SPIRITUAL PSYCHOLOGY AND COUNSELING
spiritualpc.net / 2024 Volume: 9 Number: 3

Research Article

Validation of a Short Form Three Facet Mindfulness Questionnaire (TFMQ-SF) in Pregnant Women

Hafize Dağ Tüzmen[1]
Karatay University

Kamile Altuntuğ[2]
Necmettin Erbakan University

[1] Lecturer, KTO Karatay University, Faculty of Health Sciences, Department of Midwifery Konya, Turkiye, Email: hafizem1992@gmail.com
[2] Professor, Necmettin Erbakan University, Faculty of Nursing, Department of Obstetrics and Gynecology Nursing, Konya, Turkiye. Email: kaltuntug@yahoo.com

Corresponding author:
Hafize Dağ Tüzmen
E-mail: hafizem1992@gmail.com

eISSN: 2458-9675

Received: 16.03.2024
Revision: 27.08.2024
Accepted: 27.08.2024

Abstract
This study aimed to adapt the Three Facet Mindfulness Questionnaire-Short Form (TFMQ-SF) into Turkish. The sample of the methodological research consisted of 302 pregnant women. The data were collected between May and August 2022 using the Personal Information Form, TFMQ-SF, and Tilburg Pregnancy Distress Scale. There are 12 items in the TFMQ-SF. Validity analysis of the data, content validity index, exploratory factor analysis, confirmatory factor analysis, and reliability analysis were performed with Cronbach's alpha reliability coefficient. Ethics committee approval was obtained. The content validity index of the scale was 0.93. As a result of confirmatory factor analysis, χ^2: 1178.445 (df: 66), χ^2/df: 2.407, and RMSEA: 0.068 were found, and the model indicated a good/excellent fit. The item means of the scale ranged from 2.34 ± 1.20 to 2.99 ± 1.15, the item factor loads ranged from 0.59 to 0.82, and the relationship between the scale items and the sub-dimensions was statistically significant ($p < 0.05$). The total Cronbach's alpha coefficient of the scale was 0.84. These results showed that the TFMQ-SF is a valid and reliable measurement tool.

Keywords:
Pregnancy • Mindfulness • Nursing • Validation • Reliability

Citation: Tüzmen, H. D. & Altuntuğ, K. (2024). Validation of a Short Form Three Facet Mindfulness Questionnaire (TFMQ-SF) in pregnant women. *Spiritual Psychology and Counseling, 9*(3), 321–338. http://doi.org/10.37898/spiritualpc.1453742

Introduction

Mindfulness is based on directing attention to the present moment and observing momentary experiences without judgment and with acceptance. It is a mind-body practice involving voluntarily focusing attention on momentary experiences and observing inner experiences (Kabat-Zinn & Hanh, 2009). Mindfulness is based on repetitive observation of all bodily sensations (Davidson et al., 2003).

The level of awareness varies according to the relationship between one's response, perception, and expectation of the process and responses to the transition (Meleis, 2010). Mindfulness can be gained by assuming that one is an impartial witness to one's experience. For an individual to develop awareness as a result of his/her experiences, he/she should be aware of the possibility of stepping back when he/she judges himself/herself and not seeing things as they are. When an individual begins to pay attention to activities related to the mind, he or she begins to explore, and the experience of his or her judgments should not be forgotten. Everything perceived is coded and categorized by the mind. Coding is made by the mind according to the meanings individually attributed to everything experienced. In some situations, people and events are judged as "good" when they make the individual feel good for some reason and as "bad" when they make the individual feel bad. Everything outside these that does not make the individual feel anything and that the individual is indifferent to is considered "neutral." Neutral things, events, and people are thrown out of the consciousness of individuals. Individuals generally do not find them worthy of attention (Kabat-Zinn & Hanh, 2009).

Although pregnancy is a physiological process for women, it is a period in which important biological and psychosocial changes are experienced, and the risk of encountering factors that may cause stress and anxiety is high (Taşkın, 2019). Mindfulness enables a person to react less to emotional distress and approach life, disrupted by physical and mental problems, in a more accepting way (Eyles et al., 2015). In addition, teaching pregnant women how to cope with anxiety, fear, and stressors, how to regulate their attention, and how to maintain calmness in stressful times provides them with self-confidence and improves their ability to regulate their emotions by increasing their level of well-being (Beattie et al., 2017; Dunn et al., 2012; Vieten & Astin, 2008; Yazdanimehr et al., 2016). Practices in this context strengthen the ability to cope with and adapt to the physiological and psychological symptoms of stress by focusing on emotions, sensations, and thoughts, ensuring flexibility and balance, developing problem-solving and decision-making skills, and developing the ability to recognize the effects of thoughts and beliefs on emotions (Dimidjian et al., 2015, 2016; Matvienko-Sikar & Dockray, 2017; Muthukrishnan et al., 2016).

In studies, it has been determined that as the mindfulness levels of pregnant women increase; depression, anxiety, and stress scores decrease (Yüksel et al., 2020); they notice their thoughts, emotions, and bodily sensations better and respond to them more consciously; they can better manage negative emotions, such as anger and frustration and better cope with the difficulties they face in life (Dunn et al., 2012); their negative affect levels decreased (Vieten & Astin, 2008), and their overeating behaviors decreased (Vieten et al., 2018).

Pregnant women with high levels of mindfulness experienced less emotional distress during their pregnancy. In addition, compared to children of mothers with low levels of mindfulness, their children showed fewer negative social-emotional behaviors. Moreover, interventions to increase mindfulness levels may provide a safe alternative to medication to combat the harmful effects of pregnancy-related stress, anxiety, and depression on the health of both mothers and their children (Braeken, 2017). In light of this information, measuring pregnant women's mindfulness levels during pregnancy and planning appropriate interventions at an early stage may contribute to protecting and improving maternal and infant health.

Purpose

Since no measurement tool measures the level of mindfulness of pregnant women in Türkiye, this study aimed to validate and the reliability of the Three Facet Mindfulness Questionnaire-Short Form (TFMQ-SF) and adapt it to Turkish.

Research Questions

- Is the Three Facet Mindfulness Questionnaire-Short Form a valid instrument for Turkish society?
- Is the Three Facet Mindfulness Questionnaire-Short Form a reliable instrument for Turkish society?

Method

Research Design

This was a validity and reliability study for adapting the Three Facet Mindfulness Questionnaire-Short Form (TFMQ-SF) based on a questionnaire.

Study Population and Sample

The study population consisted of 20-29 week-old pregnant mothers living in Konya province. TFMQ-SF has 12 items. It is stated that the sample size for

exploratory factor analysis for scale validity can be taken as 5–10 times the number of items (Çokluk et al., 2012). Therefore, 120 pregnant women (12*10=120), 10 times the number of scale items for exploratory factor analysis and five times the number of scale items (12*50=60) for confirmatory factor analysis, constituted the sample group. It is stated that 50 is very poor, 100 is poor, 200 is average, 300 is good, 500 is very good, and 1000 is excellent for the sample size for exploratory factor analysis. In determining the sample size, it is suggested that a size that will meet at least two of the criteria given in the literature should be taken (Çokluk et al., 2012). The number of scale items in our research was 12, so at least 120 people should be taken. Since it is stated in the literature that at least 300 people should be taken for the sample number to be at a good level, the sample number for our study was 300. Considering the possible loss of sample, 330 people were invited to this study. The present study was completed with 302 pregnant women. In the sampling method of this study, the criterion sampling method was used (to identify situations that meet certain criteria).

Inclusion Criteria

- 20–29 weeks of pregnancy (calculated taking into account the date of the last menstrual period)
- No communication problems
- No psychiatric diagnosis (self-report)

Exclusion Criteria

- Psychologically disturbed (self-report)
- Risky pregnancy
- Incomplete answers to survey questions

Measures

Personal Information Form, TFMQ-SF, and Tilburg Pregnancy Distress Scale (TPDS) were used to collect the data. The data were collected online from pregnant women who were members of social media groups (Facebook, Whatsapp, Instagram) between May and August 2022 and met the inclusion criteria. Data collection tools were organized in an online format and shared using Google Forms. As a prerequisite of the questionnaire page, it was accepted that the participants who ticked the box at the beginning of 'I Agree' to the statement "If you have read the above information and participate in this study completely voluntarily, please tick the box below with X" gave written consent. After the participants' consent was obtained, the online Google form was filled out.

Personal information form. It consists of 13 questions, including the socio-demographic characteristics of pregnant women, created by reviewing the literature (Subaşı et al., 2021; Yüksel et al., 2020). Sociodemographic data included age, pregnancy educational status, pregnancy employment status, partner age, employment status of the partner, income level, family type, number of children, duration of marriage, evaluation of the relationship with the spouse, smoking, number of pregnancies, and gestational week.

Three Facet Mindfulness Questionnaire-Short Form (TFMQ-SF). It is a 5-point Likert-type scale (1: never/very rarely true, 2: rarely true, 3: sometimes true, 4: often true, 5: very often/always true) containing 12 items developed and validated by Truijens et al. (2016). The scale measures the awareness levels of pregnant women at 20–29 weeks. When scoring the scale, items 2, 4, 5, 7, 8, 9, 11, 12 are reverse scored. The scale has three subscales. These are acting with awareness (5, 8, 11, 12), non-judging (2, 4, 7, 9), and non-reacting (1, 3, 6, 10). The score obtained from the scale is between 12-48, and high scores indicate that the awareness levels of pregnant women are good. The Cronbach's alpha values of the scale subscales were 0.87 for the subscales of acting with awareness, 0.84 for the subscales of non-judgment, and 0.80 for the subscales of non-reaction (Truijens et al., 2016). In this study, the Cronbach's alpha values were 0.79 for the acting with awareness subscales, 0.73 for the non-judgement subscales, 0.75 for the non-reaction subscales, and 0.84 for the total scale.

Tilburg Pregnancy Distress Scale (TPDS). It was developed by Pop et al. (2011) to determine distress (depression, anxiety, stress) during pregnancy. Çapik and Pasinlioglu (2015) adapted it into Turkish. The scale consists of 16 items and is graded on a 4-point Likert scale ranging from "very often" (0 points), "quite often" (1 point), "occasionally" (2 points), and "rarely or never" (3 points). Items 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 16 in the scale are reverse coded. The lowest score that can be obtained from the total scale is 0 and the highest score is 48 points. The scale has two subscales: "Negative Affect" and "Spouse Involvement."The negative affect subscale has 11 items (3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 16.) and the lowest score is 0, and the highest score is 33 points. Spouse Involvement Subscale consists of five items (1,2,4,8 and 15.). The lowest score is 0, and the highest score is 15 points. According to the cut-off point, a total score of 28 and above on the scale enables the diagnosis of pregnant women who are at risk for distress. Cronbach's alpha coefficients (total scale = 0.83, spouse involvement = 0.72, negative effect = 0.83) were adequate (Çapik & Pasinlioglu, 2015). In this study, Cronbach's alpha coefficients were (total scale = 0.78, spouse involvement = 0.79, negative affect = 0.84).

Statistical analysis

In the study, SPSS 25 (IBM Corp. Released 2017, IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.) package program was used

for the analysis. Descriptive statistics (mean, standard deviation, minimum value, maximum value, number, and percentile) were given for the variables in this study. In addition, the normality assumption, one of the prerequisites of parametric tests, was examined with the "Shapiro-Wilk" test. The relationships between the two scales were evaluated with the Pearson correlation coefficient because it met the parametric test assumptions. $p<0.05$ level was considered statistically significant.

Ethics

Written permission was obtained from Sophie EM Truijens using e-mail, and the original scale was requested for the adaptation of the scale into Turkish. Ethics committee approval was obtained from the Pharmaceutical and Non-Medical Device Research Ethics Committee of a University on 17.06.2022 with decision number 2022/006. Pregnant women who met the criteria for participation in this study were informed about the present study, and consent was obtained.

Results

Table 1
Descriptive Statistics of Demographic Characteristics of The Participants (N=302)

Variables	X±SD / n(%)
Age (year)	
Mean±SD	27.28±5.42
M (min-max)	26 (17-43)
Gestation Period (weeks)	
Mean±SD	25.4±6.28
M (min-max)	25 (2-40)
Duration of Marriage (months)	
Mean±SD	64.85±58.05
M (min-max)	48 (1-300)
Partner Age (year)	
Mean±SD	30.48±5.73
M (min-max)	30 (20-49)
Pregnancy Education Level	
Primary School	38 (%12.5)
Middle School	98 (%32.5)
High School and Above	166 (%55.0)
Pregnancy Employment Status	
Yes	54 (%17.9)
No	248 (%82.1)
Partner Employment Status	
Yes	294 (%97.3)
No	8 (%2.7)
Family Type	
Nuclear family	260 (%86.1)
Extended family	42 (%13.9)
Income Level	

Table 1
Descriptive Statistics of Demographic Characteristics of The Participants (N=302)

Variables	X±SD / n(%)
Low	41 (%13.6)
Moderate	237 (%78.5)
High	24 (%7.9)
Number of Children	
1	214 (%70.9)
2	61 (%20.2)
3 and above	27(%8.9)
Relationship Status	
Good	256 (%84.8)
Moderate	46 (%15.2)
Number of Pregnancies	
1 (first)	123 (%40.7)
2	77(%25.5)
3 and above	102(%33.8)
Smoking	
Yes	31 (%10.3)
No	271 (%89.7)

***** Abstract statistics are given as mean ± standard deviation and Median (minimum, maximum) for numerical data and Number (Percentage) for categorical data.

Validity Results

Language, content, and construct validity methods were used to ensure the validity of the scale.

Language Validity

To ensure linguistic equivalence between the Turkish translation of the TFMQ-SF and the English original and to adapt it to Turkish society, the Turkish translation of the scale was carried out independently by three experts who have a good command of the English language. A common text was obtained after being evaluated by the researchers. The obtained scale was then back-translated into English by an English expert (back-translation method), and it was evaluated that the scale expressions were compatible with the original scale. After completion of the language validity by ensuring the integrity of meaning, a pilot study was conducted with 10 people outside the sample in terms of Turkish readability and comprehensibility.

Content Validity

Content validity is used to evaluate the extent to which the measurement tool covers the basic elements of the construct to be measured (Acar, 2014; Byrne, 2013; Erefe, 2002). Expert opinions were obtained for the content validity of the scale. Experts were asked for their opinions on the way the items in the scale were expressed and

whether the expressions were clear and understandable. For this purpose, opinions were obtained from five experts in Obstetrics and Gynecology Nursing. Experts were asked to score each scale item using the Content Validity Index (CVI) technique. 1 point is 'needs a lot of change (as I suggested);' 2 points is 'needs little change (as I suggested);' 3 points is 'appropriate;' 4 points is 'very appropriate.' As a result of the expert evaluations, CVI ratios were calculated using the following formula (Polit & Beck, 2006).

CVI: Number of experts who rated the items as Appropriate and Very Appropriate/ Number of Experts

The fact that the experts evaluated 80% of the items between 3-4 points and that the scale received a CVI score of 0.80 and above indicates that the content validity of the scale is sufficient. It is recommended that item CVI values should not be below 0.78 (Erdoğan et al., 2015; Gözüm, 2003; Polit & Beck, 2006). In this study, five experts evaluated 12 items. Four items (items 1, 2, 8, 9) had a CVI value of 0.80, and the other items (items 3, 4, 5, 6, 7, 10, 11, 12) had a CVI value of 1.00. The total CVI ratio of the scale was 0.93, and the CVI value found was considered sufficient because it was higher than 0.80.

The results of the evaluation of the expert opinions and the Kendall W Concordance analysis performed with the IBM SPSS program showed that the opinions of the experts were compatible ($p > 0.05$).

Measure Related Validity

To evaluate the criterion-related validity of TFMQ-SF, TPDS was applied to the participants, and the relationship between them was analyzed using Pearson Product Moment Correlation Analysis. The level of the relationship was classified using the Pearson correlation coefficient as follows: '< 0.30 = small/negligible,' '0.30 - 0.50 = low,' '0.50 - 0.69 = moderate,' '0.70 - 0.90 = high,' and '> 0.90 =very high.' According to the scale data, the correlation analysis between TFMQ-SF and the parallel form TPDS total scores revealed a weak but significant negative relationship between the forms ($r = -0.22$, $p \leq 0.001$, Table 2).

Table 2
Correlation Between TFMQ-SF and TPDS

	Negative Affect	Spouse Involvement	TPDS
Acting With Awareness	**r =-0.364 p<0.001**	**r=0.183 p=0.001**	**r=-0.240 p<0.001**
Non-Judgement	**r=-0.126 p=0.029**	r=-0.102 p=0.077	**r=-0.164 p=0.004**
Non-Response	r=-0.078 p=0.176	r=-0.102 p=0.076	**r=-0.121 p=0.035**
TFMQ-SF	**r=-0.244 p<0.001**	r=-0.001 p=0.991	**r=-0.222 p<0.001**

r: Pearson Correlation Coefficient; p: Significance value (p<0.05); 0.00: no relationship; 0.01 - 0.29: low-level relationship; 0.30 - 0.70: moderate relationship; 0.71 - 0.99: high-level relationship; 1.00: perfect relations

Construct Validity

Construct validity shows the ability of the scale to measure the entire concept or conceptual structure. It is the process of understanding what the scores obtained from a scale mean (Gözüm, 2003). Construct validity is of primary importance for psychological scales (Westen & Rosenthal, 2003). Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used to evaluate construct validity (Erdoğan et al., 2015).

Bartlett's test of sphericity was used to statistically test the correlation between variables in the data matrix (Bartlett, 1950). In the Bartlett sphericity test, it was tested whether the matrix created between the questions was an identity matrix. In addition, the Kaiser-Meyer-Olkin (KMO) criterion, obtained using correlation and partial correlation coefficients, was also evaluated for the suitability of the data for factor analysis. A KMO value greater than 0.5 is considered sufficient (Cerny & Kaiser, 1977) n. The Bartlett's test result was obtained as 1178.445 ($p<0.05$), and the KMO value was 0.856 (Table 3). These results show the suitability of the scale's assumptions. When the results obtained were examined, it was seen that the factor loadings were above 0.30, the factor loadings ranged between 0.59 and 0.82, the measurement tool consisted of a three-factor structure, and this three-factor structure explained 59.58% of the total variance (Table 3). These results show that the scale is a valid measurement tool.

Table 3
Three Facet Mindfulness Questionnaire-Short Form (TFMQ-SF) Validity and Reliability Results (N=302)

Factor	Item No.	Factor Loading			Total Correlation	Explained Variance %	Cronbach's Alpha
		1	2	3			
Acting With Awareness	5	0.729			0.456	12.40	0.792
	8	0.591			0.565		
	11	0.829			0.530		
	12	0.818			0.524		
Non-Judgement	2			0.682	0.539	19.37	0.736
	4			0.680	0.421		
	7			0.696	0.630		
	9			0.699	0.524		
Non-Response	1		0.689		0.435	18.81	0.750
	3		0.681		0.476		
	6		0.739		0.524		
	10		0.747		0.587		
					Scale	59.58	0.849
KMO=0.856 DF=66 χ^2=1178,445 p<0.001							

KMO: Kaiser–Meyer–Olkin test; Df: Degree of Freedom

Exploratory Factor Analysis

In exploratory factor analysis, the dimensions obtained as a linear combination of observed variables are called factors. Factors are hypothetical variables formed

by observed variables (Rencher, 2002). In evaluating the suitability of the data for factor analysis, the correlation matrix should be examined. If a significant portion of the coefficients in the correlation matrix is not greater than 0.30, the application of factor analysis will probably not be appropriate (Hair et al., 1998). Bartlett's test of sphericity is used to statistically test the correlation between the variables in the data matrix (Bartlett, 1950). Bartlett's test of sphericity tests whether the matrix formed between the questions is a unit matrix (Büyüköztürk, 2002, 2018). Rejection of the null hypothesis indicates that the variables are suitable for factor analysis. In addition, the Kaiser-Meyer-Olkin (KMO) criterion, obtained using correlation and partial correlation coefficients, is important in evaluating the suitability of the data for factor analysis. KMO, the sample adequacy criterion, takes a value between 0 and 1. If the KMO value is less than 0.5, the data set in question is not suitable for factor analysis (Cerny & Kaiser, 1977)a. In the present study, the principal components method was used to obtain the factors. In determining the appropriate number of factors, factor selection criteria considered the number of eigenvalues greater than one. In addition, factor rotation was performed to clarify the variables contributing to the formation of each common factor. The varimax method was applied to this process. Confirmation factor analysis was also applied to test the conformity of the factors obtained by exploratory factor analysis to hypothetical or theoretical factor structures. Exploratory factor analysis is usually applied before the scale development and construct validity testing processes. Translating a scale into a new language requires translating it in terms of language and evaluating it as a language, culture, and psychological whole (Van de Vijver & Tanzer, 2004). It is necessary to reveal the possible structural differences that may occur with the help of EFA. Structures that cannot be noticed as a result of CFA can be discovered thanks to EFA (Bandalos and Finney, 2010).

Table 3 shows that the TFMQ-SF consisted of 12 questions. Factor analysis results showed that the scale items were clustered in three facets. In scale adaptation studies, the explained variance ratio of 30% or more is taken as a criterion (Büyüköztürk, 2018). As shown in Table 3, this three-factor structure explained 59.58% of the total variance. The reliability of the whole scale and its dimensions was also high. The scale dimensions consisted of acting with awareness, non-judgment, and non-reaction.

Confirmatory Factor Analysis

Confirmatory factor analysis is used to confirm the structure or the theoretical factor structure obtained from explanatory factor analysis (Brown, 2015). In exploratory factor analysis, the appropriate number of factors to define the basic structure is determined based on the data matrix, while in confirmative factor analysis, the number of factors is known a priori.

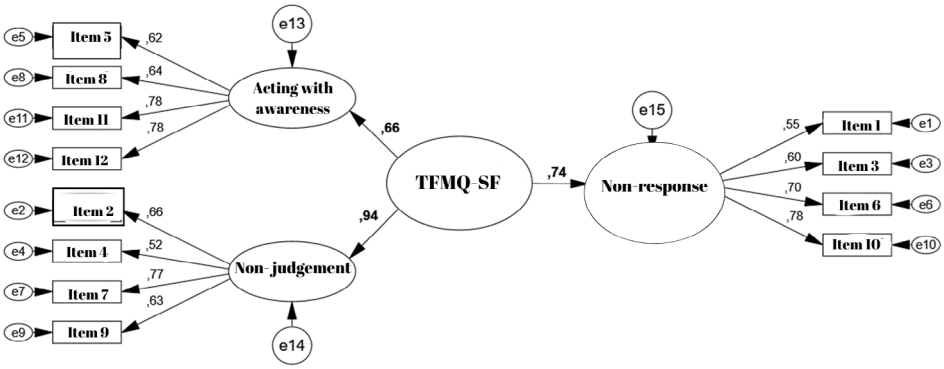
Adequate model fit can be assumed with a CFI ≥ .80, NFI ≥ .80, and RMSEA ≤ .05 for good fit and ≤.08 for adequate fit (Browne, 1993; Hu & Bentler, 1999). In the confirmatory factor analysis of the TFMQ-SF, $\chi 2/df$, root mean square of prediction errors (RMSEA), goodness of fit index (GFI), root mean square of standardized error squares (SRMR), comparative fit index (CFI), excess fit index (IFI), and Turker-Lewis index (TLI) showed that the model was acceptable (Table 4). The model is presented visually in Figure 1.

Table 4
TFMQ-SF Model's Fit Values

Measure	Good Fit	Acceptable Fit	Model's Fit Index Values
(χ^2/sd)	≤ 3	≤ 4-5	2,407 **
RMSEA	≤ 0.05	0.06-0.08	0.068 *
SRMR	≤ 0.05	0.06-0.08	0.054 *
IFI	≥ 0.95	0.94-0.90	0.937 *
CFI	≥ 0.95	0.94-0.90	0.937 *
GFI	≥ 0.90	0.89-0.85	0.934 **
TLI	≥ 0.95	0.94-0.90	0.918 *

* Acceptable Fit; ** Good Fit; The comparative fit index (CFI), normed fit index (NFI), Tucker–Lewis Index (TLI), and the root mean square error of approximation (RMSEA)

Figure 1
TFMQ-SF Path Diagram



Reliability Results

Reliability is the basic feature that every measurement tool should have. This feature ensures that the data from the measurement tool are collected correctly and are reproducible (Erefe, 2002). " Cronbach's Alpha Correlation Analysis" and "Item Total Score Correlation" can be used to determine the reliability, inter-observer agreement, and internal consistency of a measurement. Consistency is defined as the agreement between the results of repeated observations and measurements by the same observer on the same people under the same conditions. Cronbach's alpha technique, which is proposed to test the reliability of Likert-type scales, measures the internal consistency of the items in the measurement tool (Çapık et al., 2018). Cronbach's alpha values for the scale and its subscales are given in Table 5.

Tablo 4
TFMQ-SF Item-Total Score Correlation

	X±*SD*	*M* (*min-max*)	Acting with awareness	Non-judgement	Non-response	TFMQ-SF
Acting With Awareness	10,25±3,93	10 (4-20)	**1**			
Non-Judgement	12,14±3,57	12 (4-20)	**r=0,450 p<0,001**	**1**		
Non-Response	11,34±3,53	11 (4-20)	**r=0,392 p<0,001**	**r=0,549 p<0,001**	**1**	
TFMQ-SF	33,73±8,83	34 (12-60)	**r=0,784 p<0,001**	**r=0,824 p<0,001**	**r=0,796 p<0,001**	**1**

Table 5
TFMQ-SF Cronbach's Alpha Reliability Coefficients for Total and Subscales

Subscales and Total Scale	Cronbach's Alpha
TFMQ-SF	0.849
Acting with awareness	0.792
Non-judgement	0.736
Non-response	0.750

Cronbach's alpha internal consistency coefficient should be at least 0.70, and a coefficient between 0.81-1.00 is interpreted as highly reliable (Aslan, 2018; Kartal & Bardakçı, 2018). The explanatory factor analysis showed that the scale was a valid and reliable measurement tool. Items 5, 8, 11, and 12 were included in the subscales of acting with awareness. Items 2, 4, 7, and 9 were included in the non-judgement subscales. Items 1, 3, 6, and 10 were included in the non-reacting subscales. The scale and subscales were obtained by summing the scores obtained from the questions. It is thought that there is a difference between the original scale and the results of this study due to the social and social differences of the participants.

Discussion

This study examined the validity and reliability analyses of the TFMQ-SF. The results showed that TFMQ-SF has acceptable values in terms of language, content, content validity, and reliability analyses and can be used in Turkish culture.

Reliability Analysis

For the reliability of the measurement model, Cronbach's α values of the factors were analyzed. Cronbach's alpha value of ≥0.80 is accepted as a highly reliable scale (Karakoç & Dönmez, 2014). In this study, since the total Cronbach's alpha value of the scale was 0.849, the Cronbach's alpha value of the acting with awareness subscales was 0.79, the Cronbach's alpha value of the non-judgment subscales was 0.73, and the Cronbach's alpha value of the non-reaction subscales was 0.75, it can be said that the reliability of the scale is relatively high. In the study of Truijens et al. (2016), it was observed that the Cronbach's alpha value of the subscales of

acting with awareness was 0.87, the Cronbach's alpha value of the subscales of non-judgement was 0.84, and the Cronbach's alpha value of the subscales of non-reaction was 0.80. In the study of Bohlmeijer et al. (2011), it was found that the Cronbach's alpha value of the subscales of acting with awareness was 0.83, the Cronbach's alpha value of the subscales of non-judgment was 0.83, and the Cronbach's alpha value of the subscales of non-reaction was 0.75 (Ernst Bohlmeijer et al., 2011). It can be said that these values are similar to the results of the present study. The TFMQ-SF, adapted to Turkish culture and similar to the original version, is a three-dimensional assessment tool: acting with awareness, non-judgment, and non-reaction. Although there are measurement tools that measure various mindfulness levels, there is no form that evaluates these three facets. Therefore, the TFMQ-SF is the first known scale in Türkiye to assess the mindfulness levels of women during pregnancy in three facets.

Validity

In the studies on the validity of the questionnaire, other questionnaires whose validity has been accepted as the gold standard and which are all or some of which are relevant to the subject are used to evaluate the questionnaire whose validity will be investigated. For this assessment, we used TPDS scales. The 12-item TFMQ-SF showed a negative and significant correlation with distress scores, suggesting that greater mindfulness is associated with reduced pregnancy-related distress. These findings are consistent with previous research indicating that mindfulness is inversely associated with stress (E. Bohlmeijer et al., 2011; de Bruin et al., 2012).

Truijens et al. (2016) reported that the scale formed a three-factor structure (Truijens et al., 2016). In this study, it was observed that a three-factor structure was formed, similar to the original form of the scale. The factor loading of an item to a factor should be >0.30 (Li, 2016). TFMQ-SF factor loadings varied from 0.59 to 0.81. This study had a high factor loading since both factor loadings and common loadings were above 0.30. In the original form of the scale, factor loadings ranged from 0.53 to 0.89 (Truijens et al., 2016). After the EFA, the three-factor structure of the scale in the Turkish sample was confirmed by the CFA. It was observed that the fit index values showed an acceptable and good fit, and it can be said that the established model is compatible (DeVon et al., 2007; Hair et al., 2014). Factor load values were found acceptable. The fit index values in the CFA showed that the model was a good fit (Topuz et al., 2011). In other words, each factor accurately represents the questions that constitute it. In cases where it is shown to be important in large samples in general, the ratio of the chi-squared value to degrees of freedom and fit indices is a method used to determine acceptable fit (Meydan & Sesen, 2011).

Consequently, the findings of this study can be applied in clinical practice using the brief mindfulness instrument as a rapid screening tool. By screening for self-reported

mindfulness, pregnant women with low scores on the mindfulness questionnaire (indicating lower levels of mindfulness) could be offered a mindfulness training program. Additionally, there is a growing interest in experimental research with pregnancy-specific mindfulness interventions, which underscores the significance of a mindfulness questionnaire that has been specifically validated in pregnant women (Guardino et al., 2014)

Limitations

Personal, sociocultural, and environmental differences may affect the awareness levels of individuals. Another limitation is that the data were obtained based on participants' self-reports, were collected online, and no observations were made. The possibility that participants might have given the answers expected within the framework of social norms for various reasons, such as the situation they were in while answering the questions, time, may have caused bias. Despite these limitations, the TFMQ-SF can be used as a measurement tool to assess the awareness levels of pregnant women (20-29 weeks) because of the high validity and reliability of the measurement values, according to the results obtained.

Conclusion and Suggestions

The results of this study showed that the TFMQ-SF, which assesses the awareness levels of pregnant women, is a valid, reliable, three-dimensional, and clinically appropriate measurement tool for the Turkish population. Therefore, TFMQ-SF can be used in clinical practice and scientific research. Since there is no validated measurement tool to assess the awareness levels of pregnant women in our country, Türkiye, this study will a significantly contribute to the literature on measuring the awareness levels of pregnant women (20-29 weeks). It can also be used as a screening tool for nurses and other healthcare providers to determine what kind of supportive behaviors are necessary or missing to increase the awareness levels of pregnant women.

Acknowledgement. The authors thank all the pregnant women who participated in this study.

Ethical approval. For the adaptation of the scale into Turkish, written permission was obtained from Sophie EM Truijens via e-mail and the original scale was requested. Ethics committee permission was obtained from KTO Karatay University Drug and Non-Medical Device Research Ethics Committee dated 17.06.2022 and decision number 2022/006. Pregnant women who met the criteria for participation in the study were informed about the study and consent was obtained. The research was conducted in accordance with the principles of the Helsinki Declaration.

Authors' contribution. Idea/Concept: K.A, H.D.T; Design: K.A, H.D.T; Data Collection and/or Processing: K.A, H.D.T; Analysis and/or Interpretation: K.A, H.D.T; Literature Review: K.A., H.D.T; Article Writing: K.A., H.D.T; Critical Review: K.A., H.D.T.

Peer-review. Externally peer reviewed..

Funding. The authors received no financial support for the research, authorship and/or publication of this article.

Disclosure statement. No potential conflict of interest was reported by the authors.

Data Availability Statements. The data supporting the findings of this study are available from the corresponding author upon reasonable request.

References

Acar, T. (2014). Validity evidence in scale development: the application of cross-validation and classification-sequencing validation. *Educational Sciences: Theory and Practice*, *14*(3), 973-976.

Aslan, Ş. (2018). *Sosyal bilimlerde araştırma yöntemleri: nicel, nitel ve karma tasarımlar için bir rehber*. Eğitim Yayınevi.

Bartlett, M. S. (1950). Tests of significance in factor analysis. *British Journal of Psychology, 3,* 77–85.

Beattie, J., Hall, H., Biro, M. A., East, C., & Lau, R. (2017). Effects of mindfulness on maternal stress, depressive symptoms and awareness of present moment experience: a pilot randomized trial. *Midwifery*, *50*, 174-183.

Bohlmeijer, E., Ten Klooster, P. M., Fledderus, M., Veehof, M., & Baer, R. (2011). Psychometric properties of the five facet mindfulness questionnaire in depressed adults and development of a short form. *Assessment*, *18*(3), 308-320.

Bohlmeijer, E., ten Klooster, P. M., Fledderus, M., Veehof, M., & Baer, R. (2011). Psychometric properties of the five facet mindfulness questionnaire in depressed adults and development of a short form. *Assessment*, *18*(3), 308-320. https://doi.org/10.1177/1073191111408231

Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. Guilford Publications.

Browne, M. W. (1993). Testing structural equation models. *(No Title)*, 136.

Büyüköztürk, Ş. (2002). Faktör analizi: Temel kavramlar ve ölçek geliştirmede kullanımı. *Kuram ve uygulamada eğitim yönetimi*, *32*(32), 470-483.

Büyüköztürk, Ş. (2018). *Sosyal bilimler için veri analizi el kitabı.* Pegem Atıf İndeksi.

Byrne, B. M. (2013). *Structural equation modeling with mplus: basic concepts, applications, and programming*. Routledge.

Cerny, B. A., & Kaiser, H. F. (1977). A study of a measure of sampling adequacy for factor-analytic correlation matrices. *Multivariate Behavioral Research*, *12*(1), 43-47.

Çapik, A., & Pasinlioglu, T. (2015). Validity and reliability study of the tilburg pregnancy dstress scale into Turkish. *Journal of Psychiatric and Mental Health Nursing*, *22(4)*, 260-269.

Çapık, C., Gözüm, S., & Aksayan, S. (2018). Kültürlerarası ölçek uyarlama aşamaları, dil ve kültür uyarlaması: güncellenmiş rehber. *Florence Nightingale Journal of Nursing*, *26(3)*, 199-210.

Çokluk, Ö., Şekercioğlu, G., & Büyüköztürk, Ş. (2012). *Sosyal bilimler için çok değişkenli istatistik: spss ve lisrel uygulamaları* (vol. 2). Pegem Akademi.

Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., Urbanowski, F., Harrington, A., Bonus, K., & Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine*, *65(4)*, 564-570.

de Bruin, E. I., Topper, M., Muskens, J. G., Bögels, S. M., & Kamphuis, J. H. (2012). psychometric properties of the five facets mindfulness questionnaire (FFMQ) in a meditating and a non-meditating sample. *Assessment*, *19(2)*, 187-197.

DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., Savoy, S. M., & Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship*, *39(2)*, 155-164.

Dimidjian, S., Goodman, S. H., Felder, J. N., Gallop, R., Brown, A. P., & Beck, A. (2015). An open trial of mindfulness-based cognitive therapy for the prevention of perinatal depressive relapse/recurrence. *Archives of Women's Mental Health*, *18*, 85-94.

Dimidjian, S., Goodman, S. H., Felder, J. N., Gallop, R., Brown, A. P., & Beck, A. (2016). Staying well during pregnancy and the postpartum: a pilot randomized trial of mindfulness-based cognitive therapy for the prevention of depressive relapse/recurrence. *Journal of cConsulting and Clinical Psychology*, *84*(2), 134.

Dunn, C., Hanieh, E., Roberts, R., & Powrie, R. (2012). Mindful pregnancy and childbirth: effects of a mindfulness-based intervention on women's psychological distress and well-being in the perinatal period. *Archives of Women's Mental Health*, *15*, 139-143.

Erdoğan, S., Nahcivan, N., & Esin, M. N. (2015). *Hemşirelikte araştırma: süreç, ugulama ve kritik*. Nobel Tıp Kitabevi.

Erefe, İ. (2002). *Veri toplama araçlarının niteliği. hemşirelikte araştırma ilke süreç ve yöntemleri,* 133-138. Odak Ofset.

Eyles, C., Leydon, G. M., Hoffman, C. J., Copson, E. R., Prescott, P., Chorozoglou, M., & Lewith, G. (2015). Mindfulness for the self-management of fatigue, anxiety, and depression in women with metastatic breast cancer: a mixed methods feasibility study. *Integrative Cancer Therapies*, *14(1)*, 42-56.

Gözüm, S. (2003). A guide for transcultural adaptation of the scale II: psychometric characteristics and cross-cultural comparison. *Hemşirelikte Araştirma Geliştirme Dergisi*, *5*, 3.

Guardino, C. M., Dunkel Schetter, C., Bower, J. E., Lu, M. C., & Smalley, S. L. (2014). Randomized controlled pilot trial of mindfulness training for stress reduction during pregnancy. *Psychology & Health*, *29*(3), 334-349.

Hair, J., Andreson, R., Tatham, R., & Black, W. (1998). Multivariate data analysis. 5th (ed) Prentice-Hall Inc. *Unites States of America*.

Hair, J. F., Gabriel, M., & Patel, V. (2014). Amos covariance-based structural equation modeling (CB-SEM): guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing*, *13*(2).

Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55.

Kabat-Zinn, J., & Hanh, T. N. (2009). *Full catastrophe living: using the wisdom of your body and mind to face stress, pain, and illness*. Delta.

Karakoç, A. G. D. F. Y., & Dönmez, L. (2014). Ölçek geliştirme çalışmalarında temel ilkeler. *Tıp Eğitimi Dünyası*, *13*(40), 39-49.

Kartal, M., & Bardakçı, S. (2018). *Spss ve amos uygulamalı örneklerle güvenirlik ve geçerlik analizleri*. Akademisyen Kitabevi.

Li, C.-H. (2016). Confirmatory factor analysis with ordinal data: comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods*, *48*, 936-949.

Matvienko-Sikar, K., & Dockray, S. (2017). Effects of a novel positive psychological intervention on prenatal stress and well-being: a pilot randomized controlled trial. *Women and Birth*, *30*(2), e111-e118.

Meleis, A. I. (2010). *Transitions theory: middle range and situation specific theories in nursing research and practice*. Springer Publishing Company.

Meydan, C., & Sesen, H. (2011). *Structural equation modeling amos applications.* Detay Publishing.

Muthukrishnan, S., Jain, R., Kohli, S., & Batra, S. (2016). Effect of mindfulness meditation on perceived stress scores and autonomic function tests of pregnant Indian women. *Journal of clinical and diagnostic research: JCDR*, *10*(4), CC05.

Pop, V. J., Pommer, A. M., Pop-Purceleanu, M., Wijnen, H. A., Bergink, V., & Pouwer, F. (2011). Development of the tilburg pregnancy distress scale: the tpds. *BMC Pregnancy and Childbirth*, *11*(1), 1-8.

Rencher, A. C. (2002). *Methods of multivariate analysis,* 2nd ed., A John Wiley & Sons. New York.

Subaşı, H. E., Can, Ö., Cetin, H., Temiz, H. E., & Şimşek, E. E. (2021). Gebelikteki riskli durumlara ilişkin farkındalık ve bilgi düzeyi üzerine bir çalışma: gebe okulları etkin bir yol olabilir mi? *Turkish Journal of Family Medicine and Primary Care*, *15*(3), 434-442.

Taşkın, L. (2019). *Doğum ve kadın sağlığı hemşireliği*. Akademisyen Kitabevi.

Topuz, S., Ülger, Ö., Yakut, Y., & Gül Şener, F. (2011). Reliability and construct validity of the Turkish version of the trinity amputation and prosthetic experience scales (tapes) in lower limb amputees. *Prosthetics and Orthotics International*, *35*(2), 201-206.

Truijens, S. E., Nyklíček, I., van Son, J., & Pop, V. J. (2016). Validation of a short form three facet mindfulness questionnaire (TFMQ-SF) in pregnant women. *Personality and Individual Differences*, *93*, 118-124.

Van de Vijver, F., & Tanzer, N. K. (2004). Bias and equivalence in cross-cultural assessment: an overview. *European Review of Applied Psychology*, *54*(2), 119-135.

Vieten, C., & Astin, J. (2008). Effects of a mindfulness-based intervention during pregnancy on prenatal stress and mood: results of a pilot study. *Archives of Women's Mental Health*, *11*, 67-74.

Vieten, C., Laraia, B. A., Kristeller, J., Adler, N., Coleman-Phox, K., Bush, N. R., Wahbeh, H., Duncan, L. G., & Epel, E. (2018). The mindful moms training: development of a mindfulness-based intervention to reduce stress and overeating during pregnancy. *BMC Pregnancy and Childbirth*, *18*(1), 201. https://doi.org/10.1186/s12884-018-1757-6

Westen, D., & Rosenthal, R. (2003). Quantifying construct validity: two simple measures. *Journal of Personality and Social Psychology*, *84*(3), 608.

Yazdanimehr, R., Omidi, A., Sadat, Z., & Akbari, H. (2016). The effect of mindfulness-integrated cognitive behavior therapy on depression and anxiety among pregnant women: a randomized clinical trial. *Journal of Caring Sciences*, *5*(3), 195.

Yüksel, A., Dabanlı, Z., & Yılmaz, B. (2020). Gebelerde bilinçli farkındalık ile depresyon, anksiyete ve stres düzeyleri arasındaki ilişkinin belirlenmesi. *JAREN*, *6(2)*,195-202. https://doi.org/0.5222/jaren.2020.55707