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Factor structure and reliability of the Lasher and Faulkender's Anxiety about Aging Scale in Mexican adults

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RESUMEN

The worry and anticipation of physical, psychological and personal losses centered on the aging process generate anxiety. This study analyzes the factorial structure, internal consistency and factorial invariance according to gender of the Lasher and Faulkender Anxiety about Aging Scale. The sample consisted of 706 Mexican adults. The factor structure of the questionnaire was analyzed with confirmatory factor analysis. The analyses show a four-factor structure (fear of the elderly, psychological concerns, physical appearance and fear of loss) is viable and adequate for both the total sample (GFI .979; RMSEA .037; CFI .987) as for women (GFI .970; RMSEA .045; CFI .980) and men (GFI .919 and RMSEA .080; CFI .947). The four-factor structure, based on statistical and substantive criteria, has shown adequate reliability and validity fit indicators and can be considered a short and computerized version of the original version by Lasher and Faulkender. On the other hand, the factor structure, the factor loadings and the intercepts are considered invariant in the two populations studied (men and women); however, there are differences between the populations on the means of the physical appearance and fear of loss factors.

Estructura factorial y confiabilidad de la Escala de Ansiedad ante el Envejecimiento de Lasher y Faulkender en adultos mexicanos

Palabras clave:
Ansiedad ante el envejecimiento
Adaptación de una prueba
Validez de constructo
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Invarianza factorial
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ABSTRACT

La preocupación y anticipación de pérdidas físicas, psíquicas y personales centradas en el proceso de envejecimiento generan ansiedad. El presente estudio analiza la estructura factorial, consistencia interna e invarianza factorial de acuerdo al sexo de la Escala de Ansiedad ante el Envejecimiento de Lasher y Faulkender. La muestra fue de 706 adultos mexicanos. La estructura factorial del cuestionario se analizó a través de análisis factoriales confirmatorios. Los análisis, muestran que una estructura de cuatro factores (miedo a las personas mayores, preocupaciones psicológicas, apariencia física y miedo a las pérdidas), es viable y adecuada tanto para la muestra total (GFI .979; RMSEA .037; CFI .987) como para las mujeres (GFI .970; RMSEA .045; CFI .980) y hombres (GFI .919 y RMSEA .080; CFI .947). La estructura de cuatro factores, atendiendo a criterios estadísticos y sustantivos, ha mostrado adecuados indicadores de ajuste de fiabilidad y validez y se puede considerar una versión corta e informatizada de la versión original de Lasher y Faulkender. Por otro lado, la estructura factorial, las cargas factoriales y los interceptos se consideran invariantes en las dos poblaciones estudiadas (hombres y mujeres); sin embargo, existen diferencias entre las poblaciones para las medias de los factores apariencia física y miedo a las pérdidas.

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Introduction

Anxiety is a highly prevalent emotional problem throughout life, which has detrimental effects on the functioning of daily life, health and quality of life (Cisneros & Ausín, 2019; Perna et al., 2016). Anxiety can occur in anyone at any age and it is at the end of adulthood that physical, cognitive and psychosocial losses are present (Mohamad et al., 2021; Tetzner & Schuth, 2016); the worry and anticipation of physical, mental and personal losses centered around the aging process generate anxiety, thus, anxiety about aging is defined as the fear of aging (Lasher & Faulkender, 1993).

In turn, anxiety about aging is associated with a greater fear of death and less optimism (Barnett & Adams, 2018a). External appearance is one of the ways by which age is determined, hence, concerns regarding the decrease in physical attractiveness and the fear of looking old may be due to fears about social identity and death (Anne E Barrett & Toothman, 2018; Jill M Chonody & Barbra Teater, 2016).

Ageist opinions and the impact of negative cultural messages about aging generate anxiety for many adults; this anxiety influences their adaptation to the aging process itself and the attitudes and behaviors towards the elderly (Ornelas, Gastélum, Lopez-Walle, et al., 2016). Negative self-perception about one's aging process and prejudices towards aging are related to poor health and imply functional deterioration (Hall et al., 2016).

With regards to attitudes and behaviors towards the elderly, anxiety experienced towards the elderly may be due to a lack of knowledge about the aging process and a lack of interaction with the elderly (Aguirre et al., 2017). Furthermore, the perceived lack of social support and negative stereotypes significantly predict more anxiety about aging, while positive evaluations and attitudes towards the aging process are related to less anxiety (Brunton & Scott, 2015; Ramírez & Palacios-Espinosa, 2016).

Thus, greater knowledge about the aging process and a higher quality interaction with older adults, could help reduce anxiety about aging and stereotypes (Barnett & Adams, 2018a; Donizzetti, 2019).

Over the years, a number of measurement instruments have been created to assess attitudes towards aging and towards older people (Barker et al., 2007; Gething, 1994; Jain & Mathur, 2019; José et al., 2005; Kafer et al., 1980; Laidlaw et al., 2006; Lawton, 1975; Ligon et al., 2014; Catherine A Sarkisian et al., 2002; C. A Sarkisian et al., 2005; Steverink et al., 2001), however, many of these scales differ in terms of the constructs they measure, they directly assess the respondents' own experiences and reflections on aging, moreover, they have been developed specifically for older adults, they present low factor loadings, limited evidence of structural validity and internal consistency, they are unidimensional, have applicability limitations and have not taken into account the aging process from a multidimensional point of view (Faudzi et al., 2019).

On the contrary, the Anxiety about Aging Scale (AAS), proposed by Lasher and Faulkender, is a 20-item instrument, based on the sociocultural theory and measures anxiety in the face of aging in a multidimensional way, in addition, it presents adequate psychometric properties, which have been supported by other studies with different populations and cultures, providing evidence for the factor structure of the original version (Gao, 2012; Pakpour et al., 2021); in addition, it has been used in research with a wide range of ages assessing the relationships between aging anxiety, personality traits (extraversion, agreeableness, openness, neuroticism, and conscientiousness), anxiety about death, cultural attitudes, alterations between emotions and beliefs, and age discrimination; which makes it one of the most reliable, widely used and appropriate scales to measure anxiety about aging (Allan et al., 2014; Boswell, 2012; Bugental & Hehman, 2007; Fernández-Jiménez et al., 2020; Gao, 2009; Mcconatha et al., 2003).

In the Spanish-speaking population, there is limited research on the adaptation and validation of the questionnaire, which has shown adequate psychometric properties (Aguirre et al., 2017; Fernández-Jiménez et al., 2020; Ornelas, Gastélum, López-Walle, et al., 2016; Rivera-Ledesma et al., 2007; Zueck-Enríquez et al., 2021); however, these studies have evaluated the psychometric properties of the anxiety about aging questionnaire in older and younger adults.

Lasher and Faulkender's (1993) Anxiety about Aging Scale (AAS) is based on the premise that anxiety about aging is an important factor in measuring attitudes and behaviors toward the elderly, as well as a mediating factor in the adaptation to the aging process itself; through the dimensions: physical, psychological, social and transpersonal or spiritual, the scale measures anxiety, worry, fear, fear or anticipation towards the various losses associated with aging. The physical dimension refers to physical appearance, physical changes associated with age, perceived health status, concerns about sexuality and physical self-efficacy, while the psychological dimension includes satisfaction with life, psychological concerns focused on internal or personal issues, dependency and self-esteem issues; the social dimension refers to living conditions, age-related losses, such as loss of social support, economy and autonomy. Finally, the transpersonal or spiritual dimension refers to the search for meaning in the events of past and present life, coping with one's own death, as well as identity and relationship with the divine.

Lasher and Faulkender define anxiety about aging as the worry and anticipation of adverse physical, mental and personal losses during the aging process and explore fears of aging through the four dimensions previously exposed, which in turn, are expressed in three specific fears; fear of aging or the aging process itself, fear of being an older person, and fear or anxiety about older people.

Although perceived anxiety about the way the aging process is perceived and experienced influences individuals differently, the loss of physical attractiveness and the fear of looking old affect well-being, health and quality of life and is associated with lower optimism and greater fear of death (Barnett & Adams, 2018b; J. M Chonody & B Teater, 2016).

Various factors such as the pressure to stay young, challenging economic times, and inner fears of taking on more responsibility have increased the fear of maturity among men and women (Smith et al., 2017); in women, physical appearance becomes highly relevant, the loss of attractiveness that accompanies aging and the change in physical appearance generates greater concern and anxiety as compared to their male peers (A. E Barrett & Robbins, 2008; Koukouli et al., 2014; Yun & Lachman, 2006).

Given the importance of the anxiety about aging construct, it is essential to be able to evaluate it through valid and reliable instruments. For this reason, the present instrumental study (Montero & León, 2005) is aimed at providing empirical support to the factor division of the Anxiety about Aging Scale proposed by Lasher and Faulkender (1993); which is justified by the relevance of assessing the factor structure of an instrument and its psychometric equivalence in different groups (Abalo et al., 2006).

Method

Participants

706 Mexican adults participated in the study, 494 female and 212 male, the sample was obtained through a convenience sampling (which is non-probability sampling),the size of the sample was defined like this because the Structural Equations

Model methodology requires at least two hundred participants to be a representative, sample as is mentioned Ruiz et al. (2010), the estimated models with sample sizes greater than 200 offer a good assurance. The participants' age ranged between 40 and 59 years, with a mean of 49.03 and a standard deviation of 5.77 years. Average years of schooling was 12.07 years with a standard deviation of 4.76 years. Approximately 67% were married and lived with their partner. More than 70% did not depend economically on anyone. 62% reported they do not suffer from any type of disease, while of those who have some type of disease, 13% are diabetic and 24% suffer from high blood pressure.

The inclusion criteria for this research were that participants be between 40 and 59 years old, reside in the city of Chihuahua and participate voluntarily in the study. Subjects with illnesses or personal situations that made it impossible to complete the questionnaire were excluded from the study. Exclusion criteria: Participants who did not complete the questionnaire.

This study was conducted in accordance to the guidelines of the Declaration of Helsinki, the research protocol has been approved by Scientific Committee of the Department of Research and Postgraduate Studies of the Faculty of Physical Culture Sciences of the Autonomous University of Chihuahua. In addition, this research followed the guidelines of the regulations of the Mexican General Health Law on Research for Health and followed the list of elements of free and informed consent indicated by Mondragón-Barrios (2009). All participants were informed about the study procedures before participating in the study. In addition, it is necessary to point out that given the nature of the research in which the study participants were asked to answer a survey in electronic format, in order to later analyze the psychometric properties of the questionnaire; and according to article 17 of the General Health Law on Research for Health of Mexico, the research is classified as risk-free.

Instrument

Lasher and Faulkender's Anxiety about Aging Scale (1993). Likert-type questionnaire, which consists of 20 items that are grouped into four dimensions of anxiety about aging (five items per dimension): (1) Fear of Older People which measures external contact with others (for example, "I enjoy being with people older than me "); (2) Psychological Concerns which reflects more personal or internal problems (e.g., "I think it will be very difficult for me to feel happy when I am older"); (3) Physical Appearance that contains elements related to anxiety about changes in physical appearance (e.g., "I have lied about my age in order to look younger"); and (4) Fear of Loss which relates to loss of social support and autonomy (e.g., "I fear that when I am older all my friends will have died"). Respondents indicated their agreement with each item on a five-point Likert-type scale ranging from strongly agree (1) to strongly disagree (5). The scale was scored so that higher scores reflected higher levels of fear or anxiety.

Our study used the Spanish version of Fernández-Jiménez et al. (2020) making three adaptations. The fit indices for the CFA of the Lasher and Faulkender's Anxiety about Aging Scale, according to Fernández-Jiménez et al. (2020) were as follows: χ^2 (164. N = 376) = 459.13, $p < 0.001$; χ^2 df = 2.80; CFI = 0.95; RMSEA = 0.055 (CI 90% = 0.049–0.061); SRMR = 0.042.

For the first adaptation, the Lasher and Faulkender (1993) version of is scored with five response options that go from (1) completely disagree to (5) completely agree; In the adapted version used in the present investigation, the participant chooses between 11 possible responses. We merged the original scale with our version resulting in the following response options: Completely Disagree (0), Disagree (1, 2 and 3), Neither Agree nor Disagree (4, 5 and 6), Agree (7 , 8 and 9) and Completely Agree (10). This first adaptation was carried out with the intention of obtaining a greater variability in the responses, also because participants are used to being evaluated on a scale from 0 to 10 by the Mexican education system.

The second adaptation consisted of changing some terms used in the items of the original version in order to use a more appropriate language for the context of the Mexican culture and the age of the participants.

The third adaptation consisted of computerizing the questionnaire; each question was recorded on audio, which allowed the participants to view and listen to the questions of the questionnaire, when applied using a computer; this modification was carried out to facilitate data storage without requiring prior coding stages, with greater precision and speed, thus, making the data collection faster and more precise than if paper and pencil were used.

It should be noted that the instrument adaptation procedure complied with the international guidelines for the use of the tests by the International Test Commission (ITC) (Hernández et al., 2020).

Procedure

Adults from the city of Chihuahua, Mexico, were invited to participate in the study; recruitment of the participants was carried out in different public and private institutions of the City of Chihuahua, which were contacted for approximately three months, through written permit requests from the Faculty of Physical Culture Sciences of the Autonomous University of Chihuahua. The participants signed the informed consent, which appeared on the first screens of the instrument; in order to sign the informed consent, the participants pressed the "I do want" button, if the "I don't want" button was pressed, the system immediately abandoned the questionnaire; which could be abandoned at any time, if they no longer wished to continue with the application. At the beginning of the session, a brief introduction was made on the importance of research and how to access the instrument. Maximum sincerity was requested from them and the confidentiality of the obtained data was guaranteed. At the end of the session they were thanked for their participation. Instructions on how to respond were found on the first few screens; before the first instrument item. Then the instrument described above was applied, by means of a personal computer, in a single approximately 30-minute session.

Once the instrument was applied, the results were collected using the results generator module of the scale editor version 2.0 (Blanco et al., 2013).

Data analyses

The first step in the analyses of the psychometric properties of the questionnaire consisted of calculating the mean, standard deviations, skew and kurtosis for each item, as well as the multivariate Mardia index, to determine whether or not there is multivariate normality.

Two measurement models were compared: Model 1 (AAE-4F), a four-factor model according to the original distribution of the items within the questionnaire, and Model 2 (AAE-4Fm), which responds to the factor structure of the previous model, with the items that were not sufficiently well explained by Model 1 removed. According to the recommendations by Hair et al. (2009) in the sense that, the indicators (items) of a specific construct should converge or share a high proportion of common variance, and to that end, standardized

Table 1
Matrix of correlations between the items of the questionnaire.

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. I enjoy being with people older than myself	1.00	.05	.48**	.12**	.16**	.10**	.19**	.11**	.12**	.66**	.27**	.14**	.56**	.13**	.15**	.13**	.14**	.25**	.52**	.18**
2. I am afraid that when I am older all my friends will have died		1.00	.08*	.18**	.34**	.30**	.13**	.43**	.31**	.06	.15**	.30**	.03	.49**	.36**	.12**	.38**	.18**	.08*	.36**
3. I like to visit my relatives that are older than me			1.00	.13**	.19**	.07	.18**	.14**	.11**	.58**	.31**	.20**	.41**	.17**	.10**	.09*	.16**	.25**	.38**	.17**
4. I have lied about my age in order to look younger				1.00	.28**	.08*	.07	.16**	.34**	.16**	.08*	.37**	.07	.27**	.39**	-.01	.26**	.13**	.14**	.35**
5. I think it will be very difficult for me to feel happy when I am older					1.00	.28**	.26**	.37**	.38**	.14**	.25**	.35**	.09*	.42**	.40**	.19**	.43**	.33**	.16**	.39**
6. When I am older, my health is what worries me the most						1.00	.22**	.37**	.21**	.08*	.16**	.24**	.04	.39**	.28**	.22**	.34**	.20**	.02	.24**
7. I will have a lot to occupy my time when I am older							1.00	.24**	.24**	.25**	.40**	.26**	.10*	.25**	.26**	.44**	.22**	.35**	.21**	.19**
8. I get nervous when I think that someone will make decisions for me when I am older								1.00	.41**	.13**	.25**	.38**	.06	.58**	.41**	.18**	.50**	.25**	.15**	.39**
9. It bothers me to imagine myself being older									1.00	.18**	.36**	.56**	.07	.42**	.64**	.25**	.42**	.35**	.16**	.57**
10. I enjoy talking with people who are older than me										1.00	.31**	.17**	.58**	.14**	.14**	.14**	.13**	.26**	.54**	.13**
11. When I am older, I think I will feel good about life											1.00	.30**	.28**	.26**	.37**	.37**	.31**	.57**	.31**	.35**
12. I worry that when I am older I will see more wrinkles when I look in the mirror												1.00	.11**	.46**	.63**	.18**	.48**	.25**	.16**	.62**
13. I feel very comfortable around someone older than me													1.00	.06	.11**	.08*	.08*	.19**	.52**	.13**
14. I worry that when I am older people will ignore me														1.00	.48**	.15**	.57**	.27**	.11**	.51**
15. Seeing myself older has worried me															1.00	.21**	.50**	.33**	.18**	.62**
16. I believe that when I am older I will still be able to do almost everything by myself																1.00	.22**	.41**	.15**	.18**
17. I worry that life will loose meaning to me when I am older																	1.00	.32**	.15**	.47**
18. When I am older, I trust that I will feel good about myself																		1.00	.37**	.34**
19. I enjoy doing things for people who are older than me																			1.00	.18**
20. When I look at myself in the mirror, it bothers me to see how my appearance has changed with age																				1.00

Note. $^{*}p < .05$, $^{**}p < .01$

factor loadings must be 0.5 or higher, and ideally, 0.7 or higher. The rationale behind this rule can be understood in the context of an item's communality. The square of a standardized factor loading represents how much variation in an item is explained by the latent factor and is termed the variance extracted of the item. Thus, a loading of .71 squared equals .5. In short, the factor is explaining half the variation in the item with the other half being error variance. As loadings fall below .7, they can still be considered significant, but more of the variance in the measure is error variance than explained variance.

To conduct the confirmatory factor analyses, AMOS 21 software (Arbuckle, 2012) was used, the variances of the error terms were specified as free parameters, in each latent variable (factor) one of the structural coefficients was set to one so that its scale would be equal to that of one of the observable variables (items).

The estimation method employed was Maximum Likelihood (ML), with the application of bootstrapping resampling procedures for the non-normality cases (Byrne, 2016; Kline, 2011) even though in AMOS 21, the ML method is especially robust for possible cases of non-normality, especially if the sample is sufficiently large and the values of skew and kurtosis are not extreme (skew $<|2|$ y curtosis $<|7|$); in addition, following the recommendation by Thompson (2004), in the sense that when confirmatory factor analysis is used, not only the fit of a theoretical model should be corroborated, but it is advisable to compare the fit indices of several alternative models in order to select the best one.

To assess the fit of the model, the Chi-square statistic, the goodness of fit index (GFI), the standardized residual mean square root (SRMR) and the mean square error of approximation (RMSEA) were used as absolute measures of fit. The corrected goodness of fit index (AGFI), the Tucker-Lewis Index (TLI), and the comparative fit index (CFI) were used as measures of incremental fit. The Chi-square ratio over the degrees of freedom (CMIN / DF) and the Akaike information criterion (AIC) as parsimony fit measures (Byrne, 2010; Gelabert et al., 2011).

Next, the reliability of each of the dimensions of the tested models was calculated with Cronbach's Alpha Coefficient (Elosua & Zumbo, 2008; Nunnally & Bernstein, 1995) and the Omega Coefficient (Revelle & Zinbarg, 2009; Sijtsma, 2009).

Subsequently, in order to obtain a test that presents the best properties for the conformation of the scores of the Anxiety about Aging Scale in female and male participants, an analysis of the factorial invariance of the measurement models obtained for the samples was performed for women and men, based on the best

Table 2
Absolute, incremental and parsimony indices for the generated models.

	Absolute indices				Incremental indices			Parsimony indices	
Model	χ^2	GFI	RMSEA (90% CI)	SRMR	AGFI	TLI	CFI	CMIN/DF	AIC
AAE-4F	544.712*	.929	.057 (.052-.063)	.057	.909	.920	.931	3.321	636.712
AAE-4Fm	94.941*	.979	.037 (.026-.048)	.023	.965	.982	.987	1.978	154.941

Note. *p <.05; GFI = goodness of fit index; RMSEA = root mean square error of approximation; SRMR = standardized residual mean square root; AGFI = corrected goodness-of-fit index; TLI = Tucker-Lewis index; CFI = comparative fit index; CMIN / DF = chi-square ratio over degrees of freedom; AIC = Akaike information criterion.

model obtained in the total sample (AAE-4Fm model). Finally, the reliability of each dimension was calculated in both samples with Cronbach's Alpha and the Omega Coefficient (Revelle & Zinbarg, 2009; Sijtsma, 2009).

Results

Descriptive Analyses

The descriptive analyses of each of the 20 items of the questionnaire showed that the responses to all the items reflect mean scores ranging between 0.95 and 6.25, and the standard deviation offers, in all cases, values greater than 1.60 (within a response range between 0 and 10). All skew values were within the ± 2.60 range and most kurtosis within the ± 3.00 range; so it is inferred that the variables reasonably fit a normal distribution. However the Mardia multivariate index (135.41) above the value of 70 indicates a departure from multivariate normality (Rodríguez & Ruiz, 2008); thus, it can be inferred that multivariate normality does not exist.

On the other hand, the correlation matrix of the items (Table 1), shows significant associations among most of the items.

Confirmatory Factor Analyses

The overall results of the confirmatory factor analysis (GFI .929; RMSEA .057; CFI .931) for the AAE-4F model indicate that the measurement model is acceptable (Table 2).

The four factors of the AAE-4F model explain approximately 59% of the variance. On the other hand, 8 of the 20 items have saturations below .70 in their expected dimension (items 2, 3, 4, 5, 6, 7, 16 and 19). Low to moderate intercorrelations among the four

Table 3

Standarized solutions from the confirmatory factor analysis for the AAE-4F y AAE-4Fm models.

		AAE-4F				AAE-4Fm			
Item		F1	F2	F3	F4	F1	F2	F3	F4
		Pesos Factoriales							
1.	I enjoy being with people older than myself	.78				.80			
3.	I like to visit my relatives that are older than me	.64				-			
10.	I enjoy talking with people who are older than me	.84				.83			
13.	I feel very comfortable around someone older than me	.70				.70			
19.	I enjoy doing things for people who are older than me	.67				-			
5.	I think it will be very difficult for me to feel happy when I am older		.47				-		
7.	I will have a lot to occupy my time when I am older		.55				-		
11.	When I am older, I think I will feel good about life		.73				.80		
16.	I believe that when I am older I will still be able to do almost everything by myself		.53				-		
18.	When I am older, I trust that I will feel good about myself		.73				.72		
4.	I have lied about my age in order to look younger			.45				-	
9.	It bothers me to imagine myself being older			.75				.75	
12.	I worry that when I am older I will see more wrinkles when I look in the mirror			.77				.77	
15.	Seeing myself older has worried me			.82				.82	
20.	When I look at myself in the mirror, it bothers me to see how my appearance has changed with age			.77				.78	
2.	I am afraid that when I am older all my friends will have died				.58				-
6.	When I am older, my health is what worries me the most				.48				-
8.	I get nervous when I think that someone will make decisions for me when I am older				.71				.70
14.	I worry that when I am older people will ignore me				.80				.79
17.	I worry that life will loose meaning to me when I am older				.72				.74
		Internal Consistency							
	Ω	.85	.74	.84	.80	.82	.75	.86	.79
	α	.84	.71	.79	.79	.82	.73	.86	.78
		Factor Correlations							
	F1	-				-			
	F2	.47	-			.44	-		
	F3	.25	.59	-		.23	.56	-	
	F4	.21	.56	.75	-	.20	.48	.77	-

Note. F1 = Fear of the Elderly, F2 = Psychological Concerns, F3 = Physical Appeareance, F4 = Fear of Loss

Table 4
Absolute, incremental and parsimony indices for the generated models. Confirmatory factor analyses for women and men participants

	Absolute indices			Incremental indices			Parsimony indices	
Modelo	χ^2	GFI	RMSEA (90% CI)	AGFI	TLI	CFI	CMIN/DF	AIC
Factor solution for women								
AAE-4Fm	95.010*	.970	.045 (.031-.058)	.951	.973	.980	1.979	155.010
Saturated	0.000	1.000				1.000		156.000
Independent	2472.385*	.412	.272 (.263-.281)	.305	.000	.000	37.460	2496.385
Factor solution for men								
AAE-4Fm	113.513*	.919	.080 (.061-.100)	.868	.927	.947	2.365	173.513
Saturated	0.000	1.000				1.000		156.000
Independent	1299.210*	.360	.298 (.284-.312)	.244	.000	.000	19.685	1323.210

Note. * p <.05; GFI = goodness of fit index; RMSEA = root mean square error of approximation; SRMR = standardized residual mean square root; AGFI = corrected goodness-of-fit index; TLI = Tucker-Lewis index; CFI = comparative fit index; CMIN / DF = chi-square ratio over degrees of freedom; AIC = Akaike information criterion.

factors were observed, showing an adequate discriminant validity between them (Table 3).

The overall results of the confirmatory factor analysis (GFI .979; RMSEA .037; CFI .987) of the second and last model tested (AAE-4Fm) corresponding to the four-dimensional structure of the previous model without the items (2, 3, 4, 5, 6, 7, 16 and 19) that were not sufficiently well explained by the AAE-4F model or that according to the modification indices were not adequate, indicate that this measurement model is better than the previous model and its fit is optimal (Table 2). The four factors in this model together explain approximately 73% of the variance. Furthermore, none of the 12 items have saturations below .70 in their predicted dimension. Again low to moderate intercorrelations among the factors were observed, showing an adequate discriminant validity between them (Table 3).

Reliability of the subscales (internal consistency) in the total sample

The factors obtained in the confirmatory factor analyses, in both models, reach internal consistency values above .70; providing evidence of an adequate internal consistency (Table 3).

Confirmatory factor analysis for female and male participants

Results from the confirmatory factor analysis (Table 4) of 12 items grouped into four factors (AAE-4Fm) in the sample of women is optimal (GFI = .970; RMSEA = .045). On the other hand, the confirmatory factor analysis in the male sample indicates that the four-factor measurement model is acceptable (GFI = .919; RMSEA = .080).

According to the results shown in Table 5, in both samples, most of the items saturate equal to or above .70 in their predicted dimension, which evidences an appropriate convergent validity. Low to moderate intercorrelations among the factors were observed, showing an adequate discriminant validity between them.

Invariance of the factor structure between women and men

The fit indices obtained (Table 6) allow accepting the equivalence of the basic measurement models between the two samples. Although the Chi-square value exceeds that required to accept the invariance hypothesis, the indices GFI = .954, CFI = .969, RMSEA = .041 and AIC = 328.522 contradict this conclusion, which allows us to accept the base model of the invariance (unconstrained model).

By adding restrictions to the factor loadings of the base model, we characterize the metric invariance. The values shown in Table 6 allow us to accept this level of invariance. The general fit index (GFI .953) and the root mean square error of approximation (RMSEA .039) continue to provide convergent information in this direction. In addition, the Akaike information criterion (AIC 317.103) and the Bentler comparative index (CFI .970) do not vary greatly with respect to the previous model. Using the criteria for the evaluation of nested models proposed by Cheung and Rensvold (2002), who suggest that if the calculation of the difference of the CFI of both nested models decreases by .01 or less, the restricted model is considered good and therefore the factorial invariance is fullfilled; the difference between the obtained CFIs allows us to accept the metric invariance model. We can conclude so far that the factor loadings are equivalent in both samples.

Once the metric invariance between the samples was demonstrated, we proceeded to assess the equivalence of the intercepts (strong factorial invariance). The indices (Table 6) show an optimal fit of this model, both independently evaluated and analyzed with respect to its nesting with the metric invariance model. When the chi square difference is compared, it shows a significant difference between the Metric invariance model and the Strong factorial invariance $\Delta\chi 2$=23.241, Δdf=10, p=.01. Nevertheless, the difference between the Bentler benchmarks is .004; the overall fit index is .949 and the root mean square error of approximation is .039. Accepting the strong invariance, the two models evaluated are equivalent with respect to the factor coefficients and the intercepts.

The factors obtained in the confirmatory factor analyses, in both samples, show internal consistency values above .70; evidencing an adequate internal consistency (Table 5).

Contrasts of the means of the factors between women and men

Once the factorial invariance had been verified, the differences between the means of the factors of the two groups were estimated taking the sample of women as reference, setting the value of the means for that sample at 0 and freely estimating the value of the means for the sample of men. The restrictions on the regression coefficients and intercepts, required for the contrasts between the means, were performed automatically using the AMOS 21 software (Arbuckle, 2012). The results of the comparisons indicated that the means of the factors Physical Appearance (-0.632, p <0.01) and Fear of Loss (-0.988, p <0.001) are significantly higher in women. While in the factors Fear of the Elderly (0.095, p> 0.05) and Psychological Concerns (-0.224, p> 0.05) no significant differences were found.

Table 5
Standardized solutions from the confirmatory factor analyses for the AAE-4Fm model. Women and men samples.

Item		Women				Men			
		F1	F2	F3	F4	F1	F2	F3	F4
		Pesos Factoriales							
1. I enjoy being with people older than myself		.79				.83			
10. I enjoy talking with people older than me		.85				.77			
13. I feel very comfortable around someone older than me		.69				.70			
11. When I am older I think I will feel good about life			.76				.93		
18. When I am older, I trust that I will feel good about myself.			.73				.68		
9. It bothers me to imagine myself being older				.75				.77	
12. I worry that when I am older I will see more wrinkles when I look in the mirror				.74				.83	
15. Seeing myself older has worried me				.82				.82	
20. When I look in the mirror it bothers me to see how my appearance has changed with age				.77				.80	
8. I get nervous when I think that someone will make decisions for me when I am older					.69				.68
14. I worry that when I am older people will ignore me					.78				.77
17. I worry that life will loose meaning to me when I am older					.73				.78
		Internal Consistency							
	Ω	.82	.71	.85	.78	.81	.79	.88	.79
	α	.82	.72	.85	.78	.81	.77	.88	.79
		Factor Correlations							
	F1	-				-			
	F2	.41	-			.58	-		
	F3	.22	.59	-		.27	.43	-	
	F4	.16	.48	.75	-	.35	.46	.82	-

Note. F1 = Fear of the Elderly, F2 = Psychological Concerns, F3 = Physical Appeareance, F4 = Fear of Loss

Table 6
Goodness of fit indices of each of the models for which factorial invariance was assessed

Model	Fit Indices							
	χ^2	gl	GFI	NFI	CFI	RMSEA	$\Delta\chi^2$	AIC
Unconstrained model	208.522*	96	.954	.945	.969	.041		328.522
Metric invariance	213.103*	104	.953	.943	.970	.039	4.581	317.103
Strong factorial invariance	236.344*	114	.949	.937	.966	.039	23.241*	320.344

Note. *p <.05; GFI = goodness of fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean error; AIC = Akaike Information Criterion

Discussion

The goal of the study was to obtain data on the structure and factorial invariance of the Anxiety about Aging Scale proposed by Lasher and Faulkender (1993); in a sample of Mexican adult women and men. The analyses carried out showed that the AAE-4Fm model has a four-factor structure: (a) Fear of the Elderly, with 3 items (1, 10, and 13), (b) Psychological Concerns, with 2 items (11 and 18), (c) Physical Appearance, with 4 items (9, 12, 15 and 20) and (d) Fear of Loss, with 3 items (8, 14 and 17), and is a valid and viable structure for the Scale of Anxiety about Aging applied to Mexican adults of both sexes. Results that, in general, agree with those obtained by Lasher and Faulkender (1993). In addition, the factors correlate with each other in a positive and statistically significant way, which shows that as anxiety increases in one of them, it also increases in the other. In summary, this version of the Anxiety about Aging Scale has revealed satisfactory data that fits the underlying theoretical model and show high consistency and validity.

However, the obtained model differs to a certain extent from that proposed by Lasher and Faulkender (1993), since in order to achieve a better fit and greater discrimination capacity, eight of the twenty items had to be removed (item 2: I fear that when I have older all my friends have died, item 3: I like to visit my relatives who are older than me, item 4: I have lied about my age in order to look younger, item 5: I think it will be very difficult for I feel happy when I am older, item 6: When I am older my health is what worries me the most, item 7: I will have a lot to occupy my time when I am older, item 16: I think that when I am older still I will be able to do almost everything for myself and item 19: I enjoy doing things for people who are older than me). Hence, the model obtained from twelve items grouped into four factors can be considered a short and computerized version of the original version by Lasher and Faulkender.

It is important to comment that of the eight items that were eliminated to achieve a better fit and greater discrimination capacity of the model proposed by Lasher and Faulkender, items 2, 4, 5, 6 and 16 were also eliminated by Rivera-Ledesma et al. (2007) and Ornelas, Gastélum, Lopez-Walle, et al. (2016) in their studies on the factor structure of the Lasher and Faulkender's Anxiety about Aging Scale in a Mexican population, while these same items in other studies with a non-Mexican population obtain factor loadings of less than .70 (Lasher & Faulkender, 1993; Sargent-Cox et al., 2013), values that according to Hair et al. (2009) are not ideal, in the sense that the indicators (items) of a specific construct must converge or share a high proportion of common variance. While items 3 and 7 also present, both in the Mexican and non-Mexican

population, values below .70. All this probably because the content of these items is not so directly related to the perception of anxiety about aging.

Together with all the aforementioned, the results of the factorial invariance analyses between women and men; indicate a high congruence between pairs of factors. This suggests the existence of strong evidence of the cross-validation of the measure and therefore of the stability of the structure, until the contrary is proven. In addition to the fact that the comparisons between the groups reflected significant differences in two of the factors studied (Physical Appearance and Fear of Loss), which seems to indicate that adult women, in comparison with their male counterparts, tend to present higher levels of anxiety about aging in relation to anxiety due to changes in physical appearance, loss of social support and autonomy. Which, in general, agrees with that reported by Yun and Lachman (2006) who state that women show more anxiety about aging and concerns about physical appearance than their male counterparts.

Conclusions

Finally, it should be mentioned that the scope of these results is limited, and it is necessary that future research confirms the obtained structure, which will allow for more robust evidence regarding the factor structure of the questionnaire, in such a way that, it is considered that more studies are necessary in order to corroborate or refute the obtained data in the studies carried out so far.

It is also essential to assess whether the questionnaire is useful, for example, to predict psychological well-being. It will also be important that the scale can be interpreted on the basis of norm-referenced scores (e.g., percentiles).

Limitations

The present study has four limitations. First, all participants are adults from an urban setting, which poses a threat to the generalizability of the results. Extending the research to adults in rural areas, as well as to other regions and various age groups, is an area of opportunity for future studies.

Second, the instrument used is a self-report measure, which may be affected by social desirability bias.

The third limitation is related to the fact that there were several simultaneous adaptations made to the original version of the questionnaire (the change in the response scale and its application on the computer). As these changes were made at the same time, we were unable to detect whether any of them might have affected the reliability and validity of the original questionnaire.

The fourth limitation has to do with the sample selection method, which, since it is not probabilistic, introduces the risk of statistical bias in the results, so it is recommended to take the results with caution.

Likewise, it is necessary to assess whether the questionnaire predicts well-being, satisfaction with life, physical condition, among others.

Contributions

Concerns regarding the decrease in biopsychosocial capacities as a result of the aging process generate anxiety and fears about social identity and death, hence the need for valid and reliable instruments for its measurement. This study serves as a premise for future research on the study of instruments to assess aging anxiety in populations with different personal and cultural factors. Finally, it is important to highlight that the aging anxiety questionnaire has been studied in Mexican adolescents, young people and older adults, but not within the age range of the sample included in our study and therefore, the intention is to continue using it to provide data that allow future comparisons by age group, in addition to being a very useful instrument for application in different areas of research, such as descriptive or intervention studies.

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