R. L., Acton, C., Fullerton, D. A., & Maltby, J. (2002). *SPSS for social scientists* (pp. 12–353). Martin's Press, LLC and of Palgrave Macmillan Ltd. http://gtu.ge/Agro-Lib/1%20(1).pdf

Nelson, A. M. (2003). Transition to motherhood. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 32(4), 465–477. https://doi.org/10.1177/0884217503255199

O'Hara, M. W., Hoffman, J. G., Philipps, L. H., & Wright, E. J. (1992). Adjustment in childbearing women: The postpartum adjustment questionnaire. *Psychological Assessment*, 4(2), 160–169. https://doi.org/10.1037/1040-3590.4.2.160

Ozkan, H., & Polat, S. (2011). Maternal identity development education on maternity role attainment and my baby perception of primiparas. *Asian Nursing Research*, 5(2), 108–117. https://doi.org/10.1016/S1976-1317(11)60019-4

Parratt, J., & Fahy, K. (2011). A feminist critique of foundational nursing research and theory on transition to motherhood: A critical review. Midwifery, 27(4), 445–451. https://doi.org/10.1016/j.midw.2010.02.012

Pituch, K. A., Stevens, J. P. (2016). *Applied multivariate statistics for the social sciences* (6th ed.). Routledge. http://docshare02.docshare.tips/files/31719/317194846.pdf.

Ragab, M., & Arisha, A. (2017). Research methodology in business: A starter's guide. *Management and Organizational Studies*, 5(1), 1. https://doi.org/10.5430/mos.v5n1p1

Shorey, S., Chan, W., Chong, Y., & He, H. (2014). Maternal parental self-efficacy in newborn care and social support needs in Singapore: A correlational study. *Journal of Clinical Nursing*, 23(15-16), 2272–2283. https://doi.org/10.1111/jocn.12507

Sireci, S., & Faulkner-Bond, M. (2014). Validity evidence based on test content. *Psicothema*, 26(1), 100–107. https://doi.org/10.7334/psicothema2013.256

Strauss, M. E., & Smith, G. T. (2009). Construct validity: Advances in theory and methodology. *Annual Review of Clinical Psychology*, 5(1), 1–25. https://doi.org/10.1146/annurev.clinpsy.032408.153639

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Taherdoost, H. (2017). Measurement and scaling techniques in research methodology; survey/questionnaire development. *International Journal of Academic Research in Management*, 6, 1–5. https://www.researchgate.net/publication/319998001

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd

Tezbaşaran, A. A. (2008). *Likert Tipi Ölçek Hazırlama Kılavuzu. Elektronik sürüm* (in Turkish). https://www.academia.edu/1288035/Likert_Tipi_Ölçek Hazırlama Kavuzu

Thompson, B. L., Green, S. B., & Yang, Y. (2010). Assessment of the maximal split-half coefficient to estimate reliability. *Educational and Psychological Measurement*, 70(2), 232–251. https://doi.org/10.1177/0013164409355688

Watkins, M. W. (2018). Exploratory factor analysis: A guide to best practice. *Journal of Black Psychology*, 44(3), 219–246. http://edpsychassociates.com/Papers/EFAguide%282018%29.pdf https://doi.org/10.1177/0095798418771807

Watson, R., & Thompson, D. R. (2006). Use of factor analysis in journal of advanced nursing: Literature review. *Journal of Advanced Nursing*, 55(3), 330–341. https://doi.org/10.1111/j.1365-2648.2006.03915.x

Wong, K. L., Ong, S. F., & Kuek, T. Y. (2012). Constructing a survey questionnaire to collect data on service quality of business academics. *European Journal of Social Science*, *29*, 209–221. http://www.europeanjournalofsocialsciences.com

Yurdagül, H., & Bayrak, F. (2012). Ölçek geliştirme çalışmalarında kapsam geçerlik ölçüleri: Kapsam geçerlik indeksi ve kappa istatistiğinin karşılaştırılması. *Hacettepe University Journal of Education*, *2*, 264–271. https://docplayer.biz.tr/30173787-Olcek-gelistirme-cal-ismalarinda-kapsam-gecerlik-olculeri-kapsam-gecerlik-indeksi-ve-kappa-istatistiginin-kar-silastirilmasi.html (in Turkish).