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Attitudes towards Lesbian, Gay, Bisexual and Transgender Old Age Scale (EAFV– LGBT): Elaboration and Psychometric Evidence

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Abstract. The aim of this study was to construct and validate an Attitude Scale relating to Lesbian, Gay, Bisexual and Transgender (LGBT) old age (EAFV-LGBT). The first study, consisting of 29 items in its preliminary version, counted on 266 individuals from the public in general with an average age of 28.6 years (*DP* = 9.70), exploratory factor analysis was undertaken and EAFV-LGBT consisted of twelve items, with eigenvalues of 5.08, accounting for 43.8% of total variance. The second study consisted of 261 individuals from the general public with an average age of 23.18 years (*DP* = 8.25), confirmatory factor analysis was undertaken and psychometric parameters by means of Item Response Theory and conformation of the EAFV-LGBT structure. After this analysis, two items were excluded due to lower psychometric values, in which the 10 item scale proved to be valid and precise in evaluating individuals with varying levels of the latent trait. An adequate fit of the model to the data was verified, CFI = 0.97; TLI = 0.6; RMSEA, 90% CI = 0.05 [0.01, 0.07]. Lastly, the EAFV-LGBT has valid psychometric properties to evaluate attitudes towards LGBT old age.

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The aging process has resulted in changes to the world's age pyramid; this is due to the improvements in biopsychosocial aspects, in turn resulting in an increase of life expectancy. In Brazil, it is estimated that 13.7% of the population are elderly (Instituto Brasileiro de Geografia e Estatística - Brazilian Institute of Geography and Statistics, 2015). In this regard, aging is seen as a phenomenon that is inseparable from the human being, during which changes occur in all dimensions and, as such, each subject goes through biological changes that are common to senescence and through individual processes, which vary according to individual experiences (Siqueira, Botelho, & Coelho, 2002).

Sexuality of the elderly is a topic that is most subject to prejudice and ignorance, reflecting the taboos that exist in society (Alencar, Marques, Leal, & Vieira, 2016). The expression of sexuality is a basic human need, independent of age-group, which is not limited to a sexual relationship and manifests itself in the most diverse forms, be it in relationships of friendship, complicity and intimacy, which are components in a healthy and quality-filled life (Frugoli & Magalhães, 2011). Literature concerning sexuality focus mostly on cisgender heterosexual individuals (de Alencar et al., 2016). This applies not only to sexuality, LGBT (Lesbian, Gay, Bisexual, Transgender, Transvestite) old age is a phenomenon of gerontology and geriatrics that is not addressed very often (de Araújo & Fernandéz-Rouco, 2016).

According to Henning's anthropological studies (2017), LGBT gerontology underwent four stages; the first marked by concepts of isolation and solitude, the second by a positive view of the deconstruction of stereotypes, the third widens this view and goes beyond studies with gay men, including lesbians, bisexuals, transsexuals and transvestites. Lastly, the fourth stage addresses practical discussions on how to provide adequate services to the elderly LGBT community.

LGBT old age, from a psychosocial perspective, much like any other type of old age, is idiosyncratic, in which the subjects experience endogenous and exogenous changes, and each subject, individually, in their life trajectories experiences the particularity of aging, which is marked by sexual orientation and/or gender identity (Santos, Carlos, de Araújo, & Negreiros, 2017). The multiplicity of LGBT old age is a result of the various expressions of sexuality of this group (Henning, 2017),

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for example, an elderly transsexual woman has different experiences to those of an elderly lesbian woman, but at the same time both have experienced prejudice, which can have similar effects when internalized (Antunes & Mercadante, 2011). In this context, Antunes (2017) highlights that internalizing LGBTphobia has a negative effect on all areas of the subject's life.

Denying old age is one of the effects of social repression (Santos et al., 2017), one study addressed the fact that denying LGBT old age can be construed as an escape from the double prejudice of being LGBT and elderly (Alves, 2010). In this sense, another study talks at length about resorting to aesthetic devices and how it is a means to avoid an elderly appearance (Santos & Lago, 2013). Furthermore, the above-mentioned author emphasizes that, seeing that the cognitive aspects remain healthy, feeling and acting like someone younger becomes normal within the group.

Another recurring topic is based on basic healthcare and public policies directed at the LGBT elderly, where the institutions involved are deficient with regards to the application of methods adequate to this group, due to the literature in this field. An expert in this field, Cook-Daniels (2015) argues that access to public services is equal for all and, regarding the LGBT group, those that encounter more difficulty are transvestites and transsexuals. Psychosocial factors are a part of the construction of the elderly person's legacy, the creation of the Status of the Elderly came to recognize the elderly as social actors and as having rights. It is in this context that the LGBT struggle has sought equality in the services provided, and the state of affairs reveals the need for the elderly LGBT public to be included in the health and social services apparatus, in favor of longevity (de Araújo & Fernandéz-Rouco, 2016).

The manifestation of prejudice when an LGBT person is involved, is the result of attitudes and beliefs associated with ethical and moralistic thinking (Pereira, Dias, Lima, & Souza, 2017). This study aims to discuss issues that transcend an individual's sexual orientation, by placing it in the context of an elderly person. One study shows that existing ageism in society results in the propagation of negative attitudes towards elderly people. Another study, documents that the little contact adults and young people have with elderly people increases the negative stigmas linked to old age (Villas-Boas, Ramos, Amado, Oliveira, & Montero, 2017). These negative attitudes appeared together with modernization and industrialization, which require individuals in a socioeconomic society to play an active role for them to be valued.

In this context of literature regarding LGBT old age, one becomes aware of the need to expand research on the topic and, consequently, implement studies from a perspective of attitude theory. Attitudes are a result of the socialization process and are described by Rodrigues and colleagues as "feelings of for or against people or things that we come into contact with" (Rodrigues, Assmar, & Jablonski, 1999, p. 97).

Attitudes consist of three components, affection, cognition and behavior (Neiva & Mauro, 2015). The cognitive components consists of perceptions, beliefs and concepts regarding the attitude object; the affection component consists of feelings and positive or negative emotions associated with the attitude object; the behavior component consists of action or the predisposition to take action when confronted with the object (Neiva & Mauro, 2015).

Formation of an attitude occurs through social learning, by which a negative or positive reference is given to an object and, afterwards, the manifestation of a behavior (Rodrigues et al., 1999). A change of attitude takes place after a change in thinking, behavior or affect regarding a certain phenomenon (Neiva & Mauro, 2015). One way to measure attitudes related to an object is by applying a scale that encompasses attitude components through individual positioning (Lima, 2000).

Even when considering the importance of understanding the context and important variables concerning the sexuality of elderly LGBT, no attitude scale directed to this public was found when consulting the literature. Based on this, the intention of creating an instrument to measure them was considered to be justified, seeing that it has been proven that attitudes are good predictors of behavior (Ajzen, 2012). Therefore, understanding the attitude of the public in general towards the LGBT elderly, it may be possible to infer its relationship with other variables, such as prejudiced behavior, for instance (Fishbein & Ajzen, 2010). In light of the foregoing, the aim of the present study is to create and evaluate the evidence of a measure of attitudes towards LGBT old age.

Method

Study 1. EAFV-LGBT elaboration and initial psychometric evidence

Participants

A random sample of 266 individuals from the general public was used, with an average age of 28.6 years (*DP* = 9.70 years; varying between 18 and 62 years) and average income of BRL (Brazilian currency) 3,338.00 (*DP* = 3,558.94), of which a little more than half were university students (54%). Of the total number, 60.9% were women, of which the majority stated they were single (53.8%), 32% catholic and 25.9% agnostic, 50.2%, however, considered themselves as very religious. When asked about their sexual orientation, 67.3% stated being heterosexual. The majority stated they had proximity with LGBT persons (88%) and 47.7% stated they knew an LGBT elderly person.

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Instruments

Attitudes towards LGBT Old Age Scale (EAFV– LGBT): The preliminary version of the EAFV– LGBT was used, consisting of 29 items expressing the attitudes of the answerers towards this specific public. The answers were given according to a 5-point Likert type scale (1 - *Strongly Disagree*; 5 - *Strongly Agree*).

Sociodemographic questionnaire: Questions of a demographic nature were used, such as gender, age, family earnings, etc., with the purpose of characterizing the sample used.

Procedures

Initially, for the purpose of drawing up the scale, questionnaires with open-ended questions to the general public were used. After accepting to being part of the study, the participants were asked to record behaviors, affections and contexts in which attitudes towards LGBT old age could be expressed. This resulted in 42 items that were considered as a representation of the attitudes, and were submitted to a panel of judges for analysis.

This panel consisted of 11 experts in Social Psychology, who were asked to assess the pertinence, relevance and clarity of the items as good descriptors of the construct in question. It should be stressed that the experts received all the necessary explanations and definitions to carry out their assessment on an appropriate form. Items that were unanimously classified as adequate were kept and were included in the preliminary version of 30 items.

The preliminary version was submitted for semantic validation. In this case, 10 people from various educational backgrounds took part and, after signing the Free and Informed Consent Form, continued on to assess the existence of confusing items. Concerning this stage, one of the items (LGBT elderly arte more promiscuous in their sexuality) was rejected as it was difficult to understand, leaving 29 items that were included in the preliminary version of the measurement instrument.

Lastly, the preliminary version was applied. In compliance with the National Health Council's resolution 510/2016, preliminary information regarding the study and instructions on how to answer the instruments were provided. The anonymous and voluntary nature of participating was emphasized and the instruments were only completed after the Free and Informed Consent Form had been signed. It was estimated that 20 minutes, on average, was enough to complete the instruments.

Data analysis

The software IBM SPSS (version 24) and Factor 10.5 (Lorenzo-Seva & Ferrando, 2013) were used. With the first, descriptive statistics were calculated that allowed for the characterization of the sample. With the second, it was possible to apply the Hull Method to calculate how many factors should be extracted, as well as run exploratory factor analysis for ordinal data, with Robust Unweighted Least Squares (RULS) estimator, as well as calculate the internal consistency coefficient.

Results

Initially, we sought to learn if the polychoric correlation matrix, used for ordinal data (Choi, Kim, Chen, & Dannels, 2011), would be appropriate for exploratory factor analysis. The results attest to the factorability of the data, KMO = 0.74; Bartlett's Test $\chi^2(406) = 1861{,}9$; $p < .001$. In this respect, it was decided to extract a one-dimensional solution using the Hull Method (Lorenzo-Seva, Timmerman, & Kiers, 2011), which was supported by a Mean of Item Residual Absolute Loadings (MIREAL) index = 0.276, which suggests the treatment of data as essentially one-dimensional (Ferrando & Lorenzo-Seva, 2017).

In this manner, Exploratory Factor Analysis (EFA) was carried out, without defining rotation, with robust unweighted least squares (RULS) extraction method and polychoric correlations. The general factor was responsible for 43.8% of total variance. With the objective of creating a short, rational instrument, the minimum factorial load considered was $|0.40|$ so that the item could be retained in the factor (Hair, Black, Babin, Anderson, & Tatham, 2010; Pasquali, 2012). The results can be verified in Table 1, below.

The general factor, named Attitudes towards LGBT old age, consisted of twelve items and presented an eigenvalue of 5.08, explaining 43.8% of total variance. Factorial loads varied between 0.43 (Item 26. In my opinion elderly LGBT are more prone to having sexually transmitted diseases and HIV/AIDS) and 0.73 (Item 16. I would be embarrassed if I had a grandmother/grandfather who were LGBT), furthermore, precision, assessed according to internal consistency, was considered to be satisfactory ($\omega = 0.77$ and $\alpha = 0.79$). It is emphasized that the nature of this study was eminently exploratory, which led to Study 2 being conducted and whose objective is to collect more evidence relating to the factorial structure and internal consistency of the EAFV-LGBT, aside from obtaining evidence using the Item Response Theory, by estimating the difficulty and listing the items, and assessing the psychometric information of the scale.

Study 2. Psychometric parameters via Item Response Theory and Confirmation of EAFV-LGBT structure

Participants

In this study, a random sample of 261 persons from the general public was used, recruited from public locations on the Piauí coast. The average age of these volunteers

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Table 1. *EAFV-LGBT Factorial Structure*

N.	SUMMARISED CONTENT OF ITEM[a]	FACTOR	h^2
16	I would be embarrassed to have an LGBT grandmother/grandfather	0.73*	0.53
14	I would not sit close to an elderly LGBT	0.71*	0.50
25	Elderly LGBT should not take care of children	0.67*	0.44
22	Elderly LGBT people embarrass their families	0.60*	0.36
01	I would like to meet and be friends with elderly LGBT	–0.57*	0.32
13	Elderly LGBT cannot attend religious services	0.53*	0.29
03	Elderly LGBT transmit good experiences	–0.47*	0.22
20	LGBT old age is marked my regret	0.47*	0.22
11	Elderly LGBT cannot be members of social groups	0.46*	0.21
09	Elderly LGBT can be members of social groups	–0.45*	0.20
27	Elderly LGBT persons suffered abuse in childhood	0.44*	0.20
26	Elderly LGBT persons are more prone to have STDs	0.43*	0.19
15	Elderly LGBT persons suffer from prejudice	–0.30	0.09
28	Elderly LGBT are successful people	–0.29	0.08
29	Elderly LGBT have stable affective relationships	–0.28	0.08
08	Elderly LGBT are happier when they express their sexuality	–0.27	0.07
12	LGBT old age is similar to any other old age	–0.27	0.08
18	Society respectfully accepts elderly LGBT	0.24	0.06
24	Elderly LGBT cannot count on the support of their family	0.22	0.05
21	Elderly LGBT have longer lasting social relationships	–0.18	0.03
10	Elderly LGBT have the same quality of life as other elderly people	–0.17	0.03
17	I would have a relationship with an elderly LGBT	–0.16	0.03
23	Elderly LGBT have partners that are more loyal and loving	–0.16	0.03
04	Elderly LGBT cannot live in old age homes/shelters	0.14	0.02
07	Elderly LGBT are free to experience their sexuality	–0.14	0.02
19	Elderly LGBT have more freedom and are more honest	–0.12	0.01
05	Elderly LGBT people have less opportunities	–0.11	0.01
06	Elderly LGBT live in isolation	0.08	0.01
02	Elderly LGBT handle prejudice more naturally	0.04	0.01
Number of items		12	
Explained variation (%)		43.8	
ω		0.77	
α		0.79	

Note. ω = McDonald's Omega; α = Cronbach's Alpha (polychoric correlations). [a] =The full version of the items can be requested from the authors.

was 23.18 (*DP* = 8.25) and the majority were women (66.7%), single (89%) and heterosexual (83.5%). Concerning family earnings, these were BRL 3,393.78 (*DP* = 4,057.66) on average, while regarding proximity to LGBT persons, 94% stated having some type of proximity to this public and 36% stated they knew elderly LGBT.

Instruments

The Attitudes towards LGBT old age Scale, validated in Study 1, was used. This instrument consisted of 12 items, defining a general dimension, that were answered on a 5-point Likert type scale (1 – *Strongly Disagree*; 5 – *Strongly Agree*). Furthermore, with the objective of characterizing the sample, a sociodemographic questionnaire as included.

Procedures

The procedures used were similar to those used in Study 1. All ethical guidelines, established in resolution 510/2016 for research with human beings, were respected. Application of the instruments was carried out after the participants signed a Free and informed consent form and, on average, 10 minutes were enough to complete the instrument.

Data analysis

Data analysis was carried out using Software R (R Development Core Team, 2017). Aside from the calculation of statistics in R, package lavaan (Rossel, 2012), MIRT (Chalmers, 2012) and semTools version 0.4-9 (Jorgensen, Pornprasertmanit, Schoemann, & Rosseel, 2016) were used. With the first, the factorial structure

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obtained in Study 1 was tested using Confirmatory Factor Analysis (CFA) and Weighted Least Squares Mean and Variance Adjusted (WLSMV; Muthén & Muthén, 2012), appropriate for data of an ordinal nature (Li, 2016). The following fit indexes were used: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and Root Mean-Square Error of Approximation (RMSEA). Model fit should have CFI and TLI values greater than 0.90, preferably higher than 0.95 (Kline, 2015, and RMSEA should be lower than 0.08 (Brown, 2006; Kline, 2015). Internal consistency, McDonald's omega (ω) and Cronbach's Alpha with polychoric correlations (α), was calculated using semTools.

Item Response Theory (IRT) was assessed with MIRT, using a Graded Response Model (Samejima, 1969), to assess individual item parameters (difficulty and discrimination), as well as the amount of psychometric information of the items and the test.

Results

The fit of the single-factor model presented in Study 1 was initially tested using CFA for ordinal data (robust WLSMV estimator), and evidence was found supporting a general factor structure, CFI = 0.97; TLI = 0.96; RMSEA, 90% CI = 0.05 [0.02, 0.06]. The average value of factorial loads (λ) was 0.47 (*DP* = 0.09), varying between 0.34 (Items 4 and 5) and 0.58 (Item 10). Furthermore, acceptable internal consistency indicators for a one-dimensional structure consisting of the 12 EAFV-LGBT items (ω = 0.76, α = 0.77), were verified. More details concerning the factorial loads can be found in Table 2.

Having confirmed the pertinence of EAFV-LGBT one-dimensionality, the next step was to explore the individual parameters of its items, more specifically difficulty, discrimination and psychometric information (Table 2). Regarding discrimination, it was found that the scale items had an average value of 1.44 (*DP* = 0.34) for this parameter, varying between 1.07 (Item 12; high discrimination) and 2.17 (Item 10; very high discrimination). With regards to difficulty, it is pointed out that for the b1 and b2 limits the items most easily agreed with were Items 2 and 11, the latter being the easiest for limit b3 followed by item 9. For limit b4, the items requiring the lowest level of latent traits for complete agreement with their content, were Items 7 and 10. On the other hand, the items more difficult for limits b1 and b2, were 6 and 4, this one together with item 8, the most difficult for limit b3. Lastly, the items that required the greatest level of latent traits for complete agreement were Items 12 and 8. Analyzing the information curve of the test (Figure 1), it is possible to see that the measurement instrument covers a significant range of the latent trait, from approximately –1.0 to 4.0.

Nevertheless, analyzing the psychometric information of the items, it is possible to idealize a more concise version of the measurement instrument, by selecting them. In this sense, items 4 and 10, which presented the least psychometric information, I(θ) < 2.00, were excluded and are, therefore, less important for the latent trait in question, resulting in a 10 item version. For this new version, an appropriate fit of the model to the data was found, CFI = 0.97; TLI = 0.96; RMSEA, 90% CI = 0.05 [0.01, 0.07], as well as items with high discriminative capacity that cover a significant latent trait interval (Table 3).

Regarding the exclusion of the two items, it was found that this represented little loss of psychometric information (Figure 1). The total information of the 10 item instrument was I(θ) = 31.86, where item 10 provided the most

Table 2. *CFA and Analysis of the EAFV-LGBT Items with 12 Items*

Items	CFA_{12}		IRT – Graded Response Model				
E2 (E1)*	λ_{12}	a	b1	b2	b3	b4	I(θ; –4/+4)
10 (25)	0.58	2.17	0.91	1.51	2.19	2.53	4.51
07 (16)	0.57	1.87	0.78	1.14	2.17	2.53	3.65
01 (01)	0.57	1.48	–0.06	0.61	2.15	2.68	3.12
09 (22)	0.56	1.46	0.11	0.77	2.09	3.16	3.11
06 (14)	0.35	1.81	1.73	2.04	2.72	3.06	2.93
08 (20)	0.50	1.26	0.22	0.96	2.98	4.43	2.38
03 (09)	0.46	1.32	0.81	1.63	2.52	3.42	2.34
11 (26)	0.49	1.17	–0.36	0.40	1.42	3.13	2.33
02 (03)	0.50	1.10	–1.15	0.45	2.43	3.39	2.33
05 (13)	0.34	1.31	1.14	1.82	2.76	3.32	2.12
04 (11)	0.34	1.26	1.24	2.05	2.79	3.38	1.96
12 (27)	0.45	1.07	–0.14	0.58	2.44	4.01	1.93

Note. a = discrimination; $b_{1–4}$ = difficulty; I(θ) = Psychometric information; E2 (E1) = item no. in Study2 (item no. in Study1).

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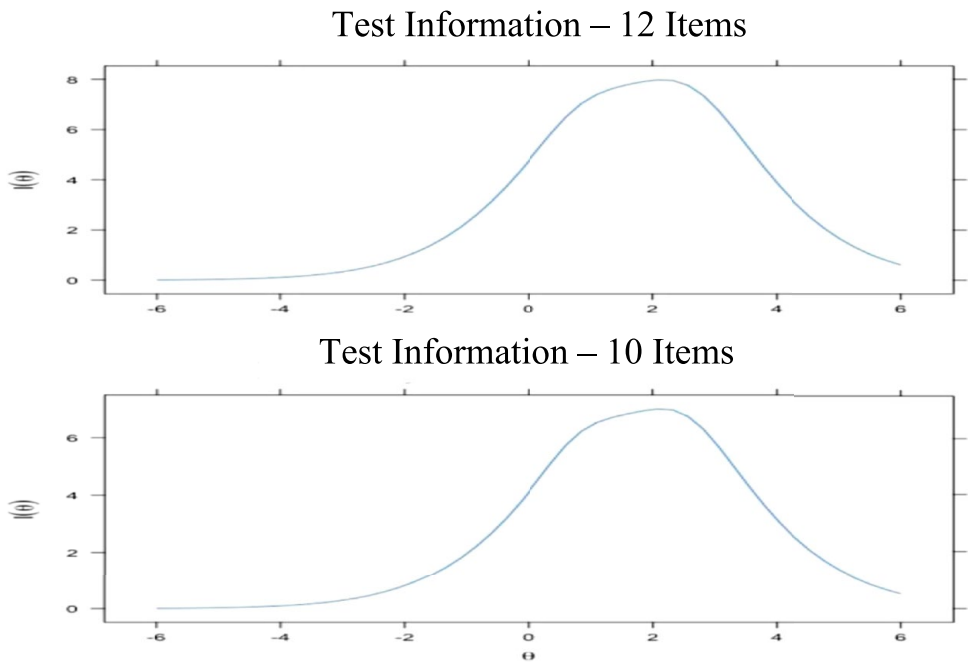

Figure 1. Information Curves of the 12 and 10 Item Test.

Table 3. *CFA and Analysis of the EAFV-LGBT Items with 10 Items*

Items	FCA_{10}		IRT – Graded Response Model				
E2 (E1)*	λ_{10}	a	b1	b2	b3	b4	I(θ; –4/+4)
10 (25)	0.60	2.27	0.90	1.50	2.17	2.51	4.81
07 (16)	0.58	1.93	0.77	1.13	2.14	2.50	3.81
01 (01)	0.58	1.52	–0.06	0.59	2.12	2.66	3.23
09 (22)	0.54	1.40	0.11	0.79	2.14	3.26	2.92
06 (14)	0.36	1.69	1.79	2.12	2.85	3.20	2.64
02 (03)	0.52	1.15	–1.13	0.43	2.36	3.29	2.50
11 (26)	0.47	1.14	–0.38	0.39	1.45	3.20	2.24
08 (20)	0.47	1.18	0.22	1.00	3.14	4.68	2.11
05 (13)	0.36	1.27	1.16	1.84	2.81	3.39	2.03
03 (09)	0.45	1.18	0.85	1.71	2.69	3.69	2.00

Note: a = discrimination; $b_{1–4}$ = difficulty; I (θ) = Psychometric information; E2 (E1) = item no. in Study2 (item no. in Study1).

information, I10(θ; –4/+4) = 4.81, while item 3 the least information, I3(θ; –4/+4) = 2.00. Therefore, it is suggested that the 10 item version be used since it was demonstrated that it was valid and precise for evaluating persons with different levels of latent trait.

Discussion

Two social groups suffer due to negative attitudes and, at times, from discriminating behavior: The elderly and LGBT. Elderly LGBT have to deal with social repression and have the resources to escape from a double prejudice (Alves, 2010; Santos et al., 2017) that is rooted in ethical and moralistic attitudes and beliefs (Pereira et al., 2017). In this sense, it becomes important to understand people's attitudes with regards to LGBT old age, especially when studies on this subject in a Brazilian context are scarce, and due to the lack of measurement instruments that assess those attitudes (de Araújo & Fernandéz-Rouco, 2016).

In light of this, we have sought to make available a valid, precise and concise measurement instrument that can be used to estimate attitudes towards the social object focus of the article. It is our belief that the objectives established were met and the existence of evidence relating to the one-dimensionality of EAFV-LGBT was shown by means of different statistical approaches (exploratory and confirmatory). Specifically, the 10 items

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of the final version of the measurement instrument adequately saturated into a general dimension (Hair et al., 2010; Pasquali, 2012), with indicators of model fit to the data supporting the solution tested (Brown, 2006; Kline, 2015). Furthermore, the internal consistency coefficients fall within the standards recommended by psychometric literature and provide additional support to the single-factor structure (Urbina, 2007).

Aside from verifying the test fit, the individual analysis of the items was also considered. In general, these were classified between high and very high (Baker, 2001), demonstrating that they have the capability of adequately differentiating participants with levels close to the latent trait in question. Regarding difficulty, it can be seen that, generally, a high level of latent trait is required for complete agreement with the items, which reflects on the information curve of the test that, although it covers a significant theta interval, showed the most precision in evaluating people with a trait magnitude of approximately theta 2.0.

In this sense, one cannot forget that the object being measured is surrounded by strong social desirability (Salgado et al., 2017), which may have contributed towards the evaluation of this parameter. Furthermore, the importance of thinking of items that may be more adequate to evaluate the lower range of the trait, i.e. those capable of dealing with more veiled aspects that are not so latent (think of affirmations people with lower levels of negative attitudes may agree on).

Despite the promising results, it is important to interpret them with some reservations. While on this subject, convenience samples are possible limiters, limiting the generalization of the results. In relation to this aspect, it should be emphasized that northern Brazilian culture is traditionalist and holds honor in very high esteem (Gouveia, Guerra, Araújo, Galvão, & Silva, 2013), which could have some influence when evaluating matters of this nature. In the same sense, point are given to the social desirability inherent to self-reporting measurement instruments, and the proposal of an implicit measurement instrument (Gouveia, Athayde, Mendes, & Freire, 2014) for attitudes towards LGBT old age in the future is a possibility. Understanding the predictors of such attitudes is equally important (e.g. social dominance orientation, human values), in addition to verifying their role as predictors with regards to the intention of being in contact with elderly LGBT even with discriminatory behavior as a criterion. It can be seen that there is still much to be done in this field of study, both by focusing on the victim of prejudice, estimating the impact to his/her physical and mental health, as well as by striving to outline a profile with greater probability of acting discriminately, by which an important first step is recognizing the attitudes.

References

Ajzen I. (2012). The theory of planned behavior. In P. A. M. Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 1, pp. 438–459). London, UK: Sage.

Alencar D. L., Marques A. P. d. O., Leal M. C. C., & Vieira J. d. C. M. (2016). The exercise of sexuality among the elderly and associated factors. *Revista Brasileira de Geriatria e Gerontologia*, *19*(5), 861–869. https://doi.org/10.1590/1809-98232016019.160028

Alves A. M. (2010). Envelhecimento, trajetórias e homossexualidade feminina [Aging, trajectories and female homosexuality]. *Horizontes Antropológicos*, *16*(34), 213–233. https://doi.org/10.1590/S0104-71832010000200010

Antunes P. P. S. (2017). Homens homossexuais, envelhecimento e homofobia internalizada [Homosexual men, internalized aging and homophobia]. *Revista Kairós - Gerontologia*, *20*(1), 311–335. https://doi.org/10.23925/2176-901X.2017v20i1p311-335

Antunes P. P. S., & Mercadante E. F. (2011). Travestis, envelhecimento e velhice [Travestis, aging and old age]. *Revista Kairós Gerontologia Temática*, *14*, 109–132.

Araújo L. F., & Fernandéz-Rouco N. (2016). Idosos LGBT: Fatores de risco e proteção [LGBT elderly: Risk and protection factors]. In D. V. d. S. Falcão, L. F. de Araújo, & J. S. Pedroso (Eds.), *Velhices: Temas emergentes nos contextos sociofamiliar, de saúde mental, cuidado e violência* [Old age: Emerging issues in the sociofamiliar, mental health, care and violence contexts] (1st Ed., pp. 22–32). Campinas, Brazil: Alínea.

Baker F. B. (2001). *The basics of item response theory* (2nd Ed.). College Park, MD: ERIC Clearinghouse on Assessment and Evaluation.

Brown T. A. (2006). *Confirmatory factor analysis for applied research*. New York, NY: Guilford Press.

Chalmers R. P. (2012). Mirt: A multidimensional item response theory package for the R Environment. *Journal of Statistical Software*, *48*, 1–29. https://doi.org/10.18637/jss.v048.i06

Chen F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(3), 464–504. https://doi.org/10.1080/10705510701301834.

Choi J., Kim S., Chen J., & Dannels S. (2011). A comparison of maximum likelihood and Bayesian estimation for polychoric correlation using Monte Carlo simulation. *Journal of Educational and Behavioral Statistics*, *36*, 523–549. https://doi.org/10.3102/1076998610381398

Cook-Daniels L. (2015). Transgender aging: What practitioners should know? In A. Orel & C. A. Fruhauf (Eds.), *The lives of LGBT older adults: Understanding challenges and resilience* (pp. 193–216). Washington, WA: American Psychological Association.

Ferrando P. J., & Lorenzo-Seva U. (2017). Assessing the quality and appropriateness of factor solutions and factor score estimates in exploratory item factor analysis. *Educational and Psychological Measurement*, *1*, 1–19. https://doi.org/10.1177/0013164417719308

Fishbein M., & Ajzen I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.

Frugoli A., & Magalhães C. A. O. (2011) A sexualidade na terceira idade na percepção de um grupo de idosas e indicações para a educação sexual. *Arquivos de Ciências da Saúde da UNIPAR*, *15*, 85–93.

Gouveia V. V., Athayde R. A., Mendes L. A. C., & Freire S. E. (2014). Introdução às medidas implícitas: Conceitos, técnicas e contribuições. *Diaphora*, *12*(1), 80–92.

Gouveia V. V., Guerra V. M., Araújo R. D. C. R., Galvão L. K. S., & Silva S. S. D. (2013). Honor concerns in the Northeast of Brazil: Demographic correlates. *Psicologia & Sociedade*, *25*(3), 581–591. https://doi.org/10.1590/S0102-71822013000300012

Hair J. F., Jr., Black W. C., Babin B. J., Anderson R. E., & Tatham R. L. (2010). *Multivariate Data Analysis* (7ª Ed.) Upper Saddle River, NJ: Pearson Prentice Hall.

Henning C. E. (2017). Gerontologia LGBT: Velhice, gênero, sexualidade e a constituição dos "idosos LGBT" [LGBT gerontology: Old age, gender, sexuality and the constitution of the "LGBT elderly"]. *Horizontes Antropológicos*, *23*(47), 283–323. http://doi.org/10.1590/s0104-71832017000100010

Instituto Brasileiro de Estatística (IBGE). (2015). *Pesquisa nacional por amostra de domicílios*. Rio de Janeiro, Brazil: IBGE.

Jorgensen T. D., Pornprasertmanit S., Schoemann A. M., & Rosseel Y. (2016). semTools: Useful tools for structural equation modeling. R package version 0.4-14. Retrieved from https://CRAN.R-project.org/package=semTools

Kline R. B. (2015). *Principles and practice of structural equation modeling* (4th Ed.ic>). New York, NY: The Guilford Press.

Li C.-H. (2016). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods*, *48*, 936–949. http://doi.org/10.3758/s13428-015-0619-7

Lima L. (2000). Atitudes: Estrutura e mudança [Attitudes: Structure and change]. In J. Vala & M. Monteiro (Eds.), *Psicologia social* [Social psychology] (pp. 187–226). Lisboa, Portugal: Fundação Calouste Gulbenkian – Serviço de Educação.

Lorenzo-Seva U., & Ferrando P. J. (2013). FACTOR 9.2: A comprehensive program for fitting exploratory and semiconfirmatory factor analysis and irt models. *Applied Psychological Measurement*, *37*, 497–498. https://doi.org/10.1177/0146621613487794

Lorenzo-Seva U., Timmerman M. E., & Kiers H. A. L. (2011). The Hull method for selecting the number of common factors. *Multivariate Behavioral Research*, *46*, 340–364. https://doi.org/10.1080/00273171.2011.564527

Muthén L. K., & Muthén B. O. (2012). *Mplus: Statistical analysis with latent variables. User's guide*. Los Angeles, CA: Muthén & Muthén

Neiva E. R., & Mauro T. G. (2011). Atitudes e mudança de atitudes [Attitudes: Structure and change]. In C. V. Torres & E. R. Neiva (Eds.), *Psicologia social: Principais temas e vertentes* [Social Psychology: Main Themes and Strands] (pp. 171– 203). Porto Alegre, Brazil: Artmed.

Pasquali L. (2012). *Análise fatorial para pesquisadores* [Factorial analysis for researchers]. Brasília, Brazil: LabPam.

Pereira A. d. S. L. S., Dias S. M. P. d. S., de Lima T. J. S., & de Souza L. E. C. (2017). As crenças sobre a homossexualidade e o preconceito contra homossexuais no ambiente de trabalho [Beliefs about homosexuality and prejudice against homosexuals in the workplace]. *Temas em Psicologia*, *25*(2), 563–575. https://doi.org/10.9788/TP2017.2-10

R Development Core Team (2017). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from https://www.R-project.org/

Rodrigues A., Assmar E. M. L., & Jablonski B. (1999). *Psicologia social* [Social psychology]. Petrópolis, Brazil: Vozes.

Rosseel Y. (2012). lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software*, *48*(2), 1–36. https://doi.org/10.18637/jss.v048.i02

Salgado A. G. A. T., de Araújo L. F., Santos J. V. O., de Jesus L. A., Fonseca L. K. S., & Sampaio D. S. (2017). La vejez LGBT: Un análisis de las representaciones sociales entre los ancianos brasileños [LGBT old age: An analysis of social representations among Brazilian elderly]. *Ciencias Psicológicas*, *11*(2), 155–163. https://doi.org/10.22235/cp.v11i2.1487

Samejima F. A. (1969). *Estimation of latent ability using a response pattern of graded scores*. (Psychometric Monograph No. 17). Richmond, VA: Psychometric Society. Retrieved from https://www.psychometrika.org/journal/online/MN17.pdf

Santos J. V. O., Carlos K. P. T., de Araújo L. F., & Negreiros F. (2017). Compreendendo a velhice LGBT: Uma revisão da literatura [Understanding LGBT old age: A literature review]. In L. F. de Araújo & C. M. R. G. de Carvalho (Eds.), *Envelhecimento e práticas gerontológicas* [Aging and gerontological practices] (1st Ed., pp. 81–96). Curitiba and Teresina, Brazil: Editora CRV and EDUFPI.

Siqueira R. L., Botelho M. I. V., & Coelho F. M. G. (2002). A velhice: Algumas considerações teóricas e conceituais [Old age: Some theoretical and conceptual considerations]. *Ciência & Saúde Coletiva*, *7*(4), 899–906. https://doi.org/10.1590/S1413-81232002000400021

Urbina S. (2007). Introdução aos testes psicológicos e seus usos [Introduction to psychological tests and their uses]. In Em S. Urbina (Ed.), *Fundamentos da testagem moderna* [Fundamentals of modern testing] (pp. 11–41). Porto Alegre, Brazil: Artmed.

Villas-Boas S., Ramos N., Amado J., Oliveira A., & Montero I. (2017). A redução de estereótipos e atitudes negativas entre gerações o contributo da educação intergeracional [The reduction of stereotypes and negative attitudes between generations the contribution of intergenerational education]. *Laplage em Revista*, *3*(3), 206–220. https://doi.org/10.24115/S2446-6220201733365p.206-220

Santos D. K., & Lago M. C. S. (2013). Estilísticas e estéticas do homoerotismo na velhice: narrativas de si. *Sexualidad, salud y sociedad*, *15*, 113-147. https://dx.doi.org/10.1590/S1984-64872013000300006