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Validity and reliability study of the Turkish version of the Aging Anxiety Scale for Middle-Aged Women

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Abstract

Purpose: This study aimed to perform a validity and reliability study of the Turkish version of the Aging Anxiety Scale for Middle-Aged Women.

Design and Methods: This methodological study was conducted with 262 women aged between 40 and 59 years.

Findings: While language, content and construct validity analyses were performed at the validity phase of the scale, internal consistency and stability over time analyses were performed at the reliability stage. Factor analyses were performed for the construct validity, and it was determined that the items of the scale were classified under four factors; this was consistent with the original form. The Cronbach's α reliability was 0.962 for the overall scale and ranged between 0.836 and 0.949 for the four subdimensions.

Practice Implications: The study determined that the Turkish adaptation of the scale is a valid and reliable measuring instrument.

KEYWORDS
anxiousness, biological aging, middle age, psychometric, woman

1 | INTRODUCTION

The rate of the world's aging population is gradually increasing. According to the data released by the World Health Organization (WHO), it is estimated that the elderly population will increase from 1 billion in 2019 to 1.4 billion in 2030 and 2.1 billion in 2050 (World Health Organization, 2020). According to the data released by the Turkish Statistical Institute (TurkStat) in 2021, the proportion of the age group >65 years, which is classified as elderly, has increased from 8.2% to 9.5% in the last 5 years, and according to estimates, it will increase up to 10% in 2023, and Turkey will take its place in countries with an elderly population (TUIK, 2019). Middle age and aging process are complex periods that should be handled biopsychosocially in a versatile and holistic way (Cataloglu, 2018). During this period, these people's biological abilities are depleted and they assume to be having more social responsibilities (Lee & You, 2019). With the increase in life

expectancy, potential challenges of the aging process cause anxiety and fears related to physical and psychosocial changes in the aging population in society (Fernández-Jiménez et al., 2020). These anxious and fears are associated with the aging process of an individual and is caused by physical, mental, and social problems resulting from the aging phenomenon (Lee & You, 2019). It is different from general anxiety and is the expression of people's fear of aging. These fears and concerns may have many causes, such as young adults' negative stereotypes and prejudices regarding older people and aging (Brunton & Scott, 2015; Fernández-Jiménez et al., 2020; Lasher & Faulkender, 1993; Pakpour et al., 2021). According to studies, although various factors are associated with aging anxiety, the most frequently associated ones are age, body image, community pressure and sex (Cameron et al., 2018; Fernández-Jiménez et al., 2020). As indicated in several studies, aging anxiety is more common in middle-aged and young people, and they are afraid of the unknown (Brunton &

Scott, 2015; Jankowski et al., 2015; Lewis-Smith, 2014). It is an inevitable fact that there is a correlation between sex and aging-related fear and anxiety. Studies have found that women age differently than do men and that especially due to physical concerns, such as weight gain, greying of hair and wrinkles, women experience aging anxiety more than men do (Barrett & Robbins, 2008; Brunton & Scott, 2015; Cameron et al., 2018; Fernández-Jiménez et al., 2020; Jankowski et al., 2015; Koukouli et al., 2013). In addition, women are exposed to various social pressures such as having their anti-greying hair dye, using antiaging creams to prevent wrinkles, dieting and undergoing cosmetic and surgical interventions against the signs of aging (Cameron et al., 2018; Slevin, 2010). All these affect women's body image, self-concept and mental health negatively and cause them to experience aging anxiety (Peat et al., 2008). According to our review of the Turkish literature, in many studies, the biological dimension of the aging process were addressed. These studies were on health problems that occur in the elderly and on solutions to these problems. Although biological and physical disorders are important in the aging process, they are not the only problem that should be addressed. The aging process is a social phenomenon and is affected by sociocultural structures, which adds a psychosocial dimension to the subject (Gursoy Cuhadar & Lordoglu, 2016). As demonstrated in the literature, the social structure and cultural characteristics of the society, and relationships between individuals affect the attitudes of them toward the aging process, either directly or indirectly. Due to these effects of the process, individuals develop "anxiety," which is defined as a fear of the unknown. Looking at the picture by sex, the phenomenon of aging poses an extra burden on women due to gender inequality, because in patriarchal societies, looking young and physically beautiful and being well-groomed are a responsibility imposed on women. The thought that body image will deteriorate with the aging process included in a category defined as "old and ugly" in the society may cause women to suffer from anxiety more than men do (Amuk & Oguzhanoglu, 2003; Efe & Aydemir, 2015; Gursoy Cuhadar & Lordoglu, 2016). In several studies, it is recommended that individuals should be educated and informed about the process to prevent women from suffering aging anxiety. It has been determined that individuals who are knowledgeable about the aging process or who have received nursing counselling display more positive attitudes toward aging (Barnett & Adams, 2018; Donizzetti, 2019; Efe & Aydemir, 2015; Jung & Oh, 2016). As is indicated in the literature, while fundamentally, the "aging phenomenon" does not create a psychological problem, individuals' experiencing uncertainty about what they will face in this process, their cultural structure and social pressures are exposed to create anxiety. While the importance of the issue is emphasized in world literature and various attempts are being made, the presence of a gap related to the issue in the Turkish literature, where the elderly population has increased so rapidly, is noteworthy. Within this context, our study was planned to gain the Turkish literature a concrete measurement tool that can determine aging anxiety with the potential to cause problems in the lives of women in our country, where the characteristics of a patriarchal society reign, and to improve this situation by clarifying the problem.

2 | METHODS

2.1 | Design

This study aimed to evaluate a psycholinguistic and psychometric properties of the Turkish version of the Aging Anxiety Scale for Middle-Aged Women. For this, we developed the Turkish version of the Aging Anxiety Scale for Middle-Aged Women by Haejin Lee and Mi-Ae You (2019) and tested its validity and reliability.

2.2 | Research questions

- Is the Turkish Form of the Aging Anxiety Scale for Middle Aged Women valid?
- Is the Turkish Form of the Aging Anxiety Scale for Middle Aged Women reliable?

2.3 | Sample

The study was conducted from April 2020 to December 2020 with Turkish women aged between 40 and 59 years. The universe of the research consisted of all women who actively use internet-social media (WhatsApp, Instagram, Facebook, etc.) between April and December 2020. In the study, since the size of the sampling in validity and reliability studies should be the 5–10-fold (Tavsancil, 2019) the number of the items in the scale, it was planned to include minimum 190 (19 × 10 = 190) individuals in the study; however, in the specified period, 262 patients were reached. The inclusion criteria were as follows: Turkish woman aged 40–59 years, able to use social media (WhatsApp, Instagram, Facebook), able read and write in Turkish and not having a psychiatric disorder. The exclusion criteria were as follows: Women do not have social media accounts and do not have internet/smartphone or computer.

2.4 | Instruments and data collection

Data collection was carried out online via social media (WhatsApp, Instagram, Facebook) through Google forms due to the COVID-19 pandemic. It took the participants approximately 10 min to fill in the questionnaires. To collect the data, the "Personal Information Form" and "Aging Anxiety Scale for Middle-Aged Women—Turkish Version" were used.

2.5 | Personal Information Form

The form prepared in line with the pertinent literature consists of items questioning the participating women's sociodemographic characteristics, their history of menopause and health/disease (Lee & You, 2019).

2.6 | Aging Anxiety Scale for Middle-Aged Women

To plan interventions aimed at reducing aging anxiety and improving the quality of life, valid and reliable tools should be used. One of the widely used scales to assess the aging anxiety of all age groups is the Aging Anxiety Scale (AAS) developed by Lasher and Faulkender (1993). According to this scale, aging anxiety has psychological, social, physical, and interpersonal dimensions (Fernández-Jiménez et al., 2020). Haejin Lee and Mi-Ae You (2019) developed the "Aging Anxiety Scale for Middle Aged Women" based on the theoretical framework of the AAS to determine the aging anxiety among middle-aged women between the age group of 40–59 years. The scale consists of 19 items and four subdimensions, namely "physical weakness" (items 1–4), "concern about changes in appearance" (items 5–8), "social valueless" (items 9–16) and "negative expectations of old age" (items 17–19). Responses given to the items are rated and a 5-point Likert-type scale ranging from 1 to 5. The sum of the scores obtained from all the subdimensions yields the score for the overall AAS for Middle-Aged Women. The minimum and maximum possible scores to be obtained from the scale were 19 and 95, respectively. As the total score increases, so does aging anxiety. The items included in the "negative expectations about aging" subdimension of the scale is reverse coded. The original scale is in English. The Cronbach's α value was 0.91 for the overall scale and ranged between 0.76 and 0.88 for the subdimensions (Lee & You, 2019).

2.7 | Procedure

2.7.1 | Linguistic validity and adaption

Group translation
To ensure language validity, the scale was first sent to five language experts in their fields, whose mother tongue was Turkish, and researchers to translate from English to Turkish. These people had a good command of English and were able observe psychological and cultural differences (Karaçam, 2019).

Back translation
The back translation of the scale was made by two linguists who were excluded from the study group and were not knowledgeable of the original scale. The items of the original scale and the items of the translated-back-translated scale were compared, and misunderstandings or unclear expressions between English and Turkish translations were revealed in the back translation (Karaçam, 2019).

2.7.2 | Content validity

Obtaining expert opinion: Content validity of the scale; It was evaluated by 10 specialist health professionals in the field of geriatrics, psychiatry and women's health. Experts rated the suitability of each item in the scale as 1 (*not suitable*) and 4 (*very suitable*). Then, the content validity was verified by calculating the content validity index (CVI) using the Davis technique. The CVI value of all the items in the scale was 0.80 and above. Therefore, no items were removed from the scale (Karaçam, 2019).

2.8 | Pilot testing

The scale was pilot-tested on 30 women in the target age group, and its comprehensibility and suitability were tested in terms of language and content. It was observed that the scale was clear and understandable, and it was decided to continue without making any changes in the scale (Tavsancil, 2019).

2.9 | Data analysis

For the analysis of the data, the IBM SPSS Statistics 25.0 (IBM SPSS Statistics for Windows; IBM Corp.) and LISREL v. 8.72 package program were used. Descriptive statistics used the arithmetic mean, standard deviation, median, minimum, maximum, frequency, and percentage values. To evaluate the stability of the scale over time, the test–retest method performed in the same sample group under the same conditions was used, and the correlation between them was calculated using the Pearson's product–moment correlation coefficient. The intraclass correlation coefficient (ICC) between the total scores of the scale was calculated based on the test–retest evaluation performed 4 weeks apart. The Cronbach's α coefficient was also used for the internal consistency of the scale. Kaiser–Meyer–Olkin (KMO) and Bartlett's Test of Sphericity were used to confirm the suitability of the data for the analysis. While the exploratory factor analysis (EFA) was performed to determine the factor design of the scale, the confirmatory factor analysis (CFA) was performed to confirm the internal construct validity. Chi-square and degrees of freedom (χ^2/df) for the CFA, comparative fit index (CFI), incremental fit index (IFI), standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), relative fit index (RFI), and non-normed fit index (NNFI) were calculated. The significance level was set at 0.05 in all the analyses (Cokluk et al., 2016; Hooper et al., 2008; Simsek, 2007).

3 | RESULTS

The mean age of the participating women was 48.64 ± 5.38 years. Of them, 36.3% were high school graduates, 21.8% were university graduates, 86.3% were married, 69.9% had two children, 58% were homemakers, 79.8% had a nuclear family, 59.9% had an income equal to their expenses, 29.4% had a physical chronic disease, and 49.2% went through menopause. Of those who had entered menopause, 72.1% had no problems during menopause.

3.1 | Validity analysis

According to the results of the KMO value (0.945) and Bartlett's Test of Sphericity ($\chi^2 = 4463.74$, $p < 0.001$) calculated to examine the construct validity of the scale, the sample size was determined to be quite sufficient to perform the factor analysis. The EFA and CFA demonstrated that the factor loadings of all the items varied between 0.53 and 0.86 and that the items were grouped under four subdimensions, which was consistent with the original scale, and that the subdimensions accounted for 77.27% of the total variance (Table 1, Figure 1). In the present study, the goodness-of-fit value obtained by dividing the χ^2 value by the degrees of freedom based on the CFA results was 4.21. The results of other frequently used goodness-of-fit values were as follows: RMSEA = 0.099, SRMR = 0.066, CFI = 0.97, NNFI = 0.97, RFI = 0.96, and IFI = 0.97 (Table 2).

3.2 | Reliability analysis

The internal consistency of the overall scale and its subdimensions was evaluated with the Cronbach's α coefficient. The Cronbach's α reliability was 0.962 for the overall scale, 0.876 for the physical weakness subdimension, 0.914 for the concern about changes in appearance subdimension, 0.949 for the social valueless subdimension and 0.836 for the negative expectations of old age subdimension. In the test–retest evaluation performed 4 weeks apart, the ICC coefficient between the total scores of the scale was 0.999. ICC values for the subdimensions of the scale were 0.994 for the physical weakness subdimension, 0.997 for the concern about changes in appearance subdimension, 0.998 for the social valueless subdimension, and 0.982 for the negative expectations of old age subdimension.

4 | DISCUSSION

Aging is a natural process characterised by maturation and changes in physical, psychological, social, and emotional levels (Lee & You, 2019). It is important to determine the perception of aging to support the healthy aging process and increase the quality of life for middle-aged women. However, Turkey currently has no scale to assess how middle-aged women cope with this process. Therefore, in the present study, the psycholinguistic and psychometric properties of the Aging Anxiety Scale for Middle-Aged Women were tested, and it was adapted to the Turkish population and culture. In a measurement tool, the validity variable is the level of measurement for the purpose. For a measurement tool to be valid, it is required to be reliable; however, its reliability alone is not enough to ensure the validity (Aksayan & Gozum, 2003). The language and content validity of the scale were identified in the first process. The translated text obtained in the language adaptation is understandable for the Turkish public. The CVI value, which indicates compliance with content validity, be above 0.80. and this study, the CVI value was calculated above 0.78 for all items in the scale (Delgado-Rico et al., 2012; Geckil & Tikici, 2015).

CFA, which refers to the determination of to what extent measurement tools can measure the construct they measure, was performed to evaluate the construct validity (Sencan, 2005; Tezbasaran, 2008). In scale adaptation studies, because the original scale has a certain factor structure, the use of CFA is considered more appropriate. In the study, explanatory and confirmatory factor analysis was performed to determine the construct validity of the scale. To perform factor analysis, the population must show a normal distribution. In addition, the significance value should be $p < 0.05$ (Cokluk et al., 2016). Bartlett's Test of Sphericity was used to evaluate the normal distribution fit and it was found to be quite significant ($p < 0.001$). A KMO value above 0.60 indicates the adequacy of the sample size and was found to be quite high (0.945) in this study (Geckil & Tikici, 2015; Hadi et al., 2016). In the original study, the KMO value of the scale was determined as 0.89 ($\chi^2 = 1804.61$; $p < 0.001$) and the data were consistent with the original scale (Lee & You, 2019).

Regardless of the sign of the factor loadings, a loading value of ≥ 0.60 is considered high whereas values ranging between 0.30 and 0.59 are considered as medium. Especially in measurement tools with a small number of items, 0.30 is accepted as the threshold (Buyukozturk, 2002; Geckil & Tikici, 2015). In the factor analyzes, the factor loadings of the scale items ranged between 0.53 and 0.86. Since the scale item factor loadings were high, no item was removed from the scale. It was collected under four factors as in the original scale (Lee & You, 2019). To verify the compatibility of the subdimensions of the scale, goodness-of-fit values were calculated through the CFA, which is the second step of the construct validity stage (Table 2). χ^2 value, ratio (χ^2/df), RMSEA, SRMR, CFI NNFI are used in model fit evaluation. Although a good fit in one of the fit indexes indicates the general fit of the data, another part of the model may show a poor fit. Therefore, more than one fit indexes are needed in the evaluation of model fit. In CFA, the calculated goodness-of-fit result values must be at a certain level, and there are studies reporting different cut-off points for the fit indices (Heene, Hilbert et al., 2011; Kılıç & Koyuncu, 2017; Koyuncu & Kilic, 2019). The model is acceptable if the ratio of (χ^2/df) compatibility index is between 2 and 5 (Heene et al., 2011). In the study, the χ^2/df ratio in CFA was significant ($\chi^2/df = 4.21$; $p < 0.001$). RMSEA 0.08 and less indicates good fit, NFI and CFI 0.90 and higher indicates good fit, NFI and CFI 0.95 and higher indicates excellent fit, IFI 0.90 and higher indicates good fit, NNFI 0.90 and higher indicates good fit, and SRMR 0.80 and higher indicates acceptable fit (Kline, 2016; Koyuncu & Kilic, 2019). In the study, all values except the RMSEA value have high goodness of fit, and the RMSEA value (0.09) is at an acceptable level.

Reliability is the fundamental feature of a measurement tool and shows that the tool is reproducible (Karaçam, 2019). The Cronbach's α coefficient is a used to determine the reliability of the tool and measures internal consistency, and a high value of Cronbach's α coefficient indicates that the items are consistent with each other (Aksayan & Gozum, 2003; Erbil & Bakır, 2009; Tezbasaran, 2008). As is reported in the literature, if the Cronbach's α coefficient is <0.39, the scale is not reliable; if between 0.4 and 0.59, its reliability is low; if between 0.6 and 0.79, it is reliable and if between 0.8 and 1.00, its reliability is high (Alpar, 2020; Souza et al., 2017). In the present study, the Cronbach's α reliability coefficient

TABLE 1 Factor analysis and internal consistency results according to the original construct of the scale

| Factor	Items	Factor loadings	Range of factor loadings	Coefficient of Cronbach's α
1. Physical weakness	1. I feel that I am not as I used to be.	0.82	0.72–0.82	0.876
	2. I feel that I am more physically restrained in my activities.	0.79		
	3. I feel that I cannot learn new things as fast as I did before.	0.72		
	4. I am afraid that menopause will cause health problems.	0.78		
2. Concern about changes in appearance	5. I do not want to think that I am getting old.	0.76	0.53–0.76	0.914
	6. When I look in the mirror. I do not want to see I have changed.	0.75		
	7. I worry that my attractiveness as a woman is waning.	0.61		
	8. I am afraid that I will look old and ugly.	0.53		
3. Social valueless	9. I am worried that my economic independence will be difficult in old age.	0.81	0.57–0.81	0.949
	10. I am worried that my economic independence will be difficult in old age.	0.81		
	11. I am afraid that people will ignore me when I get older.	0.77		
	12. I feel uncertain about my remaining life expectancy in the future.	0.76		
	13. I am afraid that I will be alone.	0.73		
	14. I am afraid that there will be fewer things that I can decide or do for myself.	0.68		
	15. I don't know what I will do for the rest of my life.	0.65		
	16. I think I need someone who is honest and trustworthy as I get older.	0.57		
4. Negative expectations of old age	17. I feel more comfortable as I get older.[a]	0.86	0.63–0.86	0.836
	18. I think I will be wiser than I am now when I get older.[a]	0.76		
	19. Life could be satisfying even when I get older.[a]	0.63		

[a]Reverse coded items.
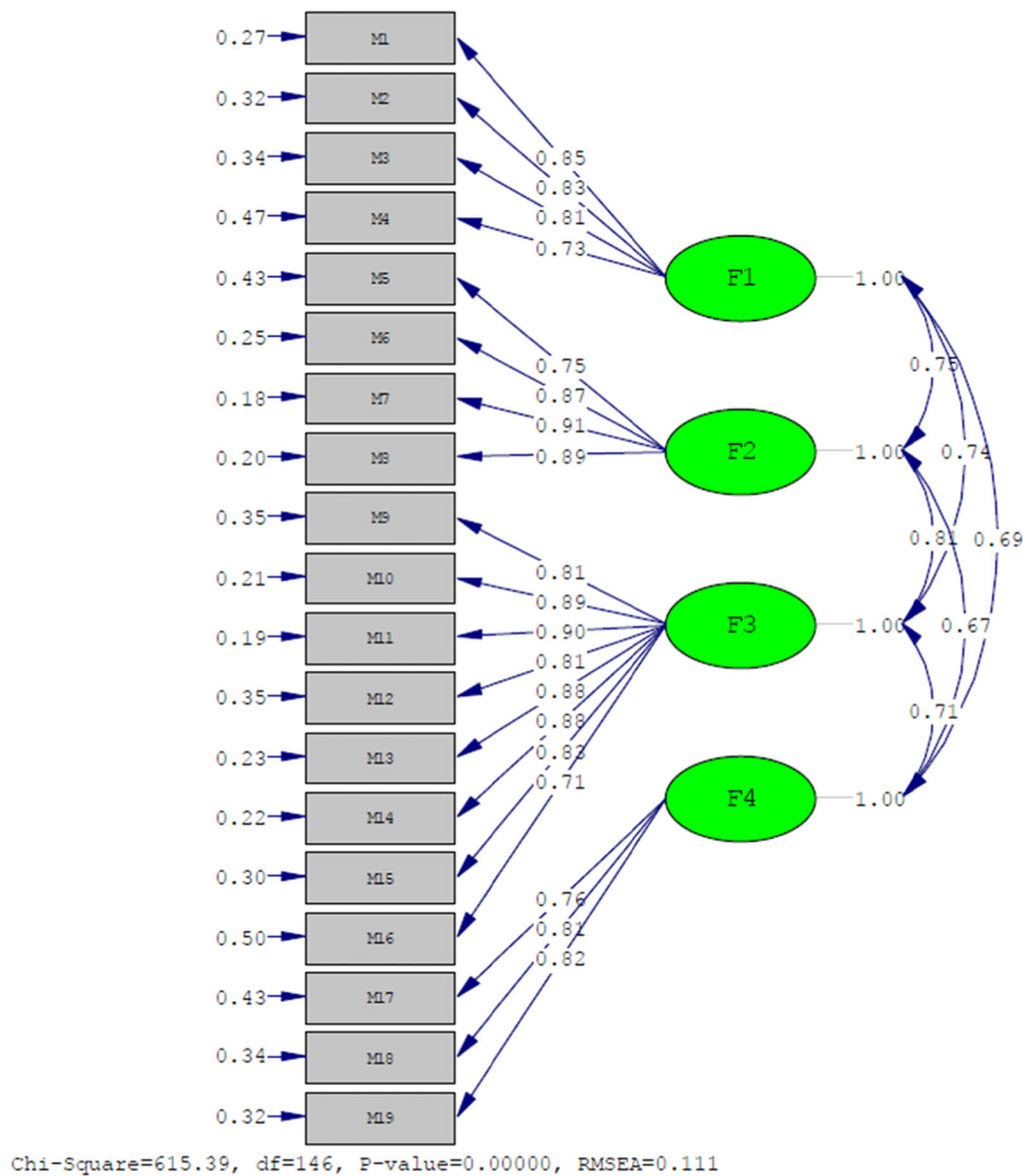
FIGURE 1 Confirmatory factor analysis output of the Aging Anxiety Scale for Middle-Aged Women. RMSEA, root mean square error of approximation.

TABLE 2 Confirmatory factor analysis goodness-of-fit index values

Fit index	Acceptable fitness criteria	Results of goodness-of-fit	
χ^2/df	$2 < \chi^2/df < 5$	615.39/146 = 4.21	High fit
RMSEA	0.05 < RMSEA < 0.09 (good) RMSEA < 0.10 (adequate)	0.09	Adequate fit
SRMR	SRMR < 0.08	0.06	High fit
CFI	0.95 ≤ CFI ≤ 1.00	0.97	High fit
NNFI	0.95 ≤ NNFI ≤ 1.00	0.97	High fit
RFI	0.90 < RF I ≤ 1	0.96	High fit
IFI	0.95 < IFI ≤ 1	0.97	High fit

Abbreviations: CFI, comperative fit index; χ^2, Chi-square; df, degrees of freedom; IFI, incremental fit index; NNFI, non-normed fit index; RFI, relative fit index; RMSEA, root mean square error of approximation; SRMR, standardized root mean square.

values for the overall scale (Cronbach's $\alpha = 0.96$) and its subdimensions (Cronbach's $\alpha = 0.83$–0.94) were determined to be highly reliable and they were higher than the reliability coefficients of the original scale (Cronbach's α of the overall scale = 0.91; Cronbach's α of the subdimensions = 0.76–0.88) were (Lee & You, 2019).

One of the methods used to demonstrate the stability of a measuring instrument's reliability is the test–retest method. The correlation coefficient used to determine the reliability between measurements should be between 0 and 1 (Aksayan & Gözüm, 2003). In healthcare settings, the ICC is often used to evaluate repeated measurements of the same individual (Ates et al., 2009). In the present study, the ICC evaluations performed 4 weeks apart revealed that there was excellent agreement between the two measurements (total scores of the scale was 0.999; subdimensions of the scale were 0.994 for the physical weakness, 0.997 for the concern about changes in appearance, 0.998 for the social valueless, and 0.982 for the negative expectations of old age). According to the test–retest results, the responses to the scale items are strongly correlated, consistent, and the scale is reliable.

In several studies conducted in Korea in which the original scale was used, noteworthy results were obtained. In a study conducted with late middle-aged women, aging anxiety was high in women with low self-esteem, low spousal support and severe menopausal symptoms (Nam et al., 2021). In another study, social support and health promotion behaviors reduced aging anxiety (Seo & Noh, 2019). In Kim's study (2020), aging anxiety of middle-aged women was affected by job satisfaction, marital satisfaction, perceived health, resilience, and self-esteem (Kim, 2020).

5 | IMPLICATIONS FOR NURSING PRACTICE

The "Aging Anxiety Scale for Middle-Aged Women" adapted to Turkish is a highly valid and reliable measurement tool. With this scale that has been introduced to the Turkish literature, the attitudes toward aging in women who are to enter the aging process can be determined and helped so that their attitudes toward the process through information and training can be improved if their anxiety level is high, as is stated in the literature. It will also help to identify factors that affect aging anxiety in women.

To reduce the anxiety levels of women during the aging process, these women should be supported with healthy lifestyle interventions. To reduce aging anxiety of middle-aged women, these women should be encouraged to participate in social activities aimed at increasing their self-esteem and ensuring the provision of social support. In addition, to develop programs aimed at reducing menopausal symptoms and improving healthy lifestyle behaviors training should be provided.

6 | LIMITATIONS

Due to the Covid-19 pandemic, data were collected through online forms, not by face-to-face interviews. The study comprised a small population. It is recommended that the scale should be administered

to different sample groups in different regions and that it should be used in interventional studies.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request. Shared data are available only upon request.

ETHICS STATEMENT

Before the study was conducted, approval was obtained from the Ege University Hospital Medical Research Ethics Committee (approval no: 09/01/2020-E.10097). To adapt the scale into Turkish and to use it in the present study, permission was obtained from Haejin Lee who developed the scale via e-mail. Written informed consent of the participants was obtained through the online form.

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