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## **The Anxiety About Aging Scale: A Validity and Reliability Study with Turkish Menopausal Women**

*Yaşlanmaya Yönelik Anksiyete Ölçeği: Menopoz Döneminde Bulunan Kadınlarda Türkçe Geçerlik / Güvenirlik Çalışması*

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**Abstract:** Background/aim: This study aimed to explore the validity and reliability of Lasher and Faulkender's "Anxiety About Aging Scale" developed among premenopausal and postmenopausal Turkish women aged 42-64 years. Materials and methods: We conducted this descriptive and cross-sectional study employing quantitative data collection techniques within the borders of Turkey and collected the data between May-July, 2020. The sample included 433 women. Ethics Committee approval was obtained from Süleyman Demirel University Ethical Commissions of Clinical Research (Decision No. 20/292 of 25.09.2020). Results: Scoring received from 11 specialists was assessed to evaluate the scales scope validation and it was determined that there was agreement between the specialists (Kendall's  $W = 0.073$ ). The Kaiser-Meyer-Olkin value of 0.795 and Barlett's test value of ( $df=120, p<0.001$ ) indicated that the data were sufficient in amount and suitable for factor analysis. The factor structure of the newly formed 4 sub-dimension scale was tested by confirmatory factor analysis and the structure was confirmed ( $\chi^2/df=2.29$ , root mean square error of approximation=0.088, comparative fit index=0.96, goodness of fit index=0.9027 and adjusted goodness of fit index=0.91). The Cronbach Alpha coefficient was found to be 0.828 for the total score of the scale. Conclusion: The findings of the present research show that the revised, multidimensional 16-item AAS is a valid scale and can be used reliably to determine the aging anxiety of Turkish menopausal women who experience various levels of physical, emotional, and social changes. Determining the aging anxiety of menopausal women is important in terms of guiding them to psychological, social, and health-related support mechanisms in the early period. Since the burden of collecting and interpreting data is low, this study will contribute to future research on determining aging anxiety in Turkey.

**Structured Abstract: Introduction:** Menopause is one of the remarkable conditions that cause aging anxiety for women and defined as the absence of a menstrual cycle for at least twelve months. Perimenopause is the process that starts before menopause and continues for a few years. During the perimenopause period, hormonal changes may lead to deterioration in the menstrual cycle, increase in fat mass and body weight, loss of tissue elasticity, increase in wrinkles, changes in skin tone and texture, and differences in hair color and weight. Such changes in this period may cause women to feel anxious about aging and dissatisfied with and ashamed of their bodies. Postmenopause refers to the period after the cessation of reproductive function. During this period, some women perceive losing their reproductive ability as old age. Ultimately, this study

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aimed to explore the validity and reliability of Lasher and Faulkender's "Anxiety About Aging Scale" developed among premenopausal and postmenopausal Turkish women aged 42-64 years. **Materials and methods:** We conducted this descriptive and cross-sectional study employing quantitative data collection techniques within the borders of Turkey and collected the data between May-July, 2020. Ethics Committee approval was obtained from Süleyman Demirel University Ethical Commissions of Clinical Research (Decision No. 20/292 of 25.09.2020). **Sample:** In determining the sample size, we used the data saturation criterion for the group 42 years and over and considered "power" to be 0.80. Ultimately, we determined the sample as 385 upon 95% confidence level. Yet, we reached out to a total of 433 women regarding the possibility of errors in the data. Due to the pandemic, we planned to collect the data via online environments using the snowball sampling method. We delivered the questionnaire booklet to perimenopausal and postmenopausal participants aged 42-64 years who can use a smartphone and/or computer and voluntarily accepted to participate in this study. Prior to the data collection procedure, we obtained their written consent. **Questionnaire Design:** The first part of the questionnaire was oriented at identifying the social and demographic characteristics of the participants. In the second part, we prepared questions to determine the menopausal status of women. The third part consisted of the "Anxiety about Aging Scale" (AAS) developed by Lasher and Faulkender in 1993 to measure the levels of anxiety about aging. We adapted the scale into Turkish for use in menopausal women. We called this questionnaire "The Aging Anxiety Scale for Menopausal Women." **Psycholinguistic Features of the Scale (Language Adaptation/Validity):** The items were translated into Turkish by two native Turkish translators from American Culture and Literature and two faculty members with good command of English. Then, the other two translators translated it back to English. Following the required comparisons between the two forms, a Turkish language specialist examined the Turkish meanings of the items to let us finalize the adapted scale. **Content Validity:** In the study, we asked eleven experts to score the items between 1 and 5 regarding suitability and clarity and state their suggestions. We identified the differences of expert opinions using Kendall's Coefficient of Concordance (W). The results showed no significant difference between the expert opinions (Kendall's  $W=0.073$ ,  $SD=19$ ,  $p=0.796$ ). **Pilot Study:** We sought the opinions of 50 menopausal on the intelligibility and readability of the items. Overall, the participants stated that the items were quite intelligible and readable; hence, we made no change to the scale. **Data Analysis:** We subjected the scale to factor analysis and tested the reliability and validity of the model. We referred to  $\chi^2/df$  ratio, CFI, GFI, AGFI, NFI, RMSEA, and RMR indices to determine the structural validity of the scale. While using statistics program for the Exploratory Factor Analysis (EFA), we performed the Confirmatory Factor Analysis (CFA) on LISREL 8.7. The sample included a total of 433 participants with a mean age of 50 years ( $SD=5.8$ ). Among the participants, 38.8% live in the Mediterranean Region, 22.2% in the Marmara Region, and 17.1% in Central Anatolia. While 79.9% are married, 38.6% hold an undergraduate degree. In terms of living arrangements, 58.2% of the participants live with their spouses and children. The last menstrual cycle of 35.8% of the participants was 4 years and more before, while 32.3% had it 1 week-15 days ago. About half of the women (44.6%) entered menopause for more than 1 year. **Construct Validity:** We performed both an EFA and CFA to reveal and validate the structure of the scale. **Exploratory Factor Analysis:** A KMO value of 0,795 and sphericity of  $\chi^2= 2008,724$ ;  $df = 120$  (Barlett's test;  $p < 0.001$ ) indicated that the scale was very well suited for factor analysis. The eigenvalues of the factors were  $F1=2.866$ ,  $F2=2.672$ ,  $F3=1.610$ , and  $F4=1.1194$ , respectively. The analysis was replicated with item additions and subtractions until they achieved sufficient loadings to the related factors. We found the variance explained by the factors to be  $F1=24.162\%$ ,  $F2=16.702\%$ ,  $F3=10.066\%$ , and  $F4=7.460\%$ , respectively. The total variance explained was calculated to be 55.697%. We found the internal consistency coefficients of the scale as 0.828 (total score). **Confirmatory Factor Analysis:** We conducted a confirmatory factor analysis to test the compatibility of the factors and items with the factorial structure revealed by the EFA. Accordingly, the data showed a good fit, and the CFA results were statistically significant and valid. **Mean Scores and Relationship Levels in the Sub-scales:** We computed Pearson's correlation coefficients to identify the relationships between the sub-scales. The scores varied between 1 and 4.8 on the F1, and the mean score was  $2.09\pm 0.68$ . The scores varied between 1 and 5 on the F2, and the mean score was  $3.06\pm 0.87$ . It was 1-5 and  $3.22\pm 0.97$ , respectively, for the F3. Finally, the scores varied between 1 and 4.75 on the F4, and the mean score was  $1.96\pm 0.58$ . **Conclusion:** The findings of the present research show that the revised, multidimensional 16-item AAS-TR is a valid scale and can be used reliably to determine the aging anxiety of Turkish menopausal women who experience various levels of physical, emotional, and social changes.

**Keywords:** Sociology, Pre-Menopause, Post-Menopause, aging, anxiety, psychometrics

**Öz: Amaç:** Bu çalışma, 42-64 yaş arası premenopozal ve postmenopozal Türk kadınları arasında geliştirilen Lasher ve Faulkender'in "Yaşlanmayla İlgili Kaygı Ölçeği"nin geçerlik ve güvenilirliğini incelemeyi amaçlamıştır. **Gereç ve yöntem:** Nicel veri toplama tekniklerinin kullanıldığı, tanımlayıcı ve kesitsel tipte olan araştırma, Türkiye sınırları içinde yapılmış ve veriler Mayıs-Temmuz 2020 tarihleri arasında toplanmıştır. Örnekleme 433 kadını içermektedir. Etik Kurul onayı Süleyman Demirel Üniversitesi Klinik Araştırmalar Etik Kurullarından alınmıştır (25.09.2020 tarih ve 20/292 sayılı Karar). **Bulgular:** Ölçek kapsam geçerliğini değerlendirmek için 11 uzmandan alınan puanlar değerlendirilmiş ve uzmanlar arasında uyum olduğu belirlenmiştir (Kendall'in  $W = 0.073$ ). Kaiser-Meyer-Olkin değerinin 0,795 ve Barlett test değerinin ( $df=120$ ,  $p<0,001$ ) olması, verilerin yeterli ve faktör analizine uygun olduğunu göstermiştir. Yeni oluşturulan 4 alt boyutlu ölçeğin faktör yapısı doğrulayıcı faktör analizi ile test edilmiş ve yapı doğrulanmıştır ( $\chi^2/df=2.29$ , yaklaşıklık karekök ortalaması=0.088, karşılaştırmalı uyum indeksi=0.96, uyum iyiliği indeksi= 0.9027 ve düzeltilmiş uyum indeksi=0.91). Ölçeğin toplam puanı için Cronbach Alpha katsayısı 0.828 olarak bulunmuştur. **Sonuç:** Mevcut araştırmanın bulguları, çok boyutlu revize edilmiş 16 maddelik AAS'nin geçerli bir ölçek olduğunu ve çeşitli düzeylerde fiziksel, duygusal ve sosyal değişiklik yaşayan menopoz dönemindeki kadınların yaşlanmaya yönelik anksiyetelerini belirlemek için güvenilir bir şekilde kullanılabileceğini göstermektedir. Menopoz döneminde bulunan kadınların yaşlanma anksiyetesinin belirlenmesi, erken dönemde kadınların psikolojik, sosyal ve sağlıkla ilgili desteklere yönlendirilmeleri açısından önemlidir. Verilerin toplama ve yorumlama yükü düşük olduğundan, bu çalışma Türkiye'de yaşlanma anksiyetesini belirleme konusunda gelecekteki araştırmaların yaygınlaşmasına katkı sağlayacaktır.

**Anahtar Kelimeler:** Sosyoloji, Menopoz Öncesi, Menopoz Sonrası, yaşlanma, kaygı, psikometri

## Introduction

Individuals' life experiences, educational attainment, beliefs, ideas, biases, and taboos, which are considered bases of their self-concept, shape their perception of aging (Kalaycı, et al., 2021: 151; Özbek Yazıcı et al., 2016: 602). Perception of aging is among the predictors of individuals' health, quality of life, and mortality (Beja, et al., 2018: 142). The perception of aging may differ among individuals. Some may feel young independent of their chronological ages, while others may feel older. The perceived age, which is independent of chronological age, represents the biological, psychological, and social characteristics of the aging process (Kalınkara, 2011: 88). The perceived age is linked with how old the individual feels himself/herself and how she looks (Kotter-Grühn et al., 2015: 1471; Sever & Özgün Başbüyük, 2009). Some tend to undergo cosmetic or aesthetic operations or conceal their gray hairs with hair dyes. Or, some try to preserve youthful appearance by imitating clothing styles of the young, avoid interacting with older adults, and refuse to be mentioned as individuals in the "older adult" category. Even some do not like to tell his/her chronological age or plan retirement. These situations suggest that aging is a source of anxiety and fear for some individuals. Fear of aging is defined as the fear associated with individuals' own aging processes (Sargent-Cox et al., 2014: 135). Chasteen et al. (2015: 890) determined that fear of aging is associated with age and that individuals experience intense fear of aging with advancing age. In the study of Chonody and Teater (2016: 11), the participants feared aging and looking old, and they sought cosmetic solutions for changes in their appearance. Aging anxiety stems from anxiety that reflects the anticipated threat and fear of loss during aging and is closely related to physical, psychological, and social well-being (Lasher & Faulkender, 1993; Lynch, 2000). Lynch (2000) found a relationship between aging anxiety and age variable. According to Lynch, aging anxiety is high between 18-39 years, it begins to decrease towards 40-49 years, and it almost diminishes at the age of 50 and over. Abramson and Silverstein (2006: 42) found that aging anxiety is high in individuals aged 18-34, 35-64, and 65 and over. It is also reported in the literature that aging anxiety differs among individuals by gender (Cummings et al., 2000: 85; Tahmaseb Mcconatha et al., 2003: 211; Barrett & von Rohr, 2008: 370); women experience more intense aging anxiety than men. This situation is often explained by factors including women's cultural structure, deterioration in their health conditions, changes in their physical appearance, and loss of reproductive ability (Saxena &

Shukla, 2016: 16; Lynch, 2000). Menopause is one of the remarkable conditions that cause aging anxiety for women and defined as the absence of a menstrual cycle for at least twelve months (Thompson & Bardone-Cone, 2019: 26). Menopause occurs naturally or surgically, and women lose reproductive ability. Perimenopause is the process that starts before menopause and continues for a few years (Lobo, 2013: 322). During the perimenopause period, hormonal changes may lead to deterioration in the menstrual cycle, increase in fat mass and body weight, loss of tissue elasticity, increase in wrinkles, changes in skin tone and texture, and differences in hair color and weight. Such changes in this period may cause women to feel anxious about aging and dissatisfied with and ashamed of their bodies (Thompson & Bardone-Cone, 2019: 26; Basalan-Iz & Tümer, 2016: 578). Postmenopause refers to the period after the cessation of reproductive function (Lobo, 2013: 322). During this period, some women perceive losing their reproductive ability as old age. In the study of Araya et al. (2017: 96-98), the women perceived menopause as the end of the reproductive process and transition to old age. It is imperative to appropriately address aging anxiety for women entering menopause to accept aging positively and adapt to it. To date, various studies have attempted to identify aging anxiety among different groups, such as youth, adults, college students, healthcare workers (Lasher & Faulkender, 1993: 253; Gao, 2012: 563; Koukouli et al., 2014: 205; Sargent-Cox et al., 2014: 137; Ornelas et al., 2016: 76; Aguirre et al., 2017). Nevertheless, we have no national data on the subject because there is no measurement tool intended to measure the aging anxiety of menopausal women. Ultimately, this study aimed to explore the validity and reliability of Lasher and Faulkender's "Anxiety About Aging Scale" developed among premenopausal and postmenopausal Turkish women aged 42-64 years.

### **Materials and methods**

We conducted this descriptive and cross-sectional study employing quantitative data collection techniques within the borders of Turkey and collected the data between May-July, 2020. Ethics Committee approval was obtained from Süleyman Demirel University Ethical Commissions of Clinical Research (Decision No. 20/292 of 25.09.2020).

### **Sample**

While determining the research population, we utilized the database of the 2019 Address-Based Population Registration System of the Turkish Statistical Institute (TUIK). Accordingly, the total female population of Turkey was 41,433,861 in 2019 (TUIK, 2020). In the research context, it was, of course, not possible to accurately determine the menopausal female population because the age of onset of menopause differs by country and community. Given that it usually occurs at the age of 42 (Finkelstein et al., 2020: 12), the menopausal female population under 65 years of age was approximately 9,080,329. In determining the sample size, we used the data saturation criterion for the group 42 years and over and considered "power" to be 0.80. Ultimately, we determined the sample as 385 upon 95% confidence level (<http://www.raosoft.com/samplesize.html>). Yet, we reached out to a total of 433 women regarding the possibility of errors in the data. Due to the pandemic, we planned to collect the data via online environments using the snowball sampling method. It was evident that we could not be reached out to the same sample at a different time for the post-test of the scale. Therefore, to compare the scale, it was necessary to use a standard scale whose validity and reliability study was conducted before. However, we were not able to test the criterion validity of the scale because the scales available in our country adopt different perspectives to address old age and menopause. We delivered the questionnaire booklet to perimenopausal and postmenopausal participants aged 42-64 years who can use a smartphone and/or computer and voluntarily accepted to participate in this study. Prior to the data collection procedure, we obtained their written consent.

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### **Questionnaire Design**

The first part of the questionnaire was oriented at identifying the social and demographic characteristics of the participants. In the second part, we prepared questions to determine the menopausal status of women. The third part consisted of the “Anxiety about Aging Scale” (AAS) developed by Lasher and Faulkender in 1993 to measure the levels of anxiety about aging. We adapted the scale into Turkish for use in menopausal women. The scale includes 4 sub-scales with 20 items: “Fear of Old People,” “Fear of Losses,” “Physical Appearance Concerns,” and “Psychological Concerns.” It is rated on a 5-point scale ranging from “Strongly Agree” and “Strongly Disagree.” The minimum and maximum scores one can obtain on the scale are 20 and 100, respectively. Increasing scores on the scale indicate high aging anxiety. We called this questionnaire “The Aging Anxiety Scale for Menopausal Women.”

### **Psycholinguistic Features of the Scale (Language Adaptation/Validity)**

The first step in adapting a scale to a different language is to investigate its psycholinguistic features; to do so, at least 2 language experts need to perform its translation and back-translation (Karaçam, 2019: 31). The items were translated into Turkish by two native Turkish translators from American Culture and Literature and two faculty members with good command of English. Then, the other two translators translated it back to English. Following the required comparisons between the two forms, a Turkish language specialist examined the Turkish meanings of the items to let us finalize the adapted scale.

### **Content Validity:**

Content validity is the evaluation of the extent to which the scale measures the intended phenomenon and whether it contains different concepts other than the scope to be measured. It is recommended to be explored by a minimum of 5 and a maximum of 40 experts (Yeşilyurt & Cross, 2018: 254). In the study, we asked eleven experts to score the items between 1 and 5 regarding suitability and clarity and state their suggestions. We identified the differences of expert opinions using Kendall’s Coefficient of Concordance (W), which reveals the degree of rater agreement (Şencan, 2005) ranging from “No Agreement (0)” and “Complete Agreement (1)”. The values close to 1 refers to that the experts highly agree on the items (Karagöz, 2010). The results showed no significant difference between the expert opinions (Kendall’s  $W=.073$ ,  $SD=19$ ,  $p=0.796$ ).

### **Pilot Study**

The literature suggests that a pilot study can be performed with at least 30-40 participants (Erkuş, 2012: 56, 60). We sought the opinions of 50 menopausal on the intelligibility and readability of the items. Overall, the participants stated that the items were quite intelligible and readable; hence, we made no change to the scale.

### **Data Analysis**

We subjected the scale to factor analysis and tested the reliability and validity of the model. We referred to  $\chi^2/df$  ratio, CFI, GFI, AGFI, NFI, RMSEA, and RMR indices to determine the structural validity of the scale. While using statistics program for the Exploratory Factor Analysis (EFA), we performed the Confirmatory Factor Analysis (CFA) on LISREL 8.7.

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**Results**
**Socio-demographic and Menopausal Characteristics of the Participants**
**Table 1:** Summary of the sample characteristics (N= 433)

Variables		Descriptive statistics	
		n	%
Marital status	Current married	343	79.9
	Her husband is dead / separated	76	16.9
	Not married	14	3.20
Educational attainment	Primary school	104	24
	Secondary school	110	25.4
	University and higher	167	38.6
	Graduate	52	12.0
Living arrangement	Living with the spouse	92	21.2
	Living with her child(ren)	50	11.5
	Living with the spouse and/or child(ren)	252	58.2
	Living alone	28	6.5
	Living with others	11	2.5

The sample included a total of 433 participants with a mean age of 50 years (SD=5.8). Among the participants, 38.8% live in the Mediterranean Region, 22.2% in the Marmara Region, and 17.1% in Central Anatolia. While 79.9% are married, 38.6% hold an undergraduate degree. In terms of living arrangements, 58.2% of the participants live with their spouses and children. More than half of the participants rated their health condition as very good (63.5%). The majority of them did not have a history of gynecological diseases (85.9%) (Table 1).

**Table 2:** Menopausal characteristics of the participants

Variables	Descriptive statistics		
	n	%	
Last menstrual cycle	1 week-15 days ago	140	32.3
	1-3 months ago	54	12.5
	4-8 months ago	27	6.2
	1-3 years ago	57	13.2
	4 and More Years Ago	155	35.8
Menstrual cycle	Once in more than 35-45 days	30	6.9
	None for more than a year	23	5.3
	More than a year since entering Menopause	193	44.6
	Active	131	30.3
	Irregular	56	12.9

The last menstrual cycle of 35.8% of the participants was 4 years and more before, while 32.3% had it 1 week-15 days ago. About half of the women (44.6%) entered menopause for more than 1 year. While 46.4% entered menopause naturally, and 93.3% did not use any hormone replacement.

### Construct Validity

We performed both an EFA and CFA to reveal and validate the structure of the scale.

### Exploratory Factor Analysis

A KMO value of 0,795 and sphericity of  $\chi^2= 2008,724$ ;  $df = 120$  (Barlett's test;  $p < 0.001$ ) indicated that the scale was very well suited for factor analysis. For this reason, we conducted the factor analysis with the principal components analysis method and Varimax rotation to reveal the basic components of the scale. The eigenvalues of the factors were  $F1=2.866$ ,  $F2=2.672$ ,  $F3=1.610$ , and  $F4=1.1194$ , respectively.

**Table 3:** Loading, variances and Cronbach's alpha values of Factor 1 and Factor 2

Items	Factor 1	Factor 2
S1. I enjoy being around old people.	0.773	
S3. I like to go visit my older relatives.	0.810	
S10. I enjoy talking with old people.	0.850	
S13. I feel very comfortable when I am around an old person.	0.637	
S19. I enjoy doing things for old people	0.694	
S6. The older I become, the more I worry about my health.		0.773
S8. I get nervous when I think about someone else making decisions for me.		0.779
S14. I worry that people will ignore me when I am old.		0.763
S17. I am afraid that there will be no meaning in life when I am old. when I am old		0.545
Variance explained	24.162%	16.702%
Cronbach's alpha	0.811	0.734

\*F1- Fear of old people, F2- Fear of losses

**Table 4:** Loading, variances and Cronbach's alpha values of Factor 3 and Factor 4

Items	Factor 3	Factor4
S12. I have never dreaded the day I would look in the mirror and see gray hairs	0.790	
S15. I have never dreaded looking old.	0.828	
S20. When I look in the mirror, it bothers me to see how my looks have changed with age	0.544	
S7. When I look in the mirror, it bothers me to see how my looks have changed with age		0.531
S11. I expect to feel good about life when I am old		0.607
S16. I believe that I will still be able to do most things for myself when I am old.		0.781
S18. I expect to feel good about myself when I am old		0.679
Variance explained	10.066%	7.460%
Cronbach's alpha	0.724	0.614



\*F3- Physical appearance concerns, F4- Psychological concerns

Table 3 and 4 presents the factors and factor loads as a result of the analysis. The analysis was replicated with item additions and subtractions until they achieved sufficient loadings to the related factors. Yet, we excluded items loaded on more than one factor with close/equal weights. Therefore, we excluded items “I fear that when I am old all my friends will be gone.” “I have never lied about my age in order to appear younger.” and “It doesn’t bother me at all to imagine myself as being old.” since they were not clustered under their related factors and replicated the analysis. Then, the replicated analysis revealed that item “I fear it will be very hard for me to find contentment in old age.” was not loaded under Factor 4. After removing item “I fear it will be very hard for me to find contentment in old age.”, we ran the analysis and concluded that the items showed sufficient loadings to their factors. We found the variance explained by the factors to be F1=24.162%, F2=16.702%, F3=10.066%, and F4=7.460%, respectively. The total variance explained was calculated to be 55.697%. We found the internal consistency coefficients of the scale as 0.828 (total score), 0.811 (first factor: F1), 0.734 (second factor: F2), 0.724 (third factor: F3), and 0.614 (fourth factor: F4) (Table 3, Table 4).

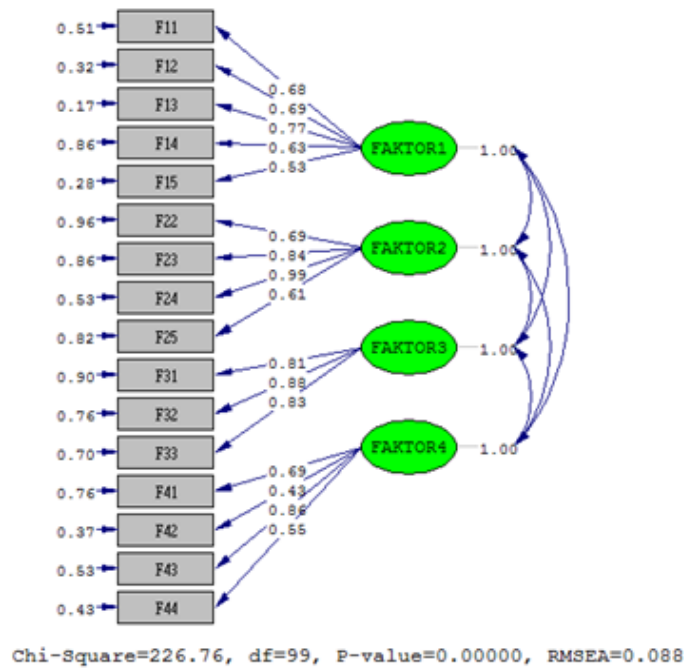
### Confirmatory Factor Analysis

We conducted a confirmatory factor analysis to test the compatibility of the factors and items with the factorial structure revealed by the EFA.

**Table 5:** Goodness of fit indices of confirmatory factor analysis

Index of compliance	Excellent compliance limit	Acceptable compliance limit	AAS-TR
RMSEA	$0 \leq \text{RMSEA} \leq 0.05$	$0.05 < \text{RMSEA} \leq 0.10$	0.088
NFI	$0.95 \leq \text{NFI} \leq 1$	$0.90 < \text{NFI} < 0.95$	0.90
NNFI	$0.95 \leq \text{NFI} \leq 1$	$0.90 < \text{NFI} < 0.95$	0.91
SRMR	$0 \leq \text{SRMR} < 0.05$	$0.05 \leq \text{SRMR} < 0.10$	0.068
CFI	$0.97 \leq \text{CFI} \leq 1$	$0.95 \leq \text{CFI} < 0.97$	0.96
$\chi^2/\text{df}$	$\chi^2/\text{df} < 3$	$3 < \chi^2/\text{df} < 5$	2.29

Table 5 presents the goodness of fit indices (RMSEA=0.088, NFI=0.90, NNFI=0.91, SRMR=0.068, and CFI=0.96) of the four-factor model as a result of the CFA. Accordingly, the data showed a good fit, and the CFA results were statistically significant and valid.



**Figure 1:** First level confirmatory factor analysis correlation diagram (Standardized model)

Figure 1 presents the correlations of the items with their factors. Accordingly, the correlations ranged between 0.53-0.77 for the first factor (Fear of Old People), between 0.61-0.99 for the second factor (Fear of Losses), between 0.81-0.88 for the third factor (Physical Appearance Concerns), and between 0.43-0.86 for the fourth factor (Psychological Concerns).

**Mean Scores and Relationship Levels in the Sub-scales**

Descriptive statistics for the sub-scales are shown below. We computed Pearson’s correlation coefficients to identify the relationships between the sub-scales.

**Tablo 6:** Mean Scores on the Sub-scales

	N	Arithmetic mean	Standard deviation	Minimum	Maximum	Median
Factor 1	433	2.09	0.68	1.00	4.80	2.00
Factor 2	433	3.06	0.87	1.00	5,00	3.00
Factor 3	433	3.22	0.97	1.00	5,00	3.33
Factor 4	433	1.96	0.58	1.00	4.75	2.00

\*F1- Fear of old people, F2- Fear of losses, F3- Physical appearance concerns, F4- Psychological concerns

The scores varied between 1 and 4.8 on the F1, and the mean score was 2.09±0.68. The scores varied between 1 and 5 on the F2, and the mean score was 3.06±0.87. It was 1-5 and 3.22±0.97, respectively, for the F3. Finally, the scores varied between 1 and 4.75 on the F4, and the mean score was 1.96±0.58 (Table 6).

**Table 7:** Correlations between factors

	Factor 1		Factor 2		Factor 3		Factor 4	
	r	p	r	p	r	p	r	p
Factor 1	1		-0.075	<b>0.044*</b>	-0.159	<b>0.001**</b>	0.298	<b>0.001**</b>
Factor 2			1		0.480	<b>0.001**</b>	- 0.236	<b>0.001**</b>
Factor 3					1		- 0.157	<b>0.001**</b>
Factor 4							1	

r=Pearson correlation \*p<0.05 \*\*p<0.01

Factor 1 and 4 were each negatively correlated with Factor 2 and 3 ( $p < 0.05$  and  $p < 0.01$ , respectively). However, we found a significant positive relationship between Factor 1 and Factor 4 and between Factor 2 and Factor 3 ( $p < 0.01$ ) (Table 7)

### Discussion

In this study, we attempted to adapt the “Anxiety About Aging” developed by Lasher and Faulkender to Turkish and investigated its psychometric properties. Cronbach’s Alpha reliability coefficient is used to evaluate the internal consistency of a scale, and the values between 0.60-0.99 indicate that the scale is reliable (Tavakol & Dennick, 2011). In the original study, Lasher and Faulkender (1993: 252) found the internal consistency of the scale as 0.82. In the international literature, the internal consistency of the AAS was found to be 0.86 in Greece (Koukoulis et al., 2014, p.203), 0.71 in the USA (Tahmaseb McConatha et al., 2004: 175), 0.82 in Spain (Fernández-Jiménez et al., 2020: 6), 0.80 in Malaysia (Mat Din & Sakdiah Minha, 2021: 15), 0.72 in Taiwan (Gao, 2012: 560) and 0.78 in Italy (Donizzetti, 2019: 4). In the present study, we computed it to be 0.828, which is consistent with the previous findings in the literature. The EFA results revealed that 16 items were gathered under 4 factors, as in the original study. We discovered that the sample size was adequate ( $KMO=0.795$ ), and the data set was suited for factor analysis ( $df=120$ ;  $p<0.001$ ). A study with young adults in Taiwan showed that the factor loadings on the AAS ranged from 0.46 to 0.87 (Gao, 2012: 561). They varied between 0.3 and 0.76 in the study of Sargent-Cox et al (2014, 140) and 0.59-0.89 in the study of Mat Din and Sakdiah Minha (2021: 15). We found the factor loadings on the adapted scale in line with the previous studies after excluding 4 items (items 2, 4, 5, and 9) with the loading of less than 0.4. On the other hand, the variance explained in the studies in social sciences is expected to be more than 50% (Hair et al., 2010). We calculated the variance explained to be 55.697% in the present study, which was above the specified value. Overall, the findings obtained were similar to the original study (Lasher & Faulkender, 1993: 252) and the study of Fernández-Jiménez et al. (2020: 4). We also performed a CFA to statistically determine the significance and construct validity of the four-factor scale with 16 items. In general, the goodness of fit indices (RMSEA, NFI, NNFI, SRMR, and CFI) are expected to be within the previously specified values, and  $\chi^2/df$  needs to be smaller than 5 (Doğan & Özdamar, 2017). Our result revealed that  $\chi^2/df$  was smaller than 5 ( $\chi^2/df = 2.29$ ), and the data showed excellent compliance limit. Accordingly, we statistically validated the four-factor model that appeared as a result of the EFA. These findings showed that the AAS has a multidimensional structure compatible with the original study and other validation studies (Lasher & Faulkender, 1993: 253; Gao, 2012: 563; Sargent-Cox et al., 2014: 137; Koukoulis et al., 2014: 205; Ornelas et al., 2016: 76; Aguirre et al., 2017). Low correlations between factors indicate good

discriminative validity (Kline, 2011). The correlations between the factors of the AAS were reported to range between 0.05-0.64 in Taiwan (Gao, 2012: 563), between 0.03-0.32 in Malaysia (Mat Din & Sakdiah Minha, 2021: 12), and between 0.117-0.241 in the original study (Lasher & Faulkender, 1993: 253). In this study, we found them to vary between 0.075 and 0.48, similar to the literature. The mean scores on the factors were also similar to what was found in the literature before (Tahmaseb McConatha et al., 2004: 176; Donizzetti, 2019: 5).

### Conclusion

The findings of the present research show that the revised, multidimensional 16-item AAS-TR is a valid scale and can be used reliably to determine the aging anxiety of Turkish menopausal women who experience various levels of physical, emotional, and social changes. Determining the aging anxiety of menopausal women is important in terms of guiding them to psychological, social, and health-related support mechanisms in the early period. Since the burden of collecting and interpreting data is low, this study will contribute to future research on determining aging anxiety in Turkey. In this way, besides helping individuals better understand their fears and concerns about aging, it will also facilitate understanding biases and behavioral attitudes towards old age and older adults. Finally, the results will contribute to the generation and implementation of relevant social policies.

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