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# Adaptation of the Attitudes Toward Motherhood Scale to Turkish: Reliability and Validity Study

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## ABSTRACT

**Background:** The aim of this study is to investigate the validity and reliability of the Turkish version of the Attitudes Toward Motherhood Scale. Attitudes Toward Motherhood Scale was developed by Sockol et al to evaluate cognitive distortions and attitudes toward motherhood during pregnancy and the postpartum period.

**Methods:** The sample of this study consisted of 223 pregnant women and 138 postpartum women. A Sociodemographic Data Form, the Edinburgh Postnatal Depression Scale, and Attitudes Toward Motherhood Scale were used to collect data from the participants.

**Results:** Cronbach's alpha coefficient for internal consistency was 0.868 for the entire sample, 0.877 during pregnancy, and 0.828 for the postpartum period. Factor analysis revealed that the 3-factor structure explained 68.93% of the variance. Pearson's correlation coefficient was calculated as 0.901 for the test-retest correlation analysis after 3 weeks ($P < .001$). There was a positive correlation between Attitudes Toward Motherhood Scale and Edinburgh Postnatal Depression Scale.

**Conclusion:** The results of this study revealed that the validity and reliability of the Turkish version of the Attitudes Toward Motherhood Scale were satisfactory.

## ARTICLE HISTORY

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## INTRODUCTION

Mental distress during pregnancy is one of the most common complications of childbirth. High levels of depression and anxiety are common during pregnancy and within the first year after delivery.[1] The view that postpartum depression is a clinical picture that develops with the interaction of many psychosocial causes rather than being caused by a single issue has gained greater importance.[2] Although risk factors such as the presence of a personal and family history of depression, low socioeconomic level, being an ethnic minority, being single, and unplanned pregnancy guide physicians in terms of the risk of strain that women will experience during the transition to parenthood,[3,4] these are risk factors that are often difficult to change or eliminate. However, identifying psychological risk factors that might pose a risk for the development of postpartum depression would make it possible to determine factors that could constitute targets for therapeutic interventions and guide psychotherapy interventions for treating these pathologies.

On the other hand, the presence of depression and anxiety during pregnancy is a risk factor for complications such as premature or low birth weight during pregnancy[5] and the development of disorders related to the emotional, cognitive, and behavioral development of the baby in the postpartum period.[6,7] Considering this, psychological interventions for changeable and reversible perinatal risk factors are of great importance in terms of mother-infant health during pregnancy.

In terms of the cognitive model, there is evidence that the development of postpartum depression is associated with negative cognitive elements.[8]

In their study, examining the role of approaches and coping for postpartum depression in first-time mothers, Besser and Priel[9] found that self-criticism was a risk factor. Some cognitive factors such as unpredictable and uncontrollable maternal attitudes may act as an additional specific risk factor for postpartum depression and anxiety by perceiving situations such as prolonged and unstoppable crying of the newborn as negative events.[10] Negative automatic thoughts, such as "Women believe that they should sacrifice their needs for others," and maternal-related dysfunctional beliefs, such as "I should do everything

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for my baby myself," are reported to be associated with postpartum depression. In addition, it has been reported that less frequent positive automatic thoughts about motherhood are associated with higher rates of postpartum depression.[11]

In their study examining maternal attitudes and postpartum depression and anxiety symptoms, Sockol et al revealed the relationship pattern between AToM, a scale that evaluates maternal cognitive factors, and the Dysfunctional Attitudes Scale (DAS), a scale that evaluates general cognitive distortions. They did report that it had a separate construct, however.[10] Postpartum depression and anxiety development may be a process that occurs within the scope of the "event congruency hypothesis" model of maternal cognitive factors.

Certain beliefs about motherhood during pregnancy may interact with specific stressors arising from the woman's transition to parenthood and mediate the emotional reactions of the woman to this process and function as a cognitive risk factor for perinatal depression.[10] Similarly, women's dysfunctional attitudes toward motherhood may also impact the relationship between parenting-related psychological distress and depressive symptoms.[12]

There is strong evidence that cognitive behavioral therapy (CBT) interventions effectively prevent and treat depression during pregnancy.[2,13,14] Therefore, the detection of anxiety and cognitive distortions associated with depression during pregnancy is vital in terms of allowing the determination of treatment strategies to be administered based on cognitive behavioral psychotherapies in psychotherapy interventions for perinatal depression and anxiety.[13] Cognitive behavioral therapy is an effective psychotherapy method in the treatment of psychopathologies during pregnancy.[10] Although there are approaches specific to pregnancy in the adaptation of psychotherapy methods and CBT techniques specific to the challenges faced by women in the transition to motherhood,[8,15] Sockol et al[14] reported that the incorporation of specific cognitive elements into CBT interventions targeting the pregnant population would improve its effectiveness.

Various scales have been developed to determine the relationship between cognitive elements such as attitudes related to motherhood with psychopathologies developing during pregnancy and the postpartum period and the role they play in this process. Based on the findings that attitudes toward pregnancy affect the course of pregnancy, Blau et al[16] developed a scale called the "Maternal Attitude Toward Pregnancy Instrument (MAPI)" in 1964 to determine the psychogenic problems that might occur during pregnancy. Grimm et al[17] stated that a woman's later emotional adjustment to motherhood was related to early attitudes, and they developed a series of scales within the scope of the H.I.P. Pregnancy Questionnaire to determine these attitudes. They stated that it was crucial to examine these variables in a nuanced and differentiated way, not as general concepts such as "anxiety" and "neuroticism" when evaluating variables related to emotional adjustment in pregnant women.[17] Maternal Adjustment and Maternal Attitudes (MAMA) is one of the most comprehensive assessment scales developed to provide clues for the increased risk of psychiatric disorders during the transition to motherhood. This 60-item self-report scale is a measurement tool that evaluates attitudes toward body image, marriage, and sexuality in pregnant women and first-time mothers, as well as attitudes toward pregnancy and the baby.[18] The Maternal Attitudes and Beliefs Scale (MABS) is another scale developed by Madar[19] to determine maternal-specific beliefs and attitudes that predispose to postpartum depression based on the rational and emotional behavioral therapy approach.

However, Sockol et al[10] reported that the scales in this area had conceptual limitations because they did not differentiate different beliefs and cognitions about motherhood. The "Maternal Attitudes Questionnaire (MAQ)," developed by Warner et al[20] to detect dysfunctional attitudes toward motherhood that played a role in the development of perinatal depressive symptoms, revealed a difference in this limitation. This 14-item scale has contributed to the etiological understanding of postpartum depression by revealing that it is cognitively heterogeneous. In addition to monitoring the change in emotional symptoms, which is a conventional method, MAQ provided a quick and easy way to monitor the change in maternal attitudes and evaluate the response to psychological treatments in clinical practice and research. However, although AToM has the mentioned advantages over other scales in this area, it is problematic in terms of its psychometric properties, especially in women who are pregnant with their first baby, because it has low internal reliability.[20]

**MAIN POINTS**

- The application of Attitudes Toward Motherhood Scale to women during pregnancy will enable the evaluation of attitudes toward motherhood and the identification of groups at risk in terms of psychopathology in the peripartum period. Therefore, it will be possible to identify risky groups in women in transition to motherhood and evaluate them in detail by using Attitudes Toward Motherhood Scale.
- Considering that maternal attitudes and cognitive distortions toward motherhood are associated with psychopathologies occurring in the peripartum period, using Attitudes Toward Motherhood Scale will allow the implementation of preventive and preventive interventions for the development of psychopathology in risky groups and will guide treatment approaches for psychopathologies developing in the peripartum period.
- Attitudes Toward Motherhood Scale, which was the first measurement tool in this field and has the advantages of being easy and fast to apply, in a self-report style, and assesses attitudes toward motherhood, has been adapted to Turkish.

Sockol et al[12] reported that the measurement tools developed in this field had conceptual limitations because they did not analyze women's expectations, experiences, and attitudes related to motherhood by separating them and examining their pregnancy and parenting experiences without including the cognitive assessment component. This shows that there are limited and structurally problematic measurement tools available to evaluate the experiences of women who are pregnant with their first baby and have not had this experience before.[12]

Given the limitations of measurement tools in this area, Sockol et al[10] reported that for first-time mothers, it was necessary to develop a valid and reliable measurement tool that examined how motherhood-related attitudes posed a potential risk for the development of depression and anxiety symptoms during pregnancy and the postpartum period.

The present study aimed to translate AToM, which was developed by Sockol et al, to evaluate maternal attitudes and cognitive distortions toward motherhood in pregnant and postpartum women who were first-time mothers and determine psychometric properties by performing validity and reliability studies.

## MATERIAL AND METHODS

### Sample

The study sample consisted of pregnant women admitted to the Bağcılar Research and Training Hospital Gynecology and Obstetrics Clinic between January 2018 and December 2018 and the mothers of babies in the first-year postpartum who were admitted to the Yeditepe University Pediatrics outpatient clinic. Women who accepted to participate in the study and were at least primary school graduates were included in the study. Insufficient mental capacity and language barriers that might prevent the women from following the study instructions and completing the necessary scales, being under the influence/absence of alcohol, or substances, and having delirium tremens, dementia, and organic mental disorders were determined as exclusion criteria. Two hundred seventy pregnant women admitted to the obstetrics and gynecology outpatient clinic were invited to join the study; 25 women were excluded due to language and mental capacity barriers. Twenty-two women were not included in the study because they did not complete the scales. Among the mothers of babies admitted to Yeditepe University Child Health and Diseases outpatient clinic within the first year after birth, 12 did not accept to participate in the study due to having insufficient time to complete the scales, and 138 women were included in the study. The total sample consisted of 223 pregnant women and 138 postpartum women in the first year.

### Translation

The original version of AToM, developed by Sockol et al[10] in 2014, is structured to detect cognitive attitudes toward motherhood. For adapting the scale to Turkish, Dr. Laura Sockol, who developed the scale, was contacted via e-mail, and her approval was obtained.

In the translation phase of the original version of the scale, a 5-stage technique was used, including a first translation, evaluation of the first translation, back-translation, evaluation of the back-translation, and expert opinion, as stated by Brislin et al.[21] The scale was translated into Turkish independently by 3 researchers who had a good level of English. A single Turkish text was obtained by combining the 3 translated texts. The collaborative Turkish text was translated independently from Turkish into English by 3 different researchers with a good knowledge of English. The original scale was compared with the scales obtained by reverse translation and, after several corrections, was submitted for expert opinions. A pilot application was performed with 10 women to evaluate whether the expressions were understandable to test the comprehensibility of the questions, and the scale was given its final form. The data of this pilot application were not included in the analysis process of the research.

The study was performed between January 1, 2018, and December 1, 2018, after receiving ethics committee approval from the Bakirkoy Prof. Dr. Mazhar Osman Research and Training Hospital for Neurology, Neurosurgey and Psychiatry Ethics Committee (Date: November 1, 2017, No: 36296-55797345).

### Procedure

Pregnant women admitted to the Bağcılar Research and Trainig Hospital Gynecology and Obstetrics Clinic and women within the first year postpartum who presented to the Yeditepe University Pediatrics Outpatient Clinic were included in the study randomly according to the inclusion and exclusion criteria. Approximately 5-10 times the total number of scale items are required to reach sufficient sampling in research statistics.[22] Accordingly, it was aimed to include 120 women as the sample, at least 60 pregnant women and 60 in the postpartum period. First, detailed information about the research was provided to the participants, and their written consent was obtained. A clinical and sociodemographic data form, which was created by the researchers, the Edinburgh Postpartum Depression Scale (EPDS), which measured depressive symptoms, and AToM were used to test the criterion validity to define the sociodemographic characteristics of the participants. Attitudes Toward Motherhood Scale was administered to 42 participants 3 weeks later by the same researcher to evaluate the test–retest reliability.

### Measurement

**Clinical and Sociodemographic Data Form:** This was a detailed interview form prepared by the researchers for the study, evaluating the sociodemographic and clinical

characteristics of the patients related to their clinical status.

**Attitudes Toward Motherhood Scale:** Attitudes Toward Motherhood Scale is a 12-item scale. There are 3 subgroups, each consisting of 4 items. Beliefs about the judgments of others, maternal responsibility, and the idealization of the maternal role are subgroups of this scale. It is a scale in a 6-point Likert system, and its scoring is between 0 and 5 points. The total score of the subgroups indicates the total test score. High subgroup scores and high test total scores indicate a high level of motherhood-related cognitive distortions (The Turkish version of the scale is added as Supplementary File.).[10]

### Edinburgh Postpartum Depression Scale

The EPDS can be used for routine screening in all women who have given birth. In the postpartum sample, the EPDS had a sensitivity of 86% and a specificity of 76%. The validity and reliability study in Turkey was performed by Engindeniz et al.[23] Studies demonstrated that it was a reliable measurement tool to evaluate depressive symptoms during pregnancy in addition to the postpartum period.[24,25]

### Statistical Analysis

The data evaluation was performed using the Statistical Package for the Social Sciences (SPSS) version 22.0 (IBM SPSS Corp.; Armonk, NY, USA) software. Descriptive statistics frequency (s) and percentages (%) were calculated to identify categorical variables. Principal component analysis was performed to evaluate the factor structure separately in the AToM pregnancy period, postpartum period, and all samples. Confirmatory factor analysis (CFA) was performed using the SPSS AMOS version 23 software to test our factor structure obtained from exploratory factor analysis. Model fit was evaluated through model fit indices ($\chi^2$, $df$, $\chi^2/df$, The Comparative Fit Index(CFI), The Goodness of Fit Index (GFI),The Adjusted Goodness of Fit Index (AGFI), The Standardized Root Mean Residual (SRMR), The Root Mean Square Error of Approximation (RMSEA)).[28] The Cronbach's alpha internal consistency coefficient of both the total and subgroups of the scale and the item-total score correlation coefficient was calculated to evaluate the reliability. Test-retest reliability was examined by re-administering AToM to 42 women 3 weeks after the first application of the scale and the correlation coefficient was calculated for the 2 applications. In the criterion validity examination, Pearson's correlation coefficient was performed for the EPDS score and the total and subgroup scores of AToM. The significance level was established as $\alpha = 0.05$.

## RESULTS

### Sociodemographic Characteristics

When the sociodemographic characteristics of the sample were examined, 64.8% were between the ages

**Table 1.** Sociodemographic and Clinical Characteristics of the Sample

| | | | Pregnant | Postpartum | Total |
|---|---|---|---|---|---|
| Age (years) | 18-25 | n | 57 | 7 | 64 |
| | | % | 25.6 | 5.1 | 17.7 |
| | 26-35 | n | 135 | 99 | 234 |
| | | % | 60.5 | 71.7 | 64.8 |
| | 36 and above | n | 31 | 32 | 63 |
| | | % | 13.9 | 23.2 | 17.5 |
| School | Middle school | n | 38 | 2 | 40 |
| | | % | 17.2 | 1.5 | 11.1 |
| | High school | n | 85 | 14 | 99 |
| | | % | 37.9 | 10.3 | 27.4 |
| | University and above | n | 100 | 122 | 222 |
| | | % | 44.9 | 88.2 | 61.5 |
| Economic status | Low | n | 8 | 0 | 8 |
| | | % | 3.6 | 0 | 2.2 |
| | Moderate | n | 114 | 31 | 145 |
| | | % | 51.1 | 22.6 | 40.2 |
| | Good | n | 101 | 107 | 208 |
| | | % | 45.3 | 77.4 | 57.6 |
| Employment history | Unemployed | n | 109 | 44 | 153 |
| | | % | 48.7 | 31.9 | 42.4 |
| | Student | n | 8 | 2 | 10 |
| | | % | 3.6 | 1.4 | 2.8 |
| | Employed | n | 106 | 92 | 198 |
| | | % | 47.7 | 66.7 | 54.8 |
| Abortion history | Yes | n | 43 | 32 | 75 |
| | | % | 19.3 | 23.2 | 20.8 |
| | No | n | 180 | 106 | 286 |
| | | % | 80.7 | 76.8 | 79.2 |
| Family type | Nuclear family | n | 187 | 126 | 313 |
| | | % | 83.8 | 91.3 | 86.7 |
| | Extended family | n | 36 | 12 | 48 |
| | | % | 16.2 | 8.7 | 13.3 |
| Spouse support | Quite supportive | n | 136 | 82 | 218 |
| | | % | 61.0 | 59.4 | 60.4 |
| | Supports | n | 70 | 46 | 116 |
| | | % | 31.4 | 33.3 | 32.1 |
| | Little support | n | 9 | 10 | 19 |
| | | % | 4.0 | 7.3 | 5.3 |
| | Does not support | n | 8 | 0 | 8 |
| | | % | 3.6 | 0.0 | 2.2 |
| Planned pregnancy | Yes | n | 187 | 116 | 303 |
| | | % | 83.9 | 84.7 | 84.2 |
| | No | n | 36 | 21 | 57 |
| | | % | 16.1 | 15.3 | 15.8 |

of 26 and 35, and 61.5% had a university or higher education level. It was stated that 86.7% lived as a nuclear family and 84.2% planned pregnancy. When asked to evaluate their spouse's support in this process, 60.4% described their spouse as very supportive. The clinical and sociodemographic characteristics of the sample are presented in Table 1.

### Item-Total Score Correlation Coefficients

Before proceeding to the validity-reliability analysis of AToM, whose original form consists of 12 items, each item in the scale was subjected to item analysis in terms of its correlation with the total score of the scale. When the analysis results were examined, it was observed that the relations of all the items in the entire group with the total score obtained from the scale varied between $r$ = 0.706 (Item 2) and $r$ = 0.522 (Item 4). When the analysis results were examined for pregnancy, it changed between $r$ = 0.729 (Item 7) and $r$=0.448 (Item 9), and when it was analyzed for the postpartum period, it varied between $r$ = 0.688 (Item 8) and $r$ = 0.513 (Item 4). It was determined that all items contributed to the total score sufficiently because the item-total-score relationship in the entire sample and its subgroups was above $r$=.044, and factor analysis was started. Item-total score correlations are summarized in Table 2.

### Factor Analysis

The data obtained from pregnant and postpartum women were combined, and Kaiser-Meyer-Olkin (KMO) and Barlett's tests were performed to evaluate the suitability of the data set. The calculated KMO value was determined as 0.85, and Bartlett's test result was (66)=2154.43 ($P$ < .001). Kaiser-Meyer-Olkin tests were evaluated within the pregnant and postpartum groups, and the results for the pregnant group were KMO=0.85 Bartlett's test (66)=1431.32 ($P$ < .001) and KMO=0.79 Bartlett's test (66)=738.83 ($P$ < .001), for the postpartum group. The data were considered suitable for factor analysis, and factor analysis was started.

**Table 2.** Item-Total Score Correlation Coefficients

| | Pregnancy AToM Total | Postpartum AToM Total | AToM Total |
|---|---|---|---|
| AToM 1 | 0.633** | 0.604** | 0.613** |
| AToM 2 | **0.706**** | 0.646** | 0.682** |
| AToM 3 | 0.655** | 0.493** | 0.578** |
| AToM 4 | **0.522**** | 0.498** | **0.513**** |
| AToM 5 | 0.586** | 0.557** | 0.597** |
| AToM 6 | 0.592** | 0.626** | 0.607** |
| AToM 7 | 0.612** | **0.729**** | 0.667** |
| AToM 8 | 0.687** | 0.664** | **0.688**** |
| AToM 9 | 0.628** | **0.448**** | 0.575** |
| AToM 10 | 0.695** | 0.597** | 0.668** |
| AToM 11 | 0.697** | 0.600** | 0.671** |
| AToM 12 | 0.553** | 0.478** | 0.535** |

AToM, Adaptation of the Attitudes Toward Motherhood Scale.
**$P$ < .001.

The scale was subjected to principal component analysis with oblique rotation to evaluate the construct validity. As a result of the analysis, a 3-factor structure with 12 items and an Eigenvalue above 1 was obtained, which explained 68.93% of the variance. The analysis revealed that item 9 was loaded on factor 3 in the original form of the scale and was loaded on factor 1 in our study. Factor analyses of pregnant and postpartum samples were performed separately. Considering that there were 3 factors in the original form of the scale and the whole sample analysis, the number of factors was fixed to 3, and it was subjected to principal components analysis with oblique rotation. Results revealed that the items were loaded on the same factors, consistent with the entire group. The results are presented in Table 3.

In addition to EFA, we performed CFA to test the 3-factor model. In the first analysis, covariance was drawn between the error variances of AToM 1 and AToM 2 ($r$=0.802; $P$ < .001), which had a high correlation between them, because the goodness-fit values could not meet the criteria. It was observed that 12 indicators and 3 latent variables, second-level AToM total score, and latent variable added to the second-level factor model provided goodness-of-fit values obtained as a result of testing (Table 4). The path diagram of the CFA of AToM is given in Figure 1.

### Criterion Dependent Validity

When the correlation analysis results with EPDS were examined, the correlation coefficient was $r$=0.358, $P$ < .001, in the entire group, $r$ = 0.343, $P$ < .001 during pregnancy, and $r$ = 0.301, $P$ = .001 in the first year postpartum, as shown in Table 5.

### Reliability Analysis

To evaluate the scale's reliability, Cronbach's Alpha internal consistency coefficient was calculated for all periods and factors. Cronbach's Alpha was determined as $\alpha$=0.87 for the entire sample; all values are summarized in Table 6.

Pearson's correlation coefficients obtained between the application within the scope of the test-retest reliability study were $r$ = 0.901, $P$ < .001 for the entire group, $r$ = 0.908, $P$ < .001 for pregnancy, and $r$ = 0.916, $P$ < .001 for the postpartum period. When the sub-factors were evaluated, test-retest correlations were statistically significant in all groups (Table 7).

## DISCUSSION

In this study, AToM, which examines cognitions about motherhood, was adapted into Turkish, and its psychometric properties were evaluated. The Cronbach's

**Table 3.** Factor Analysis Results

| Article | Expression | All Group | | | Pregnant | | | Postpartum | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F1 | F2 | F3 | F1 | F2 | F3 | F1 | F2 | F3 |
| | | *Eigenvalue: 4.988 Variance Explained: 41.57%* | | | *Eigenvalue: 1.867 Explained Variance: 15.56%* | | | *Eigenvalue: 4.352 Explained Variance: 36.27%* | | |
| AToM 1 | If I make a mistake, people will think I am a bad mother. | 0.922 | | | −0.935 | | | 0.913 | | |
| AToM 2 | If my baby is crying, people will think I cannot care for him/her properly. | 0.866 | | | −0.841 | | | 0.884 | | |
| AToM 3 | People will probably think less of me if I make parenting mistakes. | 0.847 | | | −0.839 | | | 0.798 | | |
| AToM 4 | Seeking help with my baby from other people makes me feel incompetent. | 0.765 | | | −0.772 | | | 0.798 | | |
| AToM 9 | If I fail at motherhood, then I am a failure as a person. | 0.574 | | | −0.611 | | | 0.449 | | |
| | | *Eigenvalue: 1.936 Explained Variance: 16.13%* | | | *Eigenvalue: 5.176 Explained Variance: 43.13%* | | | *Eigenvalue: 1.248 Explained Variance: 10.40%* | | |
| AToM 7 | I should feel more devoted to my baby. | 0.866 | | | 0.905 | | | −0.834 | | |
| AToM 6 | Good mothers always put their baby's needs first. | 0.845 | | | 0.841 | | | −0.833 | | |
| AToM 8 | If I love my baby, I should want to be with him/her all the time. | 0.843 | | | 0.835 | | | −0.724 | | |
| AToM 5 | I am the only person who can keep my baby safe. | 0.673 | | | 0.643 | | | −0.68 | | |
| | | *Eigenvalue: 1.348 Explained Variance: 11.23%* | | | *Eigenvalue: 1.396 Explained Variance: 11.63%* | | | *Eigenvalue: 2.282 Explained Variance: 19.01%* | | |
| AToM 12 | Negative feelings towards my baby are wrong. | 0.936 | | | 0.956 | | | 0.86 | | |
| AToM 11 | It is wrong to have mixed feelings about my baby. | 0.879 | | | 0.867 | | | 0.843 | | |
| AToM 10 | It is wrong to feel disappointed by motherhood. | 0.757 | | | 0.72 | | | 0.833 | | |

AToM, Adaptation of the Attitudes Toward Motherhood Scale.

**Table 4.** Confirmatory Factor Analysis Results

| Scale | $\chi^2$ | *Df* | $\chi^2/df$ | CFI | GFI | AGFI | SRMR | RMSEA |
|---|---|---|---|---|---|---|---|---|
| AToM | 138.191 | 51 | 2.710 | 0.959 | 0.938 | 0.906 | 0.056 | 0.070 |

AToM, Adaptation of the Attitudes Toward Motherhood Scale.

Alpha coefficient of the scale was calculated as 0.87. The explanatory factor analysis results of the validity of AToM consist of a 3-factor structure that explains 68.93% of the scale, similar to the original structure. The results of our study indicate that the Turkish version of AToM is a reliable and valid measurement tool both during pregnancy and in the postpartum period.

Fonseca and Canavarro[25] stated that cognitions related to motherhood, which they evaluated using AToM, were a risk factor for the development of postpartum depression symptoms and critical in guiding preventive interventions. The clinical use of AToM will give the opportunity to specifically detect maternal-specific cognitions, which are among the psychological factors that may pose a risk in terms of perinatal psychopathologies that can be detected with AtoM, in postpartum women and those who are pregnant and undergoing the transition to motherhood. In addition, identifying maternal cognitive distortions as a separate construct from general cognitive distortions may guide the development of specific CBT techniques and approaches for these specific cognitive factors. Our literature review revealed no other scale evaluating maternal cognitions in Turkish.

## Reliability Analysis of Attitudes Toward Motherhood Scale

Test–retest, internal consistency, and item-total score correlation analyses were used to evaluate the scale's reliability. The Cronbach's Alpha internal consistency coefficient of the scale was 0.877 for pregnancy, 0.828 for the postpartum period, and 0.868 for the entire sample. The internal consistency and item-total score correlation coefficients found in our study were quite high (*r*: 0.522-0.706). The closer the Cronbach's Alpha coefficient is to 1 in psychometric evaluations, the more reliable the scale is considered.[27]

In the original study, in which the scale was adapted, Cronbach's Alpha coefficient was 0.81, 0.82 during pregnancy, and 0.79 during the postpartum 6-month period. The original study did not examine item-total item correlation.[10] When other adaptation studies of AToM were examined, Cronbach's Alpha internal consistency coefficient was 0.84 in the Portuguese study examining the postpartum period, and 0.86 in the Korean study examining the pregnancy period.[28,29] In our study, Cronbach's Alpha values of the total and all sub-factors of the scale were

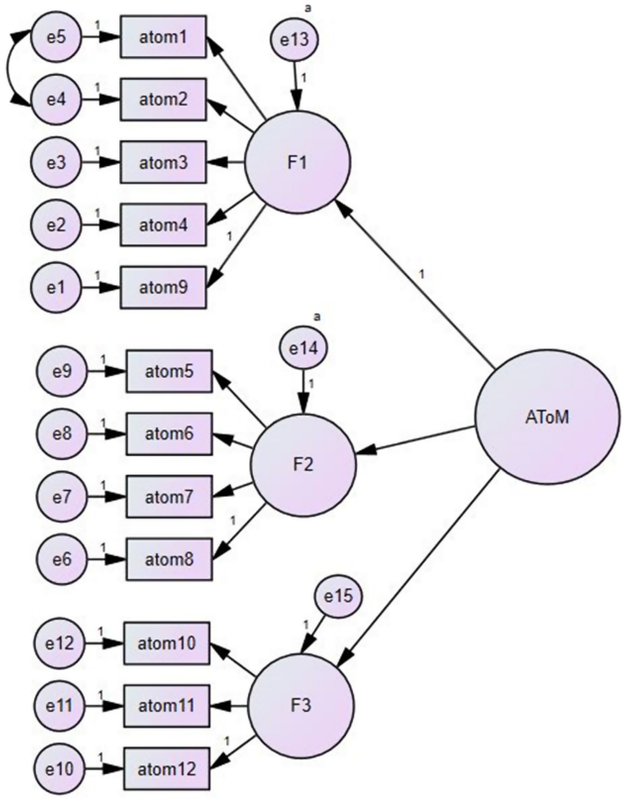


Figure 1. Path diagram of the confirmatory factor analysis.

above the acceptable limit of 0.70 and were statistically significant.[28]

According to the test-retest results performed on 42 women in the peripartum period, with an interval of 3 weeks, the sub-dimensions ranged between 0.808 and 0.967, and the total score of AToM was 0.901. Although the rates could not be compared because test-retest was not performed in the original study and other adaptation studies, detecting a highly positive and significant correlation in our study indicates the scale's reliability. When all the results are examined, the findings of our study reveal that AToM is a reliable measurement tool in evaluating attitudes toward motherhood during pregnancy.

### Factor Analysis of Attitudes Toward Motherhood Scale

Factor analysis and criterion validity analysis were performed to evaluate the validity of the scale. The factor analysis demonstrated that the scale had a 3-factor structure that explained 68.930% of the variance per the original version. When other adaptation studies were examined, a 3-factor structure was similar to our study in the Korean study examining pregnancy and the Portuguese study examining the 6-month postpartum period.[29,30] The first factor focuses on "Beliefs according to the judgments of others," the second factor is related

**Table 5.** Pearson's Correlation Coefficients Findings Between Adaptation of the Attitudes Toward Motherhood Scale and Edinburgh Postnatal Depression Scale

| | Pregnancy AToM | | Postpartum AToM | | AToM | |
|---|---|---|---|---|---|---|
| | *r* | *P* | *r* | *P* | *r* | *P* |
| EPDS | 0.343 | *P* < .001 | 0.301 | *P* < .001 | 0.358 | *P* = .001 |

AToM, Adaptation of the Attitudes Toward Motherhood Scale; EPDS, Edinburgh Postnatal Depression Scale.

**Table 6.** Internal Consistency Coefficients of Attitudes Toward Motherhood Scale and Sub-Factors

| | Pregnancy AToM | | Postpartum AToM | | AToM | |
|---|---|---|---|---|---|---|
| | Cr $\alpha$ | Number of Items | Cr $\alpha$ | Number of Items | Cr $\alpha$ | Number of Items |
| AToM | 0.877 | 12 | 0.828 | 12 | 0.868 | 12 |
| AToM F1 | 0.871 | 5 | 0.842 | 5 | 0.864 | 5 |
| AToM F2 | 0.832 | 4 | 0.793 | 4 | 0.826 | 4 |
| AToM F3 | 0.848 | 3 | 0.812 | 3 | 0.838 | 3 |

AToM, Adaptation of the Attitudes Toward Motherhood Scale.

**Table 7.** Test-Retest Pearson's Correlation Coefficients of Attitudes Toward Motherhood Scale

| Retest | Test | | | | | |
|---|---|---|---|---|---|---|
| | Pregnancy AToM | | Postpartum AToM | | AToM | |
| | *r* | *P* | *r* | *P* | *r* | *P* |
| AToM | 0.908 | *P* < .001 | 0.916 | *P* < .001 | 0.901 | *P* < .001 |
| AToM F1 | 0.955 | *P* < .001 | 0.681 | *P* < .001 | 0.808 | *P* = .001 |
| AToM F2 | 0.845 | *P* < .001 | 0.867 | *P* < .001 | 0.850 | *P* < .001 |
| AToM F3 | 0.959 | *P* < .001 | 0.980 | *P* < .001 | 0.967 | *P* < .001 |

AToM, Adaptation of the Attitudes Toward Motherhood Scale.

to "Beliefs about maternal responsibility," and the third factor is "Motherhood role idealization." Although there is a 3-factor structure in the Turkish version of the scale, as in the original study, item 9 does not match the factor in the original scale, as in the Portuguese study.[29]

The item, "If I am inadequate as a mother, I am also inadequate as an individual," which was given on the maternal role idealization subgroup in the original study, was given on the "Beliefs about the judgments of others" sub-factor in our study.[10] In the Portuguese study, the fact that the same item was loaded on the "beliefs about maternal responsibility" sub-factor indicates that the item is sensitive to cultural differences.[29]

When the Portuguese study was examined, it was stated that loading item 9 on a different factor from the original study might be related to the idealization of maternal responsibility. Due to the myth of the "perfect mother," the responsibility for the maternal role for women increases disproportionately to reality, and high parenting standards are imposed on women. Therefore, the myth is associated with placing superhuman expectations on the responsibilities encompassed by the role of the mother.[29]

As in the item, "Good mothers always put their baby's needs first," in the Portuguese study, excessive and high achievement expectations and a perfectionist attitude can explain the association of the item with maternal responsibility. It was stated that the high education level of the sample of the study might also be related to this result.[29]

In the Korean study, item 9 was included in the "motherhood role idealization" sub-factor, in line with the original study. The authors stated that the sample's demographic characteristics were similar to the original study in terms of working status, and the mother's working status might therefore have affected the factor distribution.[30]

According to the findings of our study, item 9, which includes the statement, "If I am inadequate as a mother, I am also inadequate as an individual," is included in the "Beliefs about the judgments of others" sub-factor.

Cultural elements related to the concept of "mother" in Turkish culture have a background that supports the existence of women by idealizing their mother identity in the social arena, emphasizing a privileged and sacred position concerning mother identity.[31] In a study in which the discourses on the role of women in society in Turkish proverbs and idioms were analyzed, Yılmaz reported that women's roles were coded and interpreted as a mother, housewife, homemaker or a good wife, and child-bearer, and for women, giving birth to children and being a good mother and wife were seen as some of the most critical factors that increased their social status.[32]

Ilicali and Fisek,[33] in their study evaluating the representation of motherhood in women during pregnancy and the early postpartum period, found that the women's "self as a mother" and their "self as an individual" were integrated, revealing that this finding could be interpreted on a culture-specific basis. The authors stated that in Turkey, the identity of woman and mother had been integrated since childhood, and as a result, mothers in Turkish culture formed a self in which the "self as a mother" and "self as an individual" were integrated.[33]

On the other hand, it was indicated that the emotionally warm mothering attitude of the mother was related to the traditional mother role, which in turn was related to the effort to gain social approval and the realization of the mothering role in the social context. This finding reveals the relationship between the role of motherhood and social approval in Turkish society.[34]

The results of the above studies, which demonstrated that the role of motherhood in Turkish culture was related to women's social identity, supported the inclusion of item 9 in the sub-factor of "Beliefs about others" on a culturally sensitive basis in our study. Further studies should retest how this substance works.

### Criterion Validity of Attitudes Toward Motherhood Scale

The EPDS, which is used to measure depressive symptoms in both pregnancy and postpartum periods, assessed the convergent validity. The EPDS was preferred because it measures physiological symptoms during pregnancy and the postpartum period better than other assessment tools, and there is no other Turkish scale that evaluates motherhood cognitions. AToM was positively correlated with EDPS in both pregnancy and the postpartum period ($r = 0.37$).

In the studies of Sockol et al,[10,35] in which the authors examined women who had multiple and single births in the peripartum period, the relationship between EPDS and AToM was significant, in line with our study ($r$ = 0.4 and $r$ = 0.47, respectively). Although this is significant, the low correlation may be related to the fact that EPDS evaluates mood symptoms and does not include an item or content related to cognitive factors. Our findings should be supported by studies using measurement tools that evaluate cognitive factors and mood symptoms together and with structured clinical interviews.

Leach,[36] in a thesis study investigating the role of cognitive and metacognitive factors in perinatal depression and anxiety, revealed that several cognitive and metacognitive factors, including dysfunctional attitudes about motherhood evaluated using AToM, should be considered concerning each other in understanding perinatal emotional distress. However, Leach[36] stated that how strong these cognitive and metacognitive elements were as predictors for perinatal strain depended on the context in which they were understood.

Fonseca et al[37] examined the relationship between dysfunctional attitudes toward motherhood and postpartum anxiety and depression symptoms using ARoM.

Concerning experiential avoidance, they determined that dysfunctional attitudes related to motherhood activated experiential avoidance strategies, making women's negative thoughts and feelings clear, which affected the development of psychopathological symptoms.[37]

In our study, the contribution of all items AToM to the total score and Cronbach's Alpha value of the total score and subgroups, the fact that factors similar to the original scale were obtained in the factor analysis, the high correlation coefficients in the test-retest evaluation, and the relationship between AToM and depressive symptoms showing sufficient internal consistency indicate that the Turkish version of the scale is a valid and reliable measurement tool. With these features, AToM seems to be a suitable measurement tool to evaluate attitudes toward motherhood and cognitive elements specific to motherhood during pregnancy.

The limitations of our study are the lack of a longitudinal follow-up study, the limited sample size, the absence of any other scale that scans cognitive distortions toward motherhood, the criterion validity performed with EPDS, and the online data collection. The strength of our study is that it examined the relationship between attitudes toward motherhood and depression in both populations, pregnant women and women in the postpartum periods. There is a need for studies to evaluate the relationship between maternal-specific cognitions evaluated using AToM, variables related to sociodemographic characteristics such as first pregnancy/multiple pregnancies, pregnancy/postpartum periods, and clinical variables such as personality traits, cognitive factors, anxiety in terms of diagnostic, longitudinal, and therapy techniques.

In conclusion, the Turkish version of AToM is valid and reliable for use during pregnancy. The use of AToM on women during pregnancy will enable the evaluation of attitudes toward motherhood and the identification of groups at risk in terms of psychopathology in the peripartum period. In this way, it will be possible to identify risky groups in women in transition to motherhood and evaluate them in detail using AToM. Considering that maternal attitudes and cognitive distortions toward motherhood are associated with psychopathologies occurring in the peripartum period, this will allow the implementation of preventive interventions for the development of psychopathology in risky groups and guide psychotherapeutic treatment approaches for psychopathologies developing in the peripartum period.

**Ethics Committee Approval:** This study was approved by Ethics Committee of Bakirkoy Prof. Dr. Mazhar Osman Research and Training Hospital for Neurology, Neurosurgey and Psychiatry (Approval No: 36296-55797345, Date: November 1, 2017).

**Informed Consent:** Written informed consent was obtained from the patients who agreed to take part in the study.

**Peer-review:** Externally peer-reviewed.

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## Supplementary File. Anneliğe Yönelik Tutumlar Ölçeği

Aşağıdaki tablodaki ifadelerin sıklık derecesini size uyan şekilde boşluklara işaretleyiniz.

| | Daima katılıyorum (5) | Çoğu Zaman Katılıyorum (4) | Bazen Katılıyorum (3) | Bazen Katılmıyorum (2) | Çoğu Zaman Katılmıyorum (1) | Hiç katılmıyorum (0) |
|---|---|---|---|---|---|---|
| 1. Eğer hata yaparsam insanlar benim kötü bir anne olduğumu düşünür. | | | | | | |
| 2. Eğer bebeğim ağlarsa insanlar benim onla yeterince ilgilenmediğimi düşünürler. | | | | | | |
| 3. Eğer annelikle ilgili hata yaparsam insanlar beni olduğumdan daha yetersiz görürler. | | | | | | |
| 4. Başkalarından bebeğim için yardım istersem bu bana kendimi beceriksiz hissettirir. | | | | | | |
| 5. Bebeğimin güvende olmasını sağlayabilecek tek kişi benim. | | | | | | |
| 6. İyi anneler her zaman bebeğinin ihtiyacını ilk sıraya koyar. | | | | | | |
| 7. Kendimi bebeğime daha çok adamalıyım. | | | | | | |
| 8. Eğer bebeğimi seviyorsam tüm zamanımı onunla geçirmek istemeliyim. | | | | | | |
| 9. Eğer annelikte yetersizsem, bir birey olarak da yetersizim. | | | | | | |
| 10. Annelikle ilgili hayal kırıklığına uğramak yanlıştır. | | | | | | |
| 11. Bebeğimle ilgili karmaşık duygularımın olması yanlıştır. | | | | | | |
| 12. Bebeğime yönelik olumsuz duygularımın olması yanlıştır. | | | | | | |