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CONTENTS

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Assessing the dimensionality of a New Italian Covid-19 Conspiracy Beliefs Questionnaire

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ABSTRACT. Questo studio aveva l'obiettivo di sviluppare un questionario italiano per misurare le credenze cospirazioniste riguardo il virus Covid-19 e gli agenti correlati coinvolti nella sua diffusione. Dall'analisi fattoriale sono emersi tre fattori. Il primo riguardava le origini del Covid-19 e i possibili scopi dietro la sua diffusione. Il secondo comprendeva le cospirazioni sui vaccini, il 5G, le cospirazioni guidate da Bill Gates e dalle organizzazioni ebraiche. Infine, il terzo fattore rappresentava lo scetticismo.

SUMMARY. This study aimed to develop a questionnaire to measure conspiracy beliefs about Covid-19, the related agents involved in its diffusion, the contemporary conspiracy theories about these agents, and assess its dimensionality and factorial structure. Eight different factor retention criteria were compared and three factors were retained. The first factor contained items on conspiracy beliefs about the origins of Covid-19 and the possible purposes behind its spreading. The second factor considered conspiracies about vaccines, 5G or conspiracies led by Bill Gates or Jewish organizations. The third factor was skepticism about the existence of world events. The three-factor model reached an acceptable fit. The assessment of conspiracy beliefs or the evaluation of the interventions to counter conspiracy beliefs might be possible future applications for this questionnaire.

Keywords: *Covid-19, Conspiracy beliefs, Italian questionnaire*

INTRODUCTION

Conspiracy theories regard the belief that a group of people is acting to pursue hidden malicious objectives (Zonis & Joseph, 1994). It is essential to investigate conspiracy theories because they can influence human behavior. For instance, subjects with conspiracy beliefs about Covid-19 had a reduced adherence to social distancing measures (Bierwiaczonek, Kunst & Pich, 2020). Moreover, they did antibody tests or vaccines less likely (Freeman et al., 2020). Conspiracy theories are robust despite counterfactual evidence (Darwin, Neave & Holmes, 2011) because they might satisfy psychological needs, explaining why people often believe in these theories. Specifically, Douglas, Sutton

and Cichocka (2017) identified the social (i.e., maintaining a positive image of the group), epistemic (i.e., being certain or consistent), and existential need (i.e., feeling secure or in control of the situation). For instance, national narcissism (i.e., a positive bias toward the ingroup), insufficient knowledge of Covid-19, and high anxiety and insecurity levels were positively associated with conspiracy beliefs about Covid-19 (Sallam et al., 2020; Sternisko, Cichocka, Cislak & Van Bavel, 2020).

Lately, an Infodemic has become stronger and stronger, where fake news has generated conspiracy theories (Diseases, 2020). Furthermore, conspiracies about Covid-19 have been linked to other theories about related agents that play a role in its spread, such as those on 5G antennas, vaccines, Bill Gates, Jews, lockdowns, malicious purposes of governments and in extreme cases, the complete denial of it. Social media analysis has revealed widespread of these theories. For instance, 5G antennas would favor the spread of Covid-19 (Ahmed, Vidal-Alaball, Downing & Seguí, 2020; Stephens, 2020). Another frequent theory states that Bill-Gates has created Covid-19 to implant microchips through vaccines (Goodman & Carmichael, 2020). Covid-19 is also thought of as a bioweapon released by governments to reduce the population (McManus, D'ardenne & Wessely, 2020). Moreover, Jews or Big-Pharma are often accused of having created Covid-19 to profit through vaccines (Freeman et al., 2020).

Some instruments measure general conspiracy beliefs (Brotherton, French & Pickering, 2013) or conspiracy mentality (Bruder, Haffke, Neave, Nouripanah & Imhoff, 2013; Stojanov & Halberstadt, 2019). Precisely, the *Generic Conspiracist Beliefs Scale* (*GCBS*; Brotherton et al., 2013) measures the level of engagement in general conspiracy theories (i.e., conspiracist ideation). Similarly, the *Conspiracy Mentality Questionnaire* (*CMQ*; Bruder et al., 2013) assesses the level of susceptibility to explanations based on conspiracy theories and the level of engagement in conspiracist ideation. In addition, GCBS and CMQ propose a list of conspirations where the participant has to indicate the level of agreement. Conversely, the *Flexible Inventory of Conspiracy Suspicions* (*FICS*; Wood, 2017) requires subjects to complete incomplete generic statements to detect conspiratorial beliefs about a specific topic. Finally, the *Conspiracy Mentality Scale* (*CMS*; Stojanov & Halberstadt, 2019) is useful to detect the engagement level in conspiracies independently from the content of these theories.

AIM OF THE STUDY

Therefore, this study aimed to develop an instrument that investigated the contemporary conspiracy beliefs about Covid-19 and the related agents. Specifically, we aimed to assess the dimensionality of this new questionnaire following an explorative approach. Hence, we have decided to include items considering these agents after sifting through public posts on Italian social media platforms (such as Facebook, YouTube and so on) and consulting scientific literature where Covid-19 were explained through conspiracy theories (Goodman & Carmichael, 2020; McManus et al., 2020; Meese, Frith & Wilken, 2020). However, we wanted to investigate also the contemporary conspiracy theories about vaccines, Bill Gates or Jews, regardless of Covid-19. We believe that evaluating conspiracy beliefs about these topics can predict the intentions of the population to engage in behavior of social interest (such as getting vaccinated or following lockdown restrictions). Detecting conspiracy theories can be the first step to organizing a persuasive campaign that aims at preventing and fighting conspiracy theories to encourage appropriate behavior in case of health emergencies. Finally, to the best of our knowledge, this is the first Italian questionnaire about conspiracy beliefs.

METHOD

Participants

Five hundred sixteen subjects have been recruited through social networks for a correlation study investigating the link between conspiracist ideation and defense mechanisms (Antichi & Giannini, 2022). Every participant had to be at least 18 years old (N = 516, 197 men, 314 women, 5 other, M_{age} = 32.69, SD_{age} = 14.11). The majority was Italian (98.6%), and the sample's total was of white ethnicity. Regarding Italian regions, 79.5% of participants were from the Center, while the other zones were a minority, such as North-West (7.9%), North-East (7.6%), Southern (2.5%), and Peninsular (2.5%). Most participants were single (71.5%) and lived with their parents (53.1%). In addition, 40.5% were unemployed, 42.8% were employed, while the minorities were housewives (11.4%), students (3.3%), and retirees (1.9%). The majority had a total family income lower than 36,151 euros (55.4%) or between the 36,151 -

70,000€ range (30.8%) and they were homeowners (77.1%). Most participants held a high school degree (45.3%), while 25.8% had a bachelor's degree and 20% had a master's degree. Finally, left (30.4%) or Centre-left (32.9%) political orientations were predominant, followed by the Centre-right orientation (15.7%).

Measures

- *Socio-demographic characteristics*. The online questionnaire contained a section asking nationality, Italian region, ethnicity, gender identity, marital status, housing situation, living situation, highest educational qualification, total household income, employment, and political orientation.
- *Contemporary conspiracist beliefs section*. We have created 22 items to investigate contemporary conspiracist beliefs about Covid-19, vaccines, lockdown, the possible roles of 5G antennas, Bill Gates, Jews, governments, and pharmaceutical companies on subjects' lives. Items have been developed extracting the content of public posts on Italian social media websites and scientific literature (Goodman & Carmichael, 2020; McManus et al., 2020; Meese et al., 2020). Participants had to indicate their level of agreement or disagreement on a 5-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree). Examples of items were "Covid-19 has been released to reduce the population" or "5G antennas are instruments that governments use to control people's lives". There was only one reversed item (number 3; "The Covid-19 virus comes from a species leap, which has allowed human infection"). A higher score corresponded to a greater agreement on current conspiracy theories (see Appendix for the self-report). Antichi and Giannini (2022) estimated convergent validity (r = .79, p<.01) using the *Generic Conspiracist* Beliefs Scale (GCBS; Brotherton et al., 2013). However, there were no other measures to test discriminant validity. Moreover, test-retest reliability could not be calculated because data have been collected only once.

Procedure

The university's ethics committee approved the study. Participants were recruited on social networks (such as Facebook or LinkedIn). They participated if they were interested, clicking on the link for the questionnaire. Subjects had to accept informed consent before they could complete the questionnaire. Participants were not asked to report their names, surnames, email addresses, or identification codes. The questionnaire took about 15 minutes to answer. Participants did not receive any compensation.

Data analysis

Multiple participation, participants with age lower than 18 years, and more than 10% of missing answers per case were exclusion criteria for data analysis.

- *Item analysis*. Item means, standard deviations, kurtosis, skewness, correlation coefficients, and Cronbach's alpha were calculated with Statistical Package for Social Science (SPSS) version 26.
- *Exploratory factor analysis* (*EFA*). We compared the performance of eight different factor retention criteria - the Kaiser-Guttman rule, the Scree-test, PA based on the common factor model using the 50%-percentile as well as the 95%-percentile of the eigenvalue distributions, CD with 500 simulated data sets and an α-level of 30%, the EKC, the hull method based on the CFI and the machine-learning-based Factor Forest. The Scree-test and both PA implementations were conducted with the psych package (Revelle, 2021) in R, while the EFA tools package (Steiner & Grieder, 2020) was used for CD and the hull method. The Kaiser-Guttman rule and the EKC were also conducted using base R, and the Factor Forest was applied using the pre-trained model from Goretzko and Bühner (2020) retrieved from https://osf.io/mvrau/.

  EFA tested the factorial structure of the instrument. EFA with weighted least squares (WLS) estimation and Promax/Geomin rotation was conducted using R (psych package). WLS was used as the factor extraction method to account for the categorical nature of the data and the rather high skewness in some item distributions. The Kaiser-Meyer-Olkin (KMO) criterion and Bartlett's test of sphericity were performed to determine the applicability of EFA. The number of factors was set based on the output of the different factor retention criteria. The uniqueness, communality, and complexity indices were estimated for each item. The RMSR (Root Mean Square of Residuals), TLI (Tucker-Lewis Index), and RMSEA (Root Mean Square Error of Approximation) were used to determine the goodness of model fit.

RESULTS

No subjects have been excluded, and there were no missing data. The average of the total score was 29.60 (SD = 14.06). Every item was right-skewed with skewness ranging from .38 to 7.57. Except for the second and the twenty-second items, every item had a positive correlation greater than .40 (p<.001) with the total score (see Table 1 for item analysis).

The Exploratory Factor Analysis has shown that data were deemed suitable for factor analysis. In fact, KMO's value was .95 and Bartlett's test was significant (χ^2 = 7958.89, p<.001).

In a first analysis, the number of factors was set to four according to the outcome of the factor retention process (see Table 2) and Promax rotation (see Table 3 for the standardized loadings) was used. However, only the second item (i.e., Covid-19 originated from a laboratory and was released unintentionally) loaded substantially on the third factor. It had a mean of 2.34 (SD = 1.19), a skewness score of .38, and a kurtosis score of −1.09. The item-total score correlation was .146 (p<.01), the lowest among all items. We decided to eliminate it due to the low item-total correlation. Furthermore, content validity was not impaired since items 1, 3, 4, 5, 6 and 7 investigated the origin and hidden purposes behind Covid-19's diffusion. Hence, we decided to remove the second item for a second analysis using Geomin rotation to foster interpretability (see Table 4). Excluding item 2, half of the factor retention criteria suggested three factors (see Table 2). While the Scree-test (which is rather subjective and less reliable than other criteria) and the hull method suggested a one-factor solution for both item sets (with and without item 2) CD changed from a four-factor solution to a one-factor solution as well (this instability reduces the trustworthiness of CD in this particular case). The more reliable factor retention criteria (especially PA based on the 95%-quantile, the Factor Forest and EKC, see, for example, Auerswald & Moshagen, 2019; Goretzko & Bühner, 2020) agreed on a three-factor solution which is why we decided to retain three factors. Regarding this second solution, the first factor consisted of items reflecting conspiracy beliefs about the origins of Covid-19 and the possible purposes behind its spreading (e.g., item 1, "Covid-19 originated from a laboratory and was released voluntarily by one or more countries that already held the cure"). It was formed by the items 1, 3, 5, 6, 7, 8, 16, 17, 18, 19, and 20 and accounted for 58% of the explained variance. The second factor covered conspiracies about vaccines (e.g., item 14, "Vaccines cause side effects that pharmaceutical companies tend to hide to citizens"), 5G or conspiracies led by Bill Gates or Jewish organizations. It was composed of items 9, 10, 11, 12, 13, 14, and 15 and accounted for 33% of the explained variance. Finally, the third dimension consisted of items 4, 21, 22 and accounted for 9% of the explained variance. It reflected skepticism about the existence of world events (e.g., item 4, "Covid-19 does not exist").

Moreover, items 9 and 21 showed substantial loadings in more than 2 factors (i.e., cross-loadings). However, we decided to retain these items due to content validity reasons. If item 21 had been discarded, the skepticism factor would have become meaningless as it would have been represented solely by the flat-earth theory item. Besides, the existence of cross-loadings is not a problem per-se; it just amplifies the impression of highly inter-related factors. Correlations between factors varied from .32 to .77 (see Table 5).

The Cronbach's α coefficients for each dimension were .94, .90, and .57. While the internal consistency estimates for factors one and two are usually considered high, the estimate for the third factor, which only consists of three indicators, is substantially lower and has to be discussed critically. Moreover, items' communalities varied from .14 to .81, while items' uniqueness ranged from .19 to .86. In addition, item complexity varied between 1 and 1.9, with a mean of 1.3.

Regarding fit indexes, results were as follows: RMSR = .03, TLI = .908, RMSEA = .081, 90% CI [.075, .087]. These results suggest that the three-factor model fit was quite good.

DISCUSSION

This study aimed to build an instrument that measured conspiracy beliefs about Covid-19, its related agents involved in its spreading, and the conspiracy beliefs about these agents, such as Bill Gates, 5G antennas, vaccines and so on. EFA found three dimensions for the questionnaire. The estimates of Cronbach's α for each dimension were .94, .90, and .57. These results could depend on the small number of items related to the third dimension and the greater numbers for the first and the second dimension.

This questionnaire mainly focuses on Covid-19. We were interested in the Infodemic that began in 2020, characterized by fake news that has favored the development of conspiracy theories (Diseases, 2020). Conspiracy beliefs about the

Table 1 – Item analysis

Item	Mean (SD)	Skewness	Kurtosis	Item-total score correlation
1	1.89(1.14)	1.04	−.08	.839**
2	2.34(1.19)	.38	−1.09	.146**
3	2.60(1.27)	.46	−.79	.405**
4	1.11(.46)	4.53	22.08	.488**
5	1.62(1.02)	1.49	1.10	.784**
6	1.54(.99)	1.86	2.64	.865**
7	1.78(1.14)	1.25	.37	.816**
8	1.61(1)	1.58	1.57	.862**
9	1.25(.67)	2.84	7.93	.644**
10	1.59(1)	1.58	1.51	.764**
11	1.33(.76)	2.06	2.85	.668**
12	1.56(.98)	1.59	1.35	.739**
13	1.66(1.03)	1.46	1.26	.788**
14	2.03(1.13)	.94	.01	.768**
15	1.95(1.15)	.99	.05	.733**
16	1.79(1.18)	1.35	.72	.856**
17	1.74(1.16)	1.45	.90	.807**
18	2.02(1.26)	1.05	−.13	.609**
19	1.98(1.26)	.99	−.27	.795**
20	2.25(1.32)	.63	−.91	.755**
21	1.12(.48)	4.65	24.69	.429**
22	1.05(.32)	7.57	64.85	.218**

Note. The table shows the main descriptive statistics for every item, such as mean and standard deviation. Skewness and Kurtosis indices are calculated to assess the distribution of each item. Item-total score correlation column reports every correlational coefficient between each item score and the total score.
** $p<.01$

Table 2 – Suggested number of factors based on factor retention criteria

	Suggested number of factors	
Factor retention criterion	**Solution with every item**	**Solution without item two**
Kaiser-Guttman	4	3
Scree-test	1	1
Parallel analysis (95% percentile)	3	3
Parallel analysis (50% percentile)	4	4
Comparison data	4	1
Empirical Kaiser Criterion (restricted)	4	3
Factor forest (ML model)	4	3
Hull method (CFI based)	1	1

origins of Covid-19 included an unintended escape from a scientific laboratory or the calculated release to reduce or control the world's population, earn money with vaccines and drugs, or benefit economically some countries (Douglas, 2021). Furthermore, lockdowns or the number of deaths by Covid-19 could be used to control citizens by manipulating and fabricating data or lying about the number of deaths by Covid-19 (Open, 2021a). For instance, there are conspiracy theories stating that dead Covid patients were actors. One evidence is a video where an allegedly dead man smokes a cigarette (Open, 2021b). Another Italian video that has been shared thousands of times claiming that the staff of the ambulances had the order to activate sirens in the streets of the cities to generate alarmism (Open, 2020).

Regarding the second dimension, conspiracies about vaccines containing hidden substances, side-effects being intentionally kept secret, or possible diseases that could be linked to getting vaccinated are also covered in the questionnaire. Moreover, these conspiracies regarded the potential roles of Bill Gates, Jews, and 5G antennas to spread Covid-19. In addition, the second dimension assessed the beliefs that Bill Gates and Jews could have played a role in the production of unsafe vaccines and the construction of 5G antennas. For instance, Bill Gates is often accused of implanting microchips via vaccination to control the human population (Goodman & Carmichael, 2020). Whereas Jews are charged using Covid as a weapon to control the world or kill Palestinians (Gerstenfeld, 2020).

Finally, the skepticism dimension investigated the denial beliefs of the existence of Covid-19, the environmental pollution, or the Earth's sphericity. The dimension of skepticism is generally related to conspiracy theories, similar to the CMS (Stojanov & Halberstadt, 2019). However, skepticism in CMS was related to the belief that human knowledge has limits. In fact, it was linked to rational thinking, even if the authors found no correlation between these constructs. In contrast, the skepticism factor in this questionnaire reflects a skepticism toward the existence of things such as Covid-19. For instance, being skeptical of the existence of environmental pollution predicts the

Table 3 – Solution with four factors

Item	Factor 1	Factor 2	Factor 3	Factor 4
1	.83	−.02	.05	.08
2	.08	.02	.79	.10
3	.46	.03	.12	−.07
4	.09	−.01	−.03	.55
5	.73	−.10	.02	.21
6	.61	.02	−.12	.34
7	.77	−.08	−.01	.18
8	.53	.15	.01	.28
9	−.09	.39	−.06	.48
10	.16	.41	−.07	.30
11	−.02	.39	.01	.41
12	.10	.46	.06	.28
13	.02	.86	−.05	<.01
14	.16	.83	.07	−.16
15	.02	.88	.02	.10
16	.58	.27	−.04	.05
17	.70	.03	−.07	.12
18	.56	−.02	.07	.07
19	.92	.05	−.09	−.19
20	.83	.18	< .01	−.28
21	.15	−.13	−.06	.53
22	−.11	−.03	.09	.46

Note. This table shows the factor matrix where the four-factor-solution is reported. Standardized loadings after promax rotation are presented.

Table 4 – Solution with three factors

Item	Factor 1	Factor 2	Factor 3	Communalities	Uniqueness	Complexity
1	.90	−.02	−.03	.75	.25	1
3	.48	−.01	−.13	.20	.80	1.1
4	.24	.12	.38	.36	.64	1.9
5	.83	−.07	.08	.66	.34	1
6	.72	.08	.22	.81	.19	1.2
7	.85	−.05	.06	.71	.29	1
8	.63	.21	.15	.75	.25	1.3
9	.01	.53	.37	.54	.46	1.8
10	.22	.50	.21	.61	.39	1.8
11	.07	.51	.30	.52	.48	1.7
12	.16	.55	.18	.57	.43	1.4
13	−.03	.89	.02	.77	.23	1
14	.09	.81	−.14	.72	.28	1.1
15	−.05	.89	−.07	.69	.31	1
16	.61	.29	.01	.72	.28	1.4
17	.75	.06	.04	.65	.35	1
18	.60	−.02	−.02	.34	.66	1
19	.91	−.01	−.20	.70	.30	1.1
20	.81	.09	−.31	.66	.34	1.3
21	.30	−.01	.37	.31	.69	1.9
22	.01	.08	.33	.14	.86	1.1

Note. his table shows the factor matrix where the solution with three factors is reported. Every item has the factor loadings for each factor. Geomin rotation has been used to improve interpretability. Item 2 has been eliminated. Communalities (i.e., the proportion of shared variance), Uniqueness (i.e., specific and error variances), and Complexity (i.e., how much an item indicates a single construct) indexes are shown for every item.

Table 5 – Factor Correlation Matrix

Factor	1	2	3
1. Conspiracy about Covid-19	1		
2. Contemporary Conspiracy	.77	1	
3. Skepticism	.40	.32	1

conspiracy belief that environmental pollution is a hoax that is designed to serve hidden agendas (Sarathchandra & Haltinner, 2020). In addition, skepticism about Covid-19 is predicted by medical conspiracy theories (Gemenis, 2021). Also, skepticism influences behavior. For example, believing that Covid is a hoax is associated with a reduced willingness to socially distance (Imhoff & Lamberty, 2020).

Although there were three different dimensions, the first two factors were highly correlated ($r = .77$). This could be due to the monologic nature of conspiracy theories - namely, the likelihood of believing in conspiracies if other conspiracy theories have already been accepted (Franks, Bangerter, Bauer, Hall & Noort, 2017). The monological system has also been found for conspiracies about Covid-19 and related agents (Miller, 2020). An alternative explanation could be that the thematic of the second dimension might overlap with the one of the first. Bill Gates, Jews, or 5G antennas are assumed to be possible agents for spreading Covid-19. Hence, shared common variance might be explained by the fact that both factors are related to indicators discussing the role of these different agents.

Moreover, instruments about conspiracy theories are usually developed using classical factor retention criteria, such as Scree-test, Kaiser-Guttman rule, or Parallel Analysis (Brotherton et al., 2013; Bruder et al., 2013; Stojanov & Halberstadt, 2019). Instead, we used eight different factor retention methods for exploratory factor analysis, comparing the results. In doing so, we tried to ensure that we were able to carve out the true factorial structure of our concept. Furthermore, our questionnaire is focused on specific contemporary topics, such as Covid-19, 5G antennas, vaccines, and so on. In contrast, the GCBS (Brotherton et al., 2013), CMQ (Bruder et al., 2013), FICS (Wood, 2017), and CMS (Stojanov & Halberstadt, 2019) measure the agreement on general conspiracy beliefs or/and the tendency to engage in these theories.

CONCLUSION

The present study can critically contribute to the psychological research on conspiracy beliefs. It introduces the first Italian questionnaire that measures conspiracy beliefs - especially about Covid-19. Hence, there could be interesting applications for it. For instance, since it represents the subjects' beliefs in contemporary conspiracy theories, future studies could investigate the relationship between conspiracy theories and intentions to engage in certain adaptive behaviors, such as getting vaccinated, keeping social distance, or respecting restrictions. Another important application is the evaluation of interventions to counter conspiracy beliefs. Efficacy and effectiveness could be estimated by evaluating the change of factor scores in this questionnaire after the intervention.

However, there are several limitations to this study. First, only one sample has been used to conduct the analysis, and no CFA was run as the sample size was not large enough to conduct an EFA and CFA on separate data subsets. Hence, in future research, the three-factor structure has to be evaluated in a confirmatory setting (using a CFA) and the generalizability of our results has to be tested. In a confirmatory study, different measures of convergent and

divergent validity, as well as investigations of retest reliability, have to be conducted. Second, in this study, most of the subjects were women. In fact, women seem to be less likely to believe in conspiracy theories about Covid-19 (Cassese, Farhart & Miller, 2020), so further research should focus on a more gender-balanced sample. In addition, 45.3% of participants hold a high school degree. Scientific literature indicates that a high educational level is a protection factor against conspiracy beliefs (Douglas, Sutton, Callan, Dawtry & Harvey, 2016; van Prooijen, 2017; van Prooijen, Krouwel & Pollet, 2015). Thus, sample characteristics might limit the generalizability of our results. Future research needs to generalize the results by assessing a more diverse and representative sample of Italian society. Third, the first scale is unbalanced compared to the other two, having a higher number of items. Finally, this self-report measure focuses on conspiracy beliefs about Covid-19 and, therefore, cannot be used as a general measure of conspiracy beliefs such as GCBS (Brotherton et al., 2013) or CMQ (Bruder et al., 2013).

To conclude, further studies are needed to assess test-retest reliability and criterion validity. In addition, different samples with various characteristics have to be used to extend generalizability. Finally, future studies should use this questionnaire to investigate the link between conspiracy theories and behavioral intention or test health campaigns' efficacy.

References

ANTICHI, L. & GIANNINI, M. (2022). *Investigating the association between defensive style and conspiracist ideation: A correlational study*. Manuscript submitted for publication.

AUERSWALD, M., & MOSHAGEN, M. (2019). How to determine the number of factors to retain in exploratory factor analysis: A comparison of extraction methods under realistic conditions. *Psychological Methods*, *24* (4), 468-491. https://doi.org/10.1037/met0000200

AHMED, W., VIDAL-ALABALL, J., DOWNING, J. & SEGUÍ, F.L. (2020). COVID-19 and the 5G conspiracy theory: Social network analysis of twitter data. *Journal of Medical Internet Research*, *22* (5), 1-9. doi.org/10.2196/19458

BIERWIACZONEK, K., KUNST, J.R. & PICH, O. (2020). Belief in COVID-19 conspiracy theories reduces social distancing over time. *Applied Psychology: Health and Well-Being*, *12* (4), 1270-1285. doi.org/10.1111/aphw.12223

BROTHERTON, R., FRENCH, C.C. & PICKERING, A.D. (2013). Measuring belief in conspiracy theories: The generic conspiracist beliefs scale. *Frontiers in Psychology*, *4*, 279. doi.org/10.3389/fpsyg.2013.00279

BRUDER, M., HAFFKE, P., NEAVE, N., NOURIPANAH, N. & IMHOFF, R. (2013). Measuring individual differences in generic beliefs in conspiracy theories across cultures: Conspiracy Mentality Questionnaire. *Frontiers in Psychology*, *4*, 225. doi.org/10.3389/FPSYG.2013.00225

CASSESE, E.C., FARHART, C.E. & MILLER, J.M. (2020). Gender differences in Covid-19 conspiracy theory beliefs. *Politics and Gender*. doi.org/10.1017/S1743923X2000040

DARWIN, H., NEAVE, N. & HOLMES, J. (2011). Belief in conspiracy theories: The role of paranormal belief, paranoid ideation and schizotypy. *Personality and Individual Differences*, *50* (8), 1289-1293. doi.org/10.1016/j.paid.2011.02.027

DISEASES, T.L.I. (2020). The Covid-19 infodemic. *The Lancet. Infectious Diseases*, *20* (8), 875. doi.org/10.1016/S1473-3099(20)30565-X

DOUGLAS, K.M. (2021). Covid-19 conspiracy theories. *Group Processes & Intergroup Relations*, *24* (2), 270-275. doi.org/10.1177/1368430220982068

DOUGLAS, K.M., SUTTON, R.M., CALLAN, M.J., DAWTRY, R.J. & HARVEY, A.J. (2016). Someone is pulling the strings: Hypersensitive agency detection and belief in conspiracy theories. *Thinking and Reasoning*, *22* (1), 57-77. doi.org/10.1080/13546783.2015.1051586

DOUGLAS, K.M., SUTTON, R.M. & CICHOCKA, A. (2017). The psychology of conspiracy theories. *Current Directions in Psychological Science*, *26* (6), 538-542. doi.org/10.1177/0963721417718261

FRANKS, B., BANGERTER, A., BAUER, M.W., HALL, M. & NOORT, M.C. (2017). Beyond "monologicality"? Exploring conspiracist worldviews. *Frontiers in Psychology*, *8*, 861. doi.org/10.3389/fpsyg.2017.00861

FREEMAN, D., WAITE, F., ROSEBROCK, L., PETIT, A., CAUSIER,

C., EAST, A., JENNER, L., TEALE, A.L., CARR, L., MULHALL, S., BOLD, E. & LAMBE, S. (2020). Coronavirus conspiracy beliefs, mistrust, and compliance with government guidelines in England. *Psychological Medicine*, 1-13. https://doi.org/10.1017/S0033291720001890

GEMENIS, K. (2021). Explaining conspiracy beliefs and scepticism around the COVID-19 pandemic. *Swiss Political Science Review, 27* (2), 229-242. doi.org/10.1111/SPSR.12467

GERSTENFELD, M. (2020). Anti-Jewish coronavirus conspiracy theories in historical context. *BESA Center Perspectives Paper, 1* (513), 1-4. https://besacenter.org/wp-content/uploads/2020/03/1513-Anti-Jewish-Coronavirus-Conspiracy-Theories-in-Historical-Context-Gerstenfeld-final.pdf

GOODMAN, J. & CARMICHAEL, F. (2020). *Coronavirus: Bill Gates "Microchip" conspiracy th*eory and other vaccine claims fact-checked. BBC News, Reality Check. https://www.bbc.com/news/52847648

GORETZKO, D. & BÜHNER, M. (2020). One model to rule them all? Using machine learning algorithms to determine the number of factors in exploratory factor analysis. *Psychological Methods, 25* (6), 776-786. doi.org/10.1037/MET0000262

IMHOFF, R. & LAMBERTY, P. (2020). A bioweapon or a hoax? The link between distinct conspiracy beliefs about the coronavirus disease (Covid-19): Outbreak and pandemic behavior. *Social Psychological and Personality Science*, *11* (8), 1110-1118. doi.org/10.1177/1948550620934692

McMANUS, S., D'ARDENNE, J. & WESSELY, S. (2020). Correspondence Covid conspiracies: Misleading evidence can be more damaging than no evidence at all. *Psychological Medicine*, 1-2. doi.org/10.1017/S0033291720002184

MEESE, J., FRITH, J. & WILKEN, R. (2020). Covid-19, 5G conspiracies and infrastructural futures: *Media International Australia*, *177* (1), 30-46. doi.org/10.1177/1329878X20952165

MILLER, J.M. (2020). Do Covid-19 conspiracy theory beliefs form a monological belief system? *Canadian Journal of Political Science*, *53* (2), 319-326. doi.org/10.1017/S0008423920000517

OPEN (2020, July 6). *Coronavirus, ordinavano agli operatori del 118 di suonare le sirene per terrorizzare tutti? Nessuna prova.* https://www.open.online/2020/07/06/coronavirus-ordinavano-operatori-118-suonare-sirene-terrorizzare-tutti/

OPEN (2021a, March 3). *Coronavirus, bollettini gonfiati con falsi morti Covid? No. Ecco come vengono classificati i decessi*. https://www.open.online/2021/03/03/coronavirus-bollettini-gonfiati-con-falsi-morti-covid-no-ecco-come-vengono-classificati-i-decessi/

OPEN (2021b, April 3). *Finti morti Covid-19 fumano la sigaretta dentro i sacchi neri? La teoria del complotto in un video musicale*. https://www.open.online/2021/04/03/teoria-del-complotto-finti-morti-covid-video-musicale/

REVELLE, W. (2021, June 18). *Procedures for Psychological, Psychometric, and Personality Research*. https://personality-project.org/r/psych/

SALLAM, M., DABABSEH, D., YASEEN, A., AL-HAIDAR, A., ABABNEH, N.A., BAKRI, F.G. & MAHAFZAH, A. (2020). Conspiracy beliefs are associated with lower knowledge and higher anxiety levels regarding covid-19 among students at the university of Jordan. *International Journal of Environmental Research and Public Health*, *17* (14), 1-15. doi.org/10.3390/ijerph17144915

SARATHCHANDRA, D. & HALTINNER, K. (2020). How believing climate change is a "hoax" shapes climate skepticism in the United States. *Environmental Sociology*, *7* (3), 225-238. doi.org/10.1080/23251042.2020.1855884

STEINER, M.D. & GRIEDER, S. (2020). EFAtools: An R package with fast and flexible implementations of exploratory factor analysis tools. *Journal of Open Source Software*, *5* (53), 2521. https://doi.org/10.21105/JOSS.02521

STEPHENS, M. (2020). A geospatial infodemic: Mapping Twitter conspiracy theories of Covid-19. *Dialogues in Human Geography*, *10*(2), 276–281. https://doi.org/10.1177/2043820620935683

STERNISKO, A., CICHOCKA, A., CISLAK, A. & VAN BAVEL, J.J. (2020). National narcissism and the belief and the dissemination of conspiracy theories during the Covid-19 pandemic: Evidence from 56 countries. *Personality and Social Psychology Bulletin*, Advance Online Publication. https://doi.org/10.31234/osf.io/4c6av

STOJANOV, A. & HALBERSTADT, J. (2019). The Conspiracy Mentality Scale: Distinguishing between irrational and rational suspicion. *Social Psychology*, *50* (4), 215-232. doi.org/10.1027/1864-9335/a000381

VAN PROOIJEN, J.W. (2017). Why education predicts decreased belief in conspiracy theories. *Applied Cognitive Psychology*, 31 (1), 50-58. doi.org/10.1002/acp.3301

VAN PROOIJEN, J.W., KROUWEL, A.P.M. & POLLET, T.V. (2015). Political extremism predicts belief in conspiracy theories. *Social Psychological and Personality Science*, *6* (5), 570-578. doi.org/10.1177/1948550614567356

ZONIS, M. & JOSEPH, C.M. (1994). Conspiracy thinking in the Middle East. *Political Psychology*, *15* (3), 443-459. doi.org/10.2307/3791566

APPENDIX

List of items

Number of items	Description	
1	Covid-19 originated from a laboratory and was released voluntarily by one or more countries that already held the cure.	Il virus Covid-19 origina da un laboratorio ed è stato rilasciato in modo volontario da uno o più paesi che detenevano già la cura.
2[a]	Covid-19 originated from a laboratory and was released unintentionally.	Il virus Covid-19 origina da un laboratorio ed è stato rilasciato in modo involontario.
3	Covid-19 originated from a species leap, which has allowed human infection.	Il virus Covid-19 proviene da un salto di specie, che ha permesso l'infezione dell'uomo.
4	Covid-19 does not exist.	Il virus Covid-19 non esiste.
5	Covid-19 has been released to reduce the population.	Il virus Covid-19 è stato rilasciato per ridurre la popolazione.
6	Covid-19 has been released by individual governments to control the population more easily.	Il virus Covid-19 è stato rilasciato dai singoli governi per poter controllare più facilmente la popolazione.
7	One or more countries have released Covid-19 to increase their earnings damaging others.	Il virus Covid-19 è stato rilasciato da uno o più paesi per incrementare i loro guadagni a scapito di altri.
8	Covid-19 has been released by drug companies to boost their earnings.	Il virus Covid-19 è stato rilasciato dalle case farmaceutiche per incrementare i loro guadagni.
9	Covid-19 has been able to spread more due to the presence of 5G antennas.	Il virus Covid-19 ha potuto diffondersi in modo maggiore per la presenza di antenne 5G.
10	Bill Gates is involved in at least one of the following phenomena: the spread of the Covid-19 virus, construction of 5G antennas, production of unsafe vaccines.	Bill Gates è coinvolto in almeno uno dei seguenti fenomeni: diffusione del virus Covid-19, costruzione di antenne 5G, produzione di vaccini non sicuri.
11	A group of Jews is involved in at least one of the following phenomena: the spread of the Covid-19 virus, construction of 5G antennas, production of unsafe vaccines.	Un gruppo di ebrei è coinvolto in almeno uno dei seguenti fenomeni: diffusione del virus Covid-19, costruzione di antenne 5G, produzione di vaccini non sicuri.
12	5G antennas are an instrument that is used by governments to control people's lives.	Le antenne 5G sono uno strumento utilizzato dai governi per controllare le vite delle persone.
13	Vaccines cause chronic diseases (e.g., autism or cancer).	I vaccini causano malattie croniche (per esempio l'autismo o il cancro).
14	Vaccines cause side effects that pharmaceutical companies tend to hide to citizens.	I vaccini causano effetti collaterali che le cause farmaceutiche tendono a nascondere ai cittadini.
15	Vaccines contain substances harmful to health (e.g., heavy metals).	Nei vaccini sono presenti sostanze nocive per la salute (per esempio i metalli pesanti).

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continued

Number of items	Description	
16	The cure for Covid-19 already exists, but it has not been adopted because it would not be as profitable as vaccines.	La cura per il Covid-19 esiste già ma non viene adottata perché non sarebbe redditizia come i vaccini.
17	Lockdowns have been designed to control citizens.	I lockdown imposti alla popolazione sono stati progettati per controllare la popolazione.
18	The generalized or local lockdowns have not been helpful to decrease Covid-19's infections.	I lockdown generalizzati o locali imposti alla popolazione non sono serviti per far diminuire i contagi del virus Covid-19.
19	Governments have intentionally lied about the total number of people infected with Covid-19, declaring one greater than the real one.	I governi hanno mentito intenzionalmente sul numero totale dei contagiati da Covid-19, dichiarandone uno maggiore rispetto a quello reale.
20	Governments intentionally lied about the death number from Covid-19.	I governi hanno mentito intenzionalmente sul numero dei morti da Covid-19.
21	The pollution of the planet is an invention of the strong world powers.	L'inquinamento del pianeta è un'invenzione dei poteri forti mondiali.
22	The Earth is flat, but it is kept hidden to citizens.	La Terra è piatta, ma viene tenuto nascosto ai cittadini.

Note. [a] = Item 2 has been eliminated from the second solution.
These items have been translated into English for this publication. Original items were in Italian.

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Age and gender adjusted Brazilian normative reference data for the 16-item version of Difficulties in Emotion Regulation Scale (DERS-16)

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ABSTRACT. La *Difficulties in Emotion Regulation Scale (DERS)* è un questionario self-report che misura le difficoltà nella regolazione delle emozioni con dimostrata validità, affidabilità e rilevanza clinica in diversi contesti e culture. La versione breve condivide proprietà psicometriche simili, tuttavia è assente un riferimento normativo in letteratura. Partendo da un ampio campione brasiliano, composto da 12838 adulti, questo studio ha potuto ottenere i punteggi normativi aggiustati per età e genere per la popolazione brasiliana e che possono essere utilizzati come parametri affidabili nell'interpretazione dei punteggi del DERS a 16 item.

SUMMARY. The Difficulties in Emotion Regulation Scale (DERS) is a self-report tool that measures difficulties in regulating emotions that have demonstrated its reliable psychometric properties and clinical relevance in different contexts and cultures. The shorter, 16-item version of DERS has shown similarly sound psychometric properties and validity in measuring emotion dysregulation. However, no study has yet provided normative reference for interpretation of its scores. Accordingly, this study aimed to reproduce Giromini et al.'s (2017) procedures for developing age- and gender-adjusted normative reference data, using a large Brazilian sample. Data from N = 12838 adults from all regions of Brazil were used in the study, with two-thirds of the sample (n = 8531) comprising the development sample, from which we derived the parameters of age- and gender-adjusted t-scores, and the other third of the data (n = 4307) comprising a cross-validation sample. Development of adjusted normative scores that control age and gender effects are provided to be used as parameter for interpreting data from adult assessment, along with its application in an independent nonclinical sample. Normative data are useful in psychological assessment for reliable interpretation of test scores. The present study provides reliable normative parameters for interpretation of scores of emotion dysregulation across Brazilian samples. Future studies should replicate and test whether this approach might be useful in other countries and clinical samples.

Keywords: *Emotion regulation, Test norms, Psychological assessment*

INTRODUCTION

The ability to regulate emotions is a core feature of the adaptation in the society. It is defined by the capacity to modify emotional experience and consequent behavior to better adjust to a situation. How one reacts to intense life events and is capable of find strategies to confront challenging events is an important skill to preserve mental health. In fact, difficulties in emotion regulation (ER) are related to various mental health issues in the literature, such as mood disorders, anxiety, personality disorders, autism spectrum disorder, and substance abuse. Other health conditions like cardiovascular disease and obesity have also been associated to problems with regulating emotions (Gross, 2014; Jentsch & Wolf, 2020; Segura-Serralta et al., 2019).

For its clinical relevance, this field of study has rapidly grown in the last decades, giving rise to different approaches toward ER and how it works. ER is a complex construct involving physiological, emotional, cognitive and behavioral processes (Etkin, Büchel & Gross, 2016; Gross, 1998). Theories on ER usually focus on specific parts of the process, such as changing the situation that generates emotions, controlling the body's intense physiological responses, and modifying cognitions related to the situation or control behavioral response to adapt (John & Eng, 2014).

In that sense, Gratz and Roemer (2004) presented a multidimensional perspective on ER based on empirical work in which they propose six components, or dimensions of ER: a) acceptance of emotional states; b) engagement on goal-directed behaviors, even when experiencing a negative emotion; c) controlling impulsive behavior in the face of negative emotions; d) awareness of emotional states; e) access to strategies do regulate emotions; f) having clarity of emotional experience.

Proposing a more comprehensive approach to understand ER, these authors introduced the *Difficulties in Emotion Regulation Scale* (*DERS*) (Gratz & Roemer, 2004), as a measure of problems in regulating emotions, to address these six dimensions previously proposed. This instrument is a 36-item self-report questionnaire assessing the forementioned dimensions of difficulties of ER.

Although the first validation study focused on a student sample comprised of white women (Gratz & Roemer, 2004), several studies that followed this original publication were able to demonstrate the validity and reliability of DERS scores in a multitude of cultural contexts and samples (Giromini, Velotti, De Campora, Bonalume & Zavattini, 2012; Muñoz-Martínez, Vargas & Hoyos-González, 2016; Shahabi, Hasani & Bjureberg, 2020; Westerlund & Santtila, 2018; Wolz et al., 2015). Studies contributing to support the usefulness and validity of the DERS include samples of patients with anxiety, depressive and trauma-related disorders (Hallion, Steinman, Tolin & Diefenbach, 2018), borderline personality disorder (Salsman & Linehan, 2012), eating disorders and obesity (Gianini, White & Masheb, 2013; Harrison, Sullivan, Tchanturia & Treasure, 2010), alcohol use (Dvorak et al., 2014), gambling disorders (Williams, Grisham, Erskine & Cassedy, 2012), patients with chronic pain (Kökönyei, Urbán, Reinhardt, Józan & Demetrovics, 2014), and adolescents (Charak et al., 2019; Hansson, Daukantaité & Johnsson, 2017).

Because of its comprehensive approach and applicability among different contexts, DERS is currently one of the most used measures for assessing ER in clinical and research settings (Xu et al., 2021). For instance, a quick research on Scopus performed at September, 2021, revealed that the original publication of Gratz and Roemer (2004) had more than 3553 citations. Many developments of the original scale were later proposed in order to expand its applicability and usefulness, such as the work of Bjureberg et al. (2015), that proposed a reduced version using 16 items of the original scale, after investigating its factor structure, and provided a short and reliable version of the measure, that has been adapted to different contexts. The short version, such as the original one, have shown consistently adequate psychometric properties across a variety of countries and contexts (Cho & Hong, 2013; Mitsopoulou, Kafetsios, Karademas, Papastefanakis & Simos, 2013; Victor & Klonsky, 2016; Westerlund & Santtila, 2018; Yiğit & Guzey Yiğit, 2019), which reinforces its clinical and research utility as a valid tool for assessing ER.

Recent studies tried to investigate whether age and/or gender would impact the scores of various ER measures. For instance, evidence from neurobiological and developmental studies support the idea that ER is highly influenced by age, showing that younger individuals usually display more difficulties in regulating emotion then older individuals, as a result of maturation of cognitive processes and learning experiences (Ahmed, Bittencourt-Hewitt & Sebastian, 2015; Livingstone & Isaacowitz, 2021; Messina, Grecucci & Viviani, 2021; Schweizer, 2020). Similarly, recent studies provide evidence that women tend to have higher scores on ER measures, and that gender moderates the association

of emotion dysregulation to several attachment-related constructs (Malesza, 2021; Velotti et al., 2016).

Consistent with these considerations, in a recent publication, Giromini, Ales, de Campora, Zennaro and Pignolo (2017) developed age- and gender-adjusted normative scores for DERS-36 in order to provide a benchmark regarding expected scores on the scale, thereby providing standardized cut-off scores to help interpret results on the assessment of emotional dysregulation with DERS, across research and clinical settings. However, these procedures were solely applied to DERS-36, but have not been tested on DERS-16, so there are no normative reference data available to interpretation of DERS-16 scores. Additionally, age and gender effects on scores of the short version of DERS are not yet described in the literature.

Therefore, we aim to fill this gap by testing the effect of age and gender on DERS-16 scores. Furthermore, we intend to replicate the procedures from Giromini et al.'s (2017) study to produce a normative gender and age-adjusted scores to DERS-16, using a large Brazilian sample, thus providing parameters of interpretation of DERS-16 scores.

METHOD

Participants

The total sample used in this study was comprised of 12838 participants derived from all regions and states of Brazil. Slightly more than half were women (59.6%); ages ranged from 18 to 69 (M = 28.05; SD = 9.42). The majority (63.7%) had 11 or more years of study, i.e., were enrolled or completed graduation courses, 33.5% had between 9 and 11 years of education (high school) and only 2.8% had less than eight years of education.

In order to develop a set of normative reference values adjusted by age and gender for the DERS-16, we split the initial sample into two parts: the first was comprised by two thirds of the sample (n = 8531), randomly selected using the SPSS random sample function, that were used to develop our age- and gender-adjusted scores (developmental sample), and the other third (n = 4307) was used for validation purposes (validation sample). As shown in Table 1, the developmental and validation samples did not differ from each other on age or gender.

Table 1 – Demographic composition of the sample

	Developmental (n = 8531)	**Validation (n = 4307)**	**Total (n = 12838)**
Age, $t_{(12836)} = -.51$, $p = .61$			
M	28.02	28.11	28.05
SD	9.41	9.42	9.42
Gender (ø = .01; $p = .40$)			
Females	5108	2546	7654
Males	3423	1761	5184

Procedure

All data collection was conducted online, following all required ethical procedures and guidelines for online and computerized assessment as proposed by the International Testing Commission (2017), with approval of Ethical Committee of State University of Londrina. All instruments were adapted to online format and uploaded to a domain-specific to this research. Invitations to participate in research were made using social networks. Those who decided to volunteer clicked on a link and were taken to the research entry page, where the informed consent was displayed, informing the goals of the studies. If the participant agreed to participate, they created an account with a username and password. Then (and only then) they had access to the psychological measures.

Measures

– *Difficulties in Emotion Regulation Scale (DERS-16)* (Miguel, Giromini, Colombarolli, Zuanazzi & Zennaro, 2017). The Brazilian version of the DERS-16 is comprised of 16 items assessing five dimensions of emotional dysregulation: non-acceptance of emotional responses, difficulties in engaging in goal-oriented behaviors, difficulties in control impulses, restrict access to emotional regulation strategies, and lack of emotional clarity. Respondents have to classify the frequency with which each item applies to themselves on a Likert scale varying from 1 (almost never, 0-10%) to 5 (almost always, 91-100%). The scores provide an estimate of how difficult it is for the respondent to deal with emotional-charged situations. This scale has been largely used and applied to many contexts and has been adapted for various countries. In the previous Brazilian adaptation study, the DERS-16 showed excellent psychometric properties, with Cronbach's alphas ranging from .80 to .87 for the scales and .93 for the total scale. In the present study, Cronbach's alpha ranged from .71 to .89, with an index of .91 for the whole scale, revealing adequate reliability.

Data analysis

The procedures herein applied to obtain normative age- and gender-adjusted scores for DERS-16 closely reproduce those described by Giromini et al. (2017) in the original normative study with DERS-36. First, we quantified the average contribution of two the key demographic variables under investigation, i.e., age and gender, in the determination of any given DERS-16 scores. Then, we removed the effects of these two demographic variables from each DERS-16 score to develop a set of age- and gender-adjusted DERS-16 reference data. Lastly, we tested these newly developed reference data's applicability by inspecting an independent, cross-validation sample. Consistent with Giromini et al. (2017), two-thirds of the data in our initial sample were used to generate our estimated age- and gender-adjusted scores, and the other third was used for validation purposes.

RESULTS

Development of age and gender adjusted DERS scores

As noted above, to develop age- and gender-adjusted DERS scores, we first focused on the developmental sample. Specifically, a series of multiple regressions models were tested to obtain the raw *b* weight values of age and gender (transformed into dummy variables, M = 0 and F = 1) as predictors of the DERS total and subscales scores. The values obtained from the regression models are shown in Table 2.

All regression models tested were statistically significant, $F_{(2,\ 8528)} \geq 75.619$, $p<.001$, explaining 2% to 5% of the variance on DERS scores. For all scores, both age and gender produced statistically significant beta weights ($p<.001$) in the expected directions, with increasing age negatively affecting DERS scores, and female gender reporting more emotional dysregulation.

The parameters obtained from these regression models were then used to develop our age- and gender-adjusted scores. More specifically, using the *b* weights of age and gender, we predicted, for that sample, what a DERS score of a specific participant would be considering his or her age and gender. To construct these equations, we used following calculation, exemplified by the Nonacceptance score on DERS:

$$\textit{Predicted score} = \textit{Constant} + (\text{Age} \times \textit{raw b age}) + (\text{Gender} \times \textit{raw b gender})$$

therefore,

Table 2 – Multiple regression models for developing age and gender adjusted scores (n = 8531)

	$F_{(2, 8528)}$	*p*	R^2	Adj. R^2	Raw b	Standardized ß	*p*
Nonacceptance	75.619	<.001	.13	.02			
(Constant)					9.490		<.001
Age					−.049	−.123	<.001
Gender					.476	.062	<.001
Goals	113.120	<.001	.16	.03			
(Constant)					10.892		<.001
Age					−.058	−.152	<.001
Gender					.506	.069	<.001
Impulse	119.015	<.001	.16	.03			
(Constant)					7.548		<.001
Age					−.022	−.065	<.001
Gender					1.002	.158	<.001
Strategies	159.017	<.001	.19	.04			
(Constant)					16.286		<.001
Age					−.097	−.163	<.001
Gender					1.311	.114	<.001
Clarity	224.739	<.001	.22	.05			
(Constant)					6.895		<.001
Age					−.058	−.215	<.001
Gender					.438	.085	<.001
Total	197.192	<.001	.21	.04			
(Constant)					951.110		<.001
Age					−.284	−.182	<.001
Gender					3.734	.124	<.001

Nonacceptance Predicted score = 9.490 + (Age × −.049) + (Gender × .476)

where age is measured in years and gender is transformed in dummy variable with M = 0 e F = 1. After obtaining all predicted scores, residuals between estimates and raw scores (presented in Table 3) were added to the equation to produce the scores adjusted for age and gender, as follows:

Adjusted score = (*Raw value* – *Predicted score*) + *Mean score* (*Sample*)

e.g., for Nonacceptance,

Age & Gender Adj. Nonacceptance score = (*Raw value* – (9.490 + (Age × −.049) + (Gender × .476)) + 8.40

where raw values refer to the individual's original raw score on that scale, and the mean score is the one obtained for the scale on the developmental sample. These formulas inform what DERS scores a respondent would have if his/her gender and age were the same as the average values found for these two demographic variables in our developmental sample. For instance, if the gender of a person was female and her age was lower than the average age of our developmental sample, then her adjusted DERS score would be smaller compared to her un-adjusted score.

These age- and gender-adjusted scores were then transformed into standardized *t*-scores (M = 50, SD = 10), to make it possible to obtain normative parameters for interpretation. More specifically, the following formula was used to that goal:

Adj t-score =[(Adj. score - Mean score (Sample))/Std Deviation (Sample)] 10 + 50

All equations to calculate adjusted t-scores derived from our normative sample may be obtained by contacting the first author. With these valuables, derived from a representative developmental sample, the reader could obtain adjusted standardized scores to other samples of adults (in the Brazilian context) and, therefore, interpret the level of emotional dysregulation reported by participants regardless of age gender.

Representativeness of DERS age and gender adjusted t-scores

After calculating the adjusted t-scores in the developmental sample, we inspected the validation sample to verify if the resulting scores would be representative of an independent nonclinical community-derived sample. The main goal was to test if the average age- and gender-adjusted *t*-scores derived from our developmental sample would show a mean value close to t = 50 also with this independent, cross-

Table 3 – Raw age and gender adjusted DERS scores: developmental sample (n = 8531)

	M	SD
Nonacceptance	8.40	3.75
Goals	9.57	3.54
Impulse	7.53	3.07
Strategies	14.35	5.53
Clarity	5.54	2.46
Total	45.39	14.38

validation sample. Because these analyses essentially aimed to test the null hypothesis, i.e., they aimed to demonstrate that the one-sample *t*-tests comparing our scores against 50 would not demonstrate any statistically significant differences, we implemented Bayesian statistics. More in detail, consistent with Giromini et al. (2017), we calculated the JZS Bayes Factor values based on Rouder, Speckman, Sun, Morey and Iverson's (2009) Equation 1, and interpreted them based on Jeffreys' (1961) criteria. The results of these analyses, reported in Table 4, demonstrate that our validation sample did produce DERS scores virtually identical to 50, as expected.

Additionally, point biserial correlations were calculated between the adjusted *t*-scores of DERS with age and gender on the validation sample, in order to test if those are being affected by the age and gender of participants in this sample. Results are reported in Table 5, and demonstrate that, as opposed to initial raw scores, all highly correlated with age and gender, adjusted *t*-scores did not suffer major influence of age and none of them appears to be related to gender. Although a few significant correlations were still found for age, specifically on Impulse ($r = .06$, $p<.01$), Strategies ($r = .03$, $p<.05$) and Total DERS score ($r = .04$, $p<.01$), all correlations can be considered very small in a way that they reflect effect sizes that can be considered of a minimal practical significance (Rouder & Morey, 2011).

DISCUSSION

Our study aimed to reproduce previously published approach to produce age- and gender-adjusted normative reference for DERS, in an adult Brazilian sample. For that, we used a large community sample from all regions of Brazil ($N = 12838$) and divided into two randomly assigned samples, with two thirds for developing parameters of age- and gender-adjusted scores, and the validation sample to test our newly developed *t*-scores as a normative reference for DERS. Our findings present the significant influence of age in the ability to regulate emotions and gender differences on these abilities. Additionally, we demonstrated that the normative parameters could be successfully applied to nonclinical community sample and control the influence of age and gender variables in the interpretation of DERS. Therefore, we provide researchers with a valid, reliable and useful reference for interpretation of DERS scores and offer additional evidence for the relationship between ER and age, and the usefulness and effectiveness of Giromini et al.'s (2017) approach to adjust age and gender influence on DERS scores.

Influence of age and gender of the respondents on self-reported difficulties to regulate emotions is very well documented in the literature. Similar results were presented by other studies, in which older participants reported fewer

Table 4 – Age and gender adjusted DERS t-scores: testing the null hypothesis that t = 50 within the validation sample (n = 4307)

	M	SD	$t_{(4306)}$	p	JZS B
Nonacceptance	50.22	9.96	1.45	.15	20.35
Goals	50.14	10.01	.89	.38	39.17
Impulse	49.78	9.98	−1.48	.14	19.48
Strategies	50.15	9.95	.99	.32	35.65
Clarity	50.09	9.87	.61	.54	48.31
Total	50.12	10.00	.76	.45	43.60

Table 5 – Correlation of raw and adjusted t-scores to age and gender, within the validation sample (n = 4307)

	Raw scores		Adj. t-scores	
	Age	**Gender**	**Age**	**Gender**
Nonacceptance	−.13**	.06**	.02	−.01
Goals	−.16**	.06**	.02	−.01
Impulse	−.10**	.14**	.06**	.01
Strategies	−.18**	.09**	.03*	−.01
Clarity	−.23**	.06**	.03	−.00
Total	−.20**	.10**	.04**	−.00

*p<.05; ** p<.01

difficulties when compared to young adults (Anderson, Reilly, Gorrell, Schaumberg & Anderson, 2016; Carstensen et al., 2011; Kwon, Yoon, Joormann & Kwon, 2013; Rogier, Garofalo & Velotti, 2019). Although older individuals may suffer from impairment of physical and cognitive functions, research shows that they report a decline of emotional distress and well-being, with might be related to expansion and maturation of emotion regulation strategies throughout their lifetime (Blanchard-Fields, Stein & Watson, 2004; Nashiro, Sakaki & Mather, 2012; Suri & Gross, 2012). Though adjusted *t*-scores still correlated significantly with age in our validation sample, the effect of this relation can be considered null in terms of practical implications, as its magnitude is almost zero (Greene, 2000; Rouder & Morey, 2011). In this sense, age-adjusted scores for ER difficulties are important to control for inflation of young individuals' scores and underestimate older individuals' difficulties in interpretation of mean scores.

Gender differences in ER are also commonly found in other studies. Although in Giromini et al.'s (2017) study this was not the case, we believe that our results might be consequence of a larger sample, and its possibility to better demonstrate gender differences when reporting own emotional difficulties. More specifically, it is part of the gender role expectations that women may openly express their emotional states and have more difficulties with ER, as men are usually thought to develop a more rational, controlled approach to ER. This could be a reason why self-report measures of emotional functioning, women tend to have higher scores than men, and is also the case for ER difficulties assessed by DERS. The cultural context and its influence on gender expectations might also be the reason why some samples did not found differences between genders, i.e., it is possible that specific cultural context could be a moderating factor on the openness to self-report emotional difficulties in women and men. However, more research is needed to address this relationship.

Developing normative reference for interpretation of scores is a standard procedure for measurement instruments in psychological and clinical practice. They provide

standardized and secure parameters to interpret individual scores on a measure and, therefore, help the practitioner obtain best information about the patient's functioning and define level of clinical impairment. Normative scores of DERS, thus, are a useful and relevant clinical tool to adequate interpretation of self-report difficulties of ER, as they standardize mean scores of 50 and standard deviation of 10, i.e., *t*-score distribution, giving an easy, accessible parameter to identify how far from normative expectations the individual's score is. Deviations of 1.5 to 2.0 points are usually used as parameters of normative deviation in *z*-distributions, which in *t*-score distribution corresponds to 65 *t* and 70 *t* (i.e., 1.5 to 2 *SD* above the mean of the normative sample). In that sense, clinically relevant differences might be found in individuals that present adjusted *t*-scores of 70 *t* or above, as previous studies with clinical samples reported.

One of the advantages of using age- and gender-adjusted scores is that this procedure allows the professional to appreciate the extent to which a given DERS score would be more likely to be ascribed to the fact that the test-taker has an age range in which emotional dysregulation frequently occurs, or rather to the fact that this person is emotionally dysregulated. For instance, a raw score of 60 could seem a relatively high score, when compared to the average total score of about 45 (with *SD* of about 15) found in our developmental sample. However, when applying age- and gender-adjusted normative parameters, this same raw score value of 60 would be considered to be particularly elevated if the test-taker was a 60 years old woman (adjusted *t*-score = 68, i.e., about 2 *SD*s above the *Mean* of the reference values), but only slightly higher than expected (i.e., within a one standard deviation departure) if the test-taker was an 18 years old boy (adjusted *t*-score = 57). As such, the same raw score would be considered differently troublesome depending on the age and gender of the tested person. Therefore, we can discriminate between high scores that are not clinically relevant (i.e., scores that are consistent with age and gender expectations) from those that are high in comparison with normative reference samples that are more similar to the test-taker in terms of age and gender.

This is especially important to control for the effect of these variables in interpreting scores of emotion dysregulation in samples with clinical symptoms, that are commonly associated in several studies using DERS in clinical samples. For instance, Bjureberg et al. (2015) assessed 96 women with borderline personality disorder and reported significant correlations between DERS scores and anxiety, depression and self-harm symptoms. Vuillier, Robertson & Greville-Harris (2020) assessed eating disorder symptoms and emotion dysregulation in a sample of 192 subjects, and found that higher scores on a measure of orthorexia nervosa symptoms were significantly correlated with DERS-16's scores. Additionally, in a randomized control trial with 182 adults and children with ADHD, Skott et al. (2020) found that treatment with symbiotics (a combination of pre and probiotic bacterias) for ADHD symptoms resulted in a significant reduction of DERS-16 scores in the adult sample. As these evidences suggest clinical relevance of ER across several psychiatric disorders, additional research with clinical samples using our proposed adjusted scores is encouraged to verify clinical significance of this threshold and to improve interpretation of the associations between ER scores and clinical symptoms.

Developing representative normative reference data is important to help clinicians and researchers to have a better interpretation of DERS scores. Our study provides reference values that might be used to identify clinically relevant difficulties in ER and how it manifests to particular individuals, therefore offering an important tool for treatment formulation. Additionally, our research contributes with information important to cross-cultural research on emotional functioning, which are very relevant to comprehend how people from different cultural backgrounds might differ in terms of emotional functioning, thus formulating more straight-forward approaches to emotional problems.

Our study presents a contribution to the literature on ER and additional validity for DERS as research and clinical tool. However, it has important limitations that must be underlined. First, we collect data remotely through online assessment, and did not have extensive information about participants' background such as socioeconomic status and clinical information. A great part of our sample was composed of high-educated individuals with the mean age of 28 years, which is fairly low. We know that Brazil is a vast country with great differences and that the fact that college-educated participants are not representative of the majority of Brazilian general educational status. Also, the fact that one should have internet access to participate in the research is a bias in socioeconomic background, as this is a tool not widely accessible for people with low income, which is the majority of Brazilian population. Besides that,

in research with psychological instruments through online recruiting, it is possible that people with emotional problems or psychiatric issues can over-identify with the research theme and be especially willing to collaborate, which might result in bias of the total scores. One second limitation is that we do not have access to a valid clinical sample to test whether our normative scores would differentiate clinical and nonclinical samples. This is important especially because it could provide a reliable, tested threshold to be used as parameters of emotional dysregulation that can be clinically relevant. Future studies should consider the inclusion of clinical samples to advance in this regard.

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References

AHMED, S.P., BITTENCOURT-HEWITT, A. & SEBASTIAN, C.L. (2015). Neurocognitive bases of emotion regulation development in adolescence. *Developmental Cognitive Neuroscience*, *15*, 11-25. doi.org/10.1016/J.DCN.2015.07.006

ANDERSON, L.M., REILLY, E.E., GORRELL, S., SCHAUMBERG, K. & ANDERSON, D.A. (2016). Gender-based differential item function for the difficulties in emotion regulation scale. *Personality and Individual Differences*, *92*, 87-91. doi.org/10.1016/j.paid.2015.12.016

BJUREBERG, J., LJÓTSSON, B., TULL, M.T., HEDMAN, E., SAHLIN, H., LUNDH, L.-G., … & GRATZ, K.L. (2015). Development and validation of a brief version of the Difficulties in Emotion Regulation Scale: The DERS-16. *Journal of Psychopathology and Behavioral Assessment*, *38* (2), 284-296. doi.org/10.1007/s10862-015-9514-x

BLANCHARD-FIELDS, F., STEIN, R. & WATSON, T.L. (2004). Age differences in emotion-regulation strategies in handling everyday problems. *The Journals of Gerontology: Series B*, *59* (6), P261-P269. doi.org/10.1093/geronb/59.6.P261

CARSTENSEN, L.L., TURAN, B., SCHEIBE, S., RAM, N., ERSNER-HERSHFIELD, H., SAMANEZ-LARKIN, G. R., … & NESSELROADE, J.R. (2011). Emotional experience improves with age: Evidence based on over 10 years of experience sampling. *Psychology and Aging*, *26* (1), 21-33. doi.org/10.1037/a0021285

CHARAK, R., BYLLESBY, B.M., FOWLER, J.C., SHARP, C., ELHAI, J.D. & FRUEH, B.C. (2019). Assessment of the revised difficulties in emotion regulation scales among adolescents and adults with severe mental illness. *Psychiatry Research*, *279*, 278-283. doi.org/10.1016/j.psychres.2019.04.010

CHO, Y. & HONG, S. (2013). The new factor structure of the korean version of the difficulties in emotion regulation scale (K-DERS) incorporating method factor. *Measurement and Evaluation in Counseling and Development*, *46* (3), 192-201. doi.org/10.1177/0748175613484033

DVORAK, R.D., SARGENT, E.M., KILWEIN, T.M., STEVENSON, B.L., KUVAAS, N.J. & WILLIAMS, T.J. (2014). Alcohol use and alcohol-related consequences: Associations with emotion regulation difficulties. *Am J Drug Alcohol Abuse*, *40* (2), 125-130. doi.org/10.3109/00952990.2013.877920

ETKIN, A., BÜCHEL, C. & GROSS, J.J. (2016). Emotion regulation involves both model-based and model-free processes. *Nature Publishing Group*. doi.org/10.1038/nrn.2016.79

GIANINI, L.M., WHITE, M.A. & MASHEB, R.M. (2013). Eating pathology, emotion regulation, and emotional overeating in obese adults with binge eating disorder. *Eating Behaviors*, *14* (3), 309-313. doi.org/10.1016/j.eatbeh.2013.05.008

GIROMINI, L., ALES, F., DE CAMPORA, G., ZENNARO, A. & PIGNOLO, C. (2017). Developing age and gender adjusted normative reference values for the Difficulties in Emotion

Regulation Scale (DERS). *Journal of Psychopathology and Behavioral Assessment*, 1-10. doi.org/10.1007/s10862-017-9611-0

GIROMINI, L., VELOTTI, P., DE CAMPORA, G., BONALUME, L. & ZAVATTINI, G.C. (2012). Cultural adaptation of the Difficulties in Emotion Regulation Scale: Reliability and validity of an Italian version. *Journal of Clinical Psychology*, *68* (9), 989-1007. doi.org/10.1002/jclp.21876

GRATZ, K.L. & ROEMER, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, *26* (1), 41-54. doi.org/10.1023/B:JOBA.0000007455.08539.94

GREENE, R.L. (2000). *The MMPI-2: An interpretive manual, 2nd ed*. Needham Heights, MA: Allyn & Bacon.

GROSS, J.J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, *2* (3), 271-299. doi.org/10.1037/1089-2680.2.3.271

GROSS, J.J. (2014). Emotion regulation: Conceptual and empirical foundations. In *Handbook of Emotion Regulation*. New York, NY: Guilford Press.

HALLION, L.S., STEINMAN, S.A., TOLIN, D.F. & DIEFENBACH, G.J. (2018). Psychometric properties of the Difficulties in Emotion Regulation Scale (DERS) and its short forms in adults with emotional disorders. *Frontiers in Psychology*, *9* (APR), 539. doi.org/10.3389/fpsyg.2018.00539

HANSSON, E., DAUKANTAITÉ, D. & JOHNSSON, P. (2017). Disordered eating and emotion dysregulation among adolescents and their parents. *BMC Psychology*, *5* (1). doi.org/10.1186/s40359-017-0180-5

HARRISON, A., SULLIVAN, S., TCHANTURIA, K. & TREASURE, J. (2010). Emotional functioning in eating disorders: Attentional bias, emotion recognition and emotion regulation. *Psychological Medicine*, *40* (11), 1887-1897. doi.org/10.1017/S0033291710000036

JENTSCH, V.L. & WOLF, O.T. (2020). The impact of emotion regulation on cardiovascular, neuroendocrine and psychological stress responses. *Biological Psychology, 154*, 107893. doi.org/10.1016/J.BIOPSYCHO.2020.107893

JOHN, O.P. & ENG, J. (2014). Three approaches to individual differences in affect regulation: Conceptualizations, measures, and findings. In *Handbook of Emotion Regulation*. New York, NY: Guilford Press.

KÖKÖNYEI, G., URBÁN, R., REINHARDT, M., JÓZAN, A. & DEMETROVICS, Z. (2014). The difficulties in emotion regulation scale: Factor structure in chronic pain patients. *Journal of Clinical Psychology*, *70* (6), 589-600. doi.org/10.1002/jclp.22036

KWON, H., YOON, K.L., JOORMANN, J. & KWON, J.H. (2013). Cultural and gender differences in emotion regulation: Relation to depression. *Cognition and Emotion*, *27* (5), 769-782. doi.org/10.1080/02699931.2013.792244

LIVINGSTONE, K.M. & ISAACOWITZ, D.M. (2021). Age and emotion regulation in daily life: Frequency, strategies, tactics, and effectiveness. *Emotion*, *21* (1), 39-51. doi.org/10.1037/emo0000672

MALESZA, M. (2021). Relationship between emotion regulation, negative affect, gender and delay discounting. *Current Psychology*, *40* (8), 4031-4039. doi.org/10.1007/s12144-019-00366-y

MESSINA, I., GRECUCCI, A. & VIVIANI, R. (2021). Neurobiological models of emotion regulation: A meta-analysis of neuroimaging studies of acceptance as an emotion regulation strategy. *Social Cognitive and Affective Neuroscience*, 257-267. doi.org/10.1093/scan/nsab007

MIGUEL, F.K., GIROMINI, L., COLOMBAROLLI, M.S., ZUANAZZI, A.C. & ZENNARO, A. (2017). A Brazilian investigation of the 36- and 16-item difficulties in emotion regulation scales. *Journal of Clinical Psychology*, *73* (9). doi.org/10.1002/jclp.22404

MITSOPOULOU, E., KAFETSIOS, K., KARADEMAS, E., PAPASTEFANAKIS, E. & SIMOS, P.G. (2013). The greek version of the difficulties in emotion regulation scale: Testing the factor structure, reliability and validity in an adult community sample. *Journal of Psychopathology and Behavioral Assessment*, *35* (1), 123-131. doi.org/10.1007/s10862-012-9321-6

MUÑOZ-MARTÍNEZ, A.M., VARGAS, R.M. & HOYOS-GONZÁLEZ, J.S. (2016). Escala de Dificuldades de Regulaçóo Emocional (DERS): Análise fatorial numa amostra Colombiana. *Acta Colombiana de Psicologia*, *19* (1), 225-236. doi.org/10.14718/ACP.2016.19.1.10

NASHIRO, K., SAKAKI, M. & MATHER, M. (2012). Age differences in brain activity during emotion processing: Reflections of age-related decline or increased emotion regulation. *Gerontology*, *58* (2), 156-163. doi.org/10.1159/000328465

ROGIER, G., GAROFALO, C. & VELOTTI, P. (2019). Is emotional suppression always bad? A matter of flexibility and gender differences. *Current Psychology*, *38* (2), 411-420. doi.org/10.1007/s12144-017-9623-7

ROUDER, J.N. & MOREY, R.D. (2011). A Bayes factor meta-analysis of Bem's ESP claim. *Psychonomic Bulletin & Review*, *18* (4), 682-689. doi.org/10.3758/s13423-011-0088-7

ROUDER, J.N., SPECKMAN, P.L., SUN, D., MOREY, R.D. & IVERSON, G. (2009). Bayesian t tests for accepting and rejecting the null hypothesis. *Psychonomic Bulletin and Review*. doi.org/10.3758/PBR.16.2.225

SALSMAN, N.L. & LINEHAN, M.M. (2012). An investigation of the relationships among negative affect, difficulties in emotion regulation, and features of borderline personality disorder. *Journal of Psychopathology and Behavioral Assessment*, *34* (2), 260-267. doi.org/10.1007/s10862-012-9275-8

SCHWEIZER, S. (2020). The role of affective control in emotion regulation during adolescence. *Emotion*, *20* (1), 80. doi.org/10.1037/EMO0000695

SEGURA-SERRALTA, M., PERPIÑÁ, C., CISCAR, S., BLASCO, L., ESPERT, R., ROMERO-ESCOBAR, C., … & OLTRA-CUCARELLA, J. (2019). Executive functions and emotion regulation in obesity and eating disorders. *Nutricion Hospitalaria*, *36* (1), 167-172. doi.org/10.20960/nh.02016

SHAHABI, M., HASANI, J. & BJUREBERG, J. (2020). Psychometric properties of the brief persian version of the Difficulties in Emotion Regulation Scale (The DERS-16). *Assessment for Effective Intervention*, *45* (2), 135-143. doi.org/10.1177/1534508418800210

SKOTT, E., YANG, L.L., STIERNBORG, M., SÖDERSTRÖM, Å., RÜEGG, J., SCHALLING, M., … & LAVEBRATT, C. (2020). Effects of a synbiotic on symptoms, and daily functioning in attention deficit hyperactivity disorder: A double-blind randomized controlled trial. *Brain, Behavior, and Immunity*, *89*, 9-19. doi.org/10.1016/j.bbi.2020.05.056

SURI, G. & GROSS, J.J. (2012). Emotion regulation and successful aging. *Trends in Cognitive Sciences*, *16* (8), 409-410. doi.org/https://doi.org/10.1016/j.tics.2012.06.007

VELOTTI, P., D'AGUANNO, M., DE CAMPORA, G., DI FRANCESCANTONIO, S., GAROFALO, C., GIROMINI, L., … & ZAVATTINI, G.C. (2016). Gender moderates the relationship between attachment insecurities and emotion dysregulation. *South African Journal of Psychology*, *46* (2), 191-202. doi.org/10.1177/0081246315604582

VICTOR, S.E. & KLONSKY, E.D. (2016). Validation of a brief version of the Difficulties in Emotion Regulation Scale (DERS-18) in five samples. *Journal of Psychopathology and Behavioral Assessment*, *38* (4), 582-589. doi.org/10.1007/s10862-016-9547-9

VUILLIER, L., ROBERTSON, S. & GREVILLE-HARRIS, M. (2020). Orthorexic tendencies are linked with difficulties with emotion identification and regulation. J*ournal of Eating Disorders*, *8* (1). doi.org/10.1186/s40337-020-00291-7

WESTERLUND, M. & SANTTILA, P. (2018). A Finnish adaptation of the emotion regulation questionnaire (ERQ) and the Difficulties in Emotion Regulation Scale (DERS-16). *Nordic Psychology*. doi.org/10.1080/19012276.2018.1443279

WILLIAMS, A.D., GRISHAM, J.R., ERSKINE, A. & CASSEDY, E. (2012). Deficits in emotion regulation associated with pathological gambling. *British Journal of Clinical Psychology*, *51* (2), 223-238. doi.org/10.1111/j.2044-8260.2011.02022.x

WOLZ, I., AGÜERA, Z., GRANERO, R., JIMÉNEZ-MURCIA, S., GRATZ, K.L., MENCHÓN, J.M. & FERNÁNDEZ-ARANDA, F. (2015). Emotion regulation in disordered eating: Psychometric properties of the difficulties in emotion regulation scale among spanish adults and its interrelations with personality and clinical severity. *Frontiers in Psychology*, *6* (JUN), 1-13. doi.org/10.3389/fpsyg.2015.00907

XU, L., CHENG, F., LIU, C., JIN, R., PAN, H., ZHANG, M. & LIANG, Z. (2021). Psychometric properties and factor structures of the CERQ, DERS, and RESE measures: A bifactor approach. *Journal of Personality Assessment*. doi.org/10.1080/00223891.2021.1887201

YIĞIT, İ. & GUZEY YIĞIT, M. (2019). Psychometric properties of Turkish version of Difficulties in Emotion Regulation Scale-Brief Form (DERS-16). *Current Psychology*, *38* (6), 1503-1511. doi.org/10.1007/s12144-017-9712-7

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Evaluation of the psychometric properties of the Italian Female Sexual Subjectivity Inventory

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ABSTRACT. Aderire a copioni sessuali tradizionali può portare le donne ad assumere un ruolo passivo nei confronti della propria sessualità e a non sentirsi legittimate a desiderare e ricercare il piacere sessuale. Il *Female Sexual Subjectivity Inventory (FSSI)* è un questionario self-report che indaga la capacità delle giovani donne di resistere agli stereotipi di genere e di porsi in qualità di soggetto attivo della propria sessualità. Nel presente studio sono state esaminate la dimensionalità, la coerenza interna e la validità convergente della versione italiana del FSSI. I risultati indicano che la versione italiana del FSSI presenta buone proprietà psicometriche e può quindi essere utilizzata per valutare la *Female Sexual Subjectivity* nelle giovani donne italiane.

SUMMARY. The Female Sexual Subjectivity Inventory (FSSI) is a 20-item self-report measure to assess whether women feel entitled to express and satisfy their sexual needs. Despite the relevance of sexual subjectivity for female sexual wellbeing, the FSSI has not yet received scientific attention in Italy. For this reason, the purpose of the present study was to evaluate the psychometric properties of the Italian version of the FSSI. A community sample of 1404 women (mean age = 22.25±3.42 years; age range 18-35 years) was recruited in Italy. Exploratory factor analysis revealed that the Italian FSSI had a five-factor structure, similar to the original version, named Sexual body-esteem, Sense of entitlement to sexual pleasure from self, Sense of entitlement to sexual pleasure from partner, Self-efficacy in achieving sexual pleasure, and Sexual self-reflection. The confirmatory factor analysis indicated that the five-factor structure of the Italian FSSI had good fit. The Italian FSSI showed good internal reliability (Cronbach's alphas for the five factors were .74, .77, .77, .85, and .76 respectively) and good convergent validity. Overall, results indicate that the Italian FSSI has good psychometric properties and can be used to assess sexual subjectivity among young Italian women.

Keywords: *Female sexual subjectivity, Psychometric properties, Factor structure*

INTRODUCTION

Female sexual subjectivity can be described as a woman's feeling of entitlement to be an active subject rather than an object of sexual desire (Burch, 1998). It encompasses different aspects of sexual self-concepts, such as "sexual body-esteem, perceptions of efficacy and entitlement to sexual desire and pleasure, and sexual self-reflection" (Horne & Zimmer-Gembeck, 2006). Tolman (2002) stated that a woman's sexual subjectivity means experiencing entitlement to sexual pleasure and sexual safety and being aware of social forces against her possessing these entitlements. Indeed, most cultures discourage female sexual expression, thus making particularly challenging for young women to develop positive representations of their sexual selves (i.e., free of shame, guilt and fear) (Bay-Cheng, Bruns & Maguin, 2018; Breakwell & Millward, 1997; Fine, 1988; Tolman, 1994). In fact, gender stereotypes traditionally assign women to a passive and submissive role, but also expect them to satisfy their male partners' sexual desires (Kim et al., 2007, Seabrook et al., 2016). Moreover, research has established that a double standard exists in the evaluation of men and women sexual behaviours (Migheli & Pronzato, 2020; Sagebin Bordini & Sperb, 2012). That is to say that men and women are evaluated differently for the same sexual behaviour: men are accorded sexual freedom and promiscuity, women instead are expected to act as "gate-keepers" (Seabrook et al., 2016). The sexual double standard affects many aspects of women's sexuality, for instance, having sex at a young age (Kreager, Staff, Gauthier, Lefkowitz & Feinberg, 2016) or having numerous sexual partners (Marks, Young & Zaikman, 2019) are disapproved behaviours for women, while they are accepted, if not even encouraged, in men. As a result, women may grow to feel that it is not appropriate for them to express and explore their own sexual desires and they might not feel entitled to take charge of their sexual pleasure and safety.

Sexual subjectivity has been associated with numerous aspects of female psychological and sexual wellbeing. Firstly, positive associations were found with sexual self-consciousness, safe-sex self-efficacy and safe-sex competence, which suggests that women with higher levels of sexual subjectivity tend to feel more in control of their sexual experiences and sexual safety and therefore may be more capable of preventing the unwanted consequences of unprotected sex such as unintended pregnancy and/or sexually transmitted infections (Horne & Zimmer-Gembeck, 2006; Mastro & Zimmer-Gembeck, 2015). Secondly, women who possess a stronger sense of sexual subjectivity also show greater general self-esteem and a better identity achievement (Horne & Zimmer-Gembeck, 2006), which may indicate that sexual subjectivity is an important component of women's identity and self-esteem. Thirdly, higher levels of sexual subjectivity were found to increase women's likelihood to overtly communicate their consent to receive oral sex, which suggests that sexual subjectivity could be a protective factor against the occurrence of consensual, yet unwanted, sexual activities (Satinsky & Jozkowski, 2014). Fourthly, sexual subjectivity is associated with higher romantic and sexual satisfaction, increased positive emotional reactions to recent sexual encounters, and diminished negative emotional reactions to recent sexual encounters, which indicates that sexual subjectivity may have important implications on women's experiences of partnered sexuality (Mastro & Zimmer-Gembeck, 2015; Zimmer-Gembeck, See & O'Sullivan, 2014). Finally, women who show higher levels of sexual subjectivity have considerably more chances to achieve orgasm frequently (Bond, Morrison & Hawes, 2020).

Sexual attitudes and gender stereotypes in the Italian context

Despite the relevance of female sexual subjectivity for women's sexual, relational, and general well-being, this construct has not yet received scientific attention in Italy. Nevertheless, gender stereotypes are particularly prominent in the Italian culture (Ragnedda & Budd, 2015), which, as mentioned before, may increase young women's risk to develop negative representations of their sexual selves. For a brief overview of the general adherence to gender stereotypes in the Italian context, it appears meaningful to consider the findings of a national survey on gender role's stereotypes and the social image of sexual violence, that was conducted in 2018 on a large sample of Italian adults (N = 15034; age range 18-74 years) (ISTAT, 2019). More than half (58.8%) of the respondents, with no significant difference between men and women, were found to agree (quite or very much so) with at least one gender stereotype such as "for a man, more than for a woman, it is very important to be successful at work" (32.5%) or "men are less suited to household chores" (31.5%) (ISTAT, 2019). Moreover, 23.9% of the sample believed that a woman's outfit may provoke sexual aggression, and up to

7.2% of the respondents believed that when women receive sexual advances they often refuse, but they actually mean to accept (ISTAT, 2019). These findings clearly indicate that a large proportion of Italian adults adhere to stereotyped gender roles and endorse gendered sexual scripts.

The stereotyped representation of the feminine role is further reinforced by Italian media. Several studies have observed that women's portrayals in Italian media are more often stereotyped and/or sexualized (Ragnedda & Budd, 2015) than in other European countries. More specifically, women are much less likely than men to be depicted in leading roles or to be presented as experts, while they are much more likely to be portrayed in roles that are related to their sexuality or family status (Ragnedda & Budd, 2015). Tartaglia and Rollero (2015) compared the rate and type of women's portrayals in Italian and Dutch newspaper's advertisements and they found that whereas in both countries women's depictions were more often sexualized and used in a decorative fashion than men's ones, this phenomenon was significantly more frequent in Italy than it was in The Netherlands, reflecting the patriarchal mentality that characterizes the Italian culture and the increased risk for Italian women to be sexualized.

Another socio-cultural aspect, that is peculiar to the Italian context and is worth mentioning because of its potential impact on the development of negative sexual attitudes, is the presence of the Vatican City within the Italian borders and the strong influence that the Catholic Church has on Italian youth socialization (Caltabiano, Rosina & Dalla-Zuanna, 2006). In fact, Italians deem religion and family as much more important than other European citizens do (De Santis, Maltagliati & Salvini, 2015). Numerous authors have highlighted how religiosity is generally associated with more conservative sexual attitudes, less permissive sexual behaviors, and increased sexual shame (Lefkowitz, Gillen, Shearer & Boone, 2004; Marcinechová & Záhorcová, 2020). Moreover, solid evidence has established that religious attitudes predict a higher endorsement of traditional gender roles (Morgan, 1987); higher levels of sexism (Glick & Fiske, 1997; Maltby, Hall, Anderson & Edwards, 2010; Mikołajczak & Pietrzak, 2014), and a stronger endorsement of the sexual double standard (Emmerink, Vanwesenbeeck, van den Eijnden & ter Bogt, 2015; Migheli & Pronzato, 2020), meaning that religious people are significantly more likely to negatively evaluate a woman (but not a man) on the basis of her sexual behaviors.

Recent research conducted on Italian university students has shown that Italian youth is progressively catching up with other Western European countries in terms of liberal sexual attitudes (Minello, Caltabiano, Dalla-Zuanna & Vignoli, 2020; Stranges & Vignoli, 2020). In this regard, Minello and colleagues (2020) have compared the sexual behaviors and opinions of two cohorts of university students, using data collected in 2000 and 2017. The authors observed that a considerable shift toward sexual permissiveness has taken place, specifically, young women are reporting an increasing number of occasional partners, the expectation that women should remain virgins until marriage has significantly dropped, having casual partners is becoming more acceptable for women and cheating has become less acceptable for men. Yet, despite these signs of progress, young Italian women are still being evaluated significantly more harshly than men on their sexual sphere (Migheli & Pronzato, 2020). Indeed, when Migheli and Pronzato (2020) assessed individuals' asymmetry in judging men and women for certain sexual behaviors, they found that the (hetero)sexual double standard keeps dominating the mentality of Italian university students. Specifically, the authors found that the cultural context was particularly relevant in predicting the sexual double standard. Indeed, the respondents who grew up in more conservative regions of Italy were two to three times more likely to believe that women, but not men, should avoid certain sexual behaviors (such as having pre-marital sex, having sex at a young age or having multiple partners).

The Italian literature lacks solid evidence on the sexual attitudes of Italian youth and on its positive and health-enhancing aspects. However, a recent study has evaluated sexual satisfaction and its correlates among Italian university students and has found that the majority of the sample declared themselves as sexually satisfied, without significant gender differences (Terzera, Rimoldi & Barbiano di Belgiojoso, 2020). However, the authors found gender differences in the variables influencing sexual satisfaction, specifically, female respondents were less likely to have ever engaged in masturbation and their sexual satisfaction levels were more negatively impacted when reporting low self-confidence and when holding sexual double standards about early sexual debut (Terzera et al., 2020).

Overall, the evidence discussed so far seems to indicate that the Italian context is characterized by numerous socio-cultural factors which are likely to increase young women's

risk to develop negative representations of their sexual selves. The influence of the Catholic religion, the traditional dichotomization of the feminine and masculine roles, the high rates of sexualization of women's bodies in the media and the endorsement of the sexual double standard among Italian youth, all appear to be potential risk factors for women's development of a healthy sexual subjectivity.

The Female Sexual Subjectivity Inventory

Horne and Zimmer-Gembeck (2006) were the first to operationalize the concepts related to female sexual subjectivity and to develop an instrument for its measurement: the *Female Sexual Subjectivity Inventory (FSSI)*. According to the conceptualization of Horne and Zimmer-Gembeck (2006), sexual subjectivity consists of self-conceptions and cognitions in regard to three macro areas: Sexual body-esteem, Sexual Desire and Pleasure, and Sexual self-reflection. The three studies that yielded to the development and validation of the FSSI revealed that a 20-item five-factor structure showed the best fit to the data (Horne & Zimmer-Gembeck, 2006). Indeed, the second element of sexual subjectivity, Sexual Desire and Pleasure, is further divided into three factors: Sense of entitlement to sexual pleasure from self, Sense of entitlement to sexual pleasure from a partner, and Self-efficacy in achieving sexual pleasure. Despite the slightly better fit of the five-factor structure, the authors preferred to maintain the original, conceptually derived, three-factor structure. However, the authors also acknowledged that the FSSI measures five related but distinct factors that only show moderate positive correlations with each other, and therefore should be considered separately (Horne & Zimmer-Gembeck, 2006). Factor 1 (Sexual body-esteem) assesses women's perceptions of their sexual attractiveness. A sample item is "I am confident that others will find me sexually desirable". Factor 2 (Sense of entitlement to sexual pleasure from self) assesses women's sense of entitlement to experience sexual pleasure from masturbation. A sample item is "It is okay for me to meet my own sexual needs through self-masturbation". Factor 3 (Entitlement to sexual pleasure from a partner) assesses women's sense of entitlement to receive pleasurable sexual stimulation from a partner. A sample item is "If a partner were to ignore my sexual needs and desires, I'd feel hurt". Factor 4 (Self-efficacy in achieving sexual pleasure) assesses a woman's ability to demand the sexual stimulation that she needs in order to achieve sexual pleasure. A sample item is "I am able to ask a partner to provide the sexual stimulation I need". Factor 5 (Sexual self-reflection) assesses women's proneness to critically reflect about their sexual selves. A sample item is "I spend time thinking and reflecting about my sexual experiences". Respondents are asked to indicate how much each statement is true for them, using a 5-point Likert type scale ranging from 1 (absolutely false) to 5 (absolutely true). Higher scores indicate higher levels of sexual subjectivity. The psychometric evaluation of the instrument was performed on data collected from a sample of 216 Australian women aged 17 to 22 and revealed adequate psychometric properties (Horne & Zimmer-Gembeck, 2006). Cronbach's alphas were .82, .81, .81, .85, and .78 for Factor 1, 2, 3, 4 and 5 respectively. Good convergent validity was demonstrated through positive correlations with measures of sexual consciousness, safe-sex self-efficacy, self-esteem, identity achievement, and resistance to sexual double standards (Horne & Zimmer-Gembeck, 2006). A negative correlation was found with a measure of self-silencing in intimate relationships (Horne & Zimmer-Gembeck, 2006). Two longitudinal studies have attempted to assess the stability of sexual subjectivity over time and the factors that may be associated with its variation (Hewitt-Stubbs, Zimmer-Gembeck, Mastro & Boislard, 2016; Zimmer-Gembeck, Ducat & Boislard-Pepin, 2011). These studies showed that sexual subjectivity' scores correlate with the amplitude of the repertoire of sexual experiences and suggest that sexual subjectivity tends to develop steadily when sexual activity is first initiated and then stabilizes as sexual activity increases (Hewitt-Stubbs et al., 2016; Horne & Zimmer-Gembeck, 2005; Zimmer-Gembeck et al., 2011). Overall sexual subjectivity scores were not found to significantly differ by age group (Zimmer-Gembeck et al., 2011), however, positive associations were found between age and entitlement to sexual pleasure from a partner (Hewitt-Stubbs et al., 2016; Zimmer-Gembeck et al., 2011) and between age and entitlement to sexual pleasure from self (Moyano, Granados, Vélez-Schemankewitz & Dib-Fayad, 2020; Zimmer-Gembeck et al., 2011). Sexual subjectivity scores have been found to be significantly higher in women who have a stable romantic relationship (Zimmer-Gembeck et al., 2011). Albeit the FSSI was developed to assess the sexual self-concepts of girls in their late adolescence and emerging adulthood, some scholars have used it with women up to 71 years of age and have concluded that the FSSI is an adequate instrument to use with women in

different developmental stages (Moyano et al., 2020; Satinsky & Jozkowski, 2014). Most of the research employing the FSSI has been conducted on White, English-speaking populations (such as Australian or American samples). Moyano and colleagues (2020) have developed a Spanish version of the FSSI and have examined its psychometric properties on a sample of Ecuadorian women. Although the Spanish version was found to have adequate psychometric properties, the authors observed that Ecuadorian women scored particularly low in the Entitlement to pleasure from self subscale, which suggests that female sexual subjectivity is a culture-dependent construct (Moyano et al., 2020), and the need to re-examine the structure and psychometric properties of measures when they are applied to another context or culture.

The current study

The present study aimed to determine whether the FSSI could be a psychometrically-sound measure in the Italian context. This is important because it provides further cross-cultural research on the FSSI, while also providing a useful tool with which to assess this construct in Italy. Indeed, it should be noted that, to the best of our knowledge, no measure of entitlement to sexual pleasure, sex reflection or sexual self-efficacy is currently available in the Italian language. This lack of instruments is currently impeding the Italian literature to replicate the research on female sexual well-being that has been conducted elsewhere and is especially preventing clinicians from gaining important insights in regard to the sexual well-being of young Italian women. For these reasons, the aims of the present study were to examine the dimensionality, internal consistency, and convergent validity of the Italian version of the FSSI. On the basis of the literature reviewed so far, we expected to find evidence for a five-factor structure for the FSSI. Furthermore, based on previous findings (Horne & Zimmer-Gembeck, 2006; Moyano et al., 2020), we expected FSSI scores to correlate positively with measures of general self-esteem and body self-esteem and negatively with a measure of self-surveillance (i.e., self-objectification). For the conflicting previous results about the association between sexual subjectivity and age (Hewitt-Stubbs et al., 2016; Moyano et al., 2020; Zimmer-Gembeck et al., 2011), and for the lack of previous findings in regard to the association between sexual subjectivity and religiosity, no specific predictions were made.

METHOD

Participants

Data were derived from the first phase of a larger study that was conducted by the first two authors of this paper in 2020 aimed to investigate the impact of gender scripts, sexual pressure, and sexual subjectivity on young heterosexual women' sexual functioning. The study comprised three different phases on three different samples. A total of 1404 Italian women aged 18 to 35 (M = 22.25, SD = 3.42) participated in the first phase of the study. The majority of participants (65.1%) had a high school diploma, 24.3% had an academic degree, 7.8% had an elementary or middle school diploma, and 2.8% had postgraduate degrees. For what concerns religious faith, 30,7% of the participants stated that they were religious. As the overall research focused on the impact of gender scripts in the specific context of heterosexual relationships, only women who had been in a romantic relationship with a man in the six months preceding recruitment were eligible to participate, thus this study does not include lesbian or asexual women.

The recruitment procedure was carried out by disseminating advertisements on social media platforms such as Facebook and Instagram, and in particular, on a sex education Instagram profile that posts daily content on sexuality-related topics (Sessuologia, n.d.). The study was advertised as a "Scientific research on gender stereotypes and female sexual well-being" and inclusion criteria were stated in the online post. Those included identifying as a female, being between 18 and 35 years of age, and having or having had a romantic relationship with a male partner in the six months preceding recruitment. Participants were screened for eligibility in the first page of the online survey, those who did not meet the inclusion criteria were redirected directly to the closing page of the online protocol, thus their data were not collected. Participation was voluntary and participants did not receive remuneration.

Measures

– *Female Sexual Subjectivity Inventory*. The Italian version of the *Female Sexual Subjectivity Inventory* (*FSSI*; Horne & Zimmer-Gembeck, 2006) was developed using a standard back-translation technique (Brislin, 1986). Firstly, the parent English version was translated from English to Italian

by a bilingual individual who was unaffiliated with the study (thus creating Version 1), next, the scale was translated back to English by a second individual (thus creating Version 2). Finally, Version 1 and Version 2 were compared by two additional independent translators that were not affiliated with the study. Minor discrepancies were settled through consensus. The Italian FSSI can be found in Appendix.

- *Body Shape Questionnaire-14*. The Italian version (Matera, Nerini & Stefanile, 2013) of the *Body Shape Questionnaire-14* (*BSQ-14*; Dowson & Henderson, 2001), is a 14 items scale that investigates women's dissatisfaction with their body image and shape. Participants are asked to indicate how frequently they experienced the feelings or situations that are described in the items in the past two weeks, using a 6-points Likert scale ranging from 1 (Never) to 6 (Always). Higher scores indicate higher levels of body dissatisfaction. The psychometric properties of the Italian version of the questionnaire were tested on a sample of Italian non-clinical young women, Cronbach's alpha for the total scale was found to be high (α = .93) and convergent validity was good (Matera et al., 2013). In the current study, Cronbach's alpha was .95.
- *Objectified Body Consciousness Scale*. The Italian version (Dakanalis, Timko, Clerici, Riva & Carrà, 2016) of the Self-surveillance subscale of the *Objectified Body Consciousness Scale* (*OBCS*; McKinley & Hyde, 1996) was used to measure respondents' tendency or habit to persistently monitor and think about their bodies as outside observers and respondents' levels of objectification of their bodies. The Self-surveillance subscale was found to be distinct from the two other dimensions of the *Objectified Body Consciousness Scale* (namely Body shame and appearance control beliefs) and can therefore be administered independently (McKinley & Hyde, 1996). The Self-surveillance subscale comprises 8 items (e.g., "I often worry about whether the clothes I am wearing make me look good"). Participants have to express their agreement or disagreement using a 7-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). Higher scores indicate higher levels of self-surveillance. Psychometric evaluation of the Italian version of the OBCS has demonstrated that the Self-surveillance subscale possesses good internal consistency (Cronbach's α = .86), test-retest reliability, convergent, and discriminant validity (Dakanalis et al., 2016). In the current study, Cronbach's α was .75.
- *Rosenberg Self-Esteem Scale*. The Italian adaptation (Prezza, Trombaccia & Armento, 1997) of the *Rosenberg Self-Esteem Scale* (*RSES*; Rosenberg, 1965) was used as a measure of global self-esteem. The questionnaire counts 10 items investigating respondents' feelings of worthiness, contentedness about the self, and beliefs about competency. A sample item is "I feel that I have a number of good qualities". The rating scale consists of a 4-point Likert-type scale that ranges from 1 (Completely false) to 4 (Completely true). Higher scores indicate higher levels of self-esteem. The internal consistency of the Italian version of the instrument was found to be good (Cronbach's alpha = .84), as well as its construct validity (Prezza et al., 1997). In the current study, Cronbach's α was .87.

Procedure and statistical analysis

The individuals who were interested in undertaking the survey were provided with a link redirecting them directly to the online research questionnaire. Before starting the survey, participants were informed about the scope of the research, data treatment and privacy, and they were asked to declare that they were at least 18 years old and that they had read and understood the informed consent. International ethical guidelines were followed, and ethics approval was obtained.

A two-step analytic strategy to examine the psychometric properties of the Italian FSSI was used. We split the sample's dataset into two so that each subsample had a random allocation of 702 participants. There were no significant differences between the two subsamples in terms of age, or in the distribution of all the other study variables. In the first subsample, we assessed the factor structure of the Italian FSSI using principal component analysis (PCA) in IBM SPSS Statistics v.25. The sample sizes in this subsample met a conservative item-to-participant ratio of 10:1 (Tabachnick & Fidell, 2013). Using the original validation study (Horne & Zimmer-Gembeck, 2006) as a guide, we used oblimin rotation. The number of factors to be extracted was determined by factor eigenvalues above 1.0 (the EGV1 criterion) and examination of the scree plot (Preacher & MacCallum, 2003). Factor loadings were interpreted using Tabachnick and Fidell's (2013) recommendations, with loadings of .71 and above considered excellent, .63-.70 considered very good, .55-.62 considered good, .33-.54 considered fair, and .32 or lower considered poor. We then examined internal consistency by computing Cronbach's reliability coefficient. Next, data from the second

subsample were subjected to confirmatory factor analysis (CFA) with maximum likelihood (ML) estimation method by using LISREL. Hypothesized modelling was based on the results of the PCA in the first subsample. Standard goodness-of-fit indices were selected a priori to assess the measurement models (Hu & Bentler, 1999): the normed model chi-square (χ^2/df), the Comparative fit index (CFI), the Standardized Root-Mean-Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). Specifically, a χ^2/df value of <3.00 indicates a good fit, CFI values should be close to or >.95 for a good fit but can be as low as .90 for adequate fit. A cut-off value for SRMR is recommended to be close to or <.09. RMSEA values close to .06 indicate a good fit, with values ranging to .10 representing a mediocre fit. In this second subsample, we examined convergent validity by computing bivariate correlations between FSSI scores and scores on the *Rosenberg Self-Esteem Scale* (Rosenberg, 1965), the Self-surveillance subscale of the *Objectified Body Consciousness Scale* (McKinley & Hyde, 1996), and the *Body Shape Questionnaire-14* (Dowson & Henderson, 2001). Bivariate correlations between FSSI scores, Age and Religiosity were also computed. Religiosity was coded as a dummy variable, with "non-religious" as a reference.

RESULTS

Item analysis

Means, standard deviations, skewness, and kurtosis for each FSSI item in the first subsample (n = 702 age M = 22.30 SD = 3.46) were calculated. They are shown in Table 1. All the items except one (i.e., item 13) showed skewness and kurtosis within normal parameters (being included in the conventional cut-off of ±3 [e.g., Mayers, 2013]). Regardless of statistical significance, simulation studies have found that serious problems may exist when univariate skewness is ≥2.0 and kurtosis is ≥7.0 (Curran, West & Finch, 1996).

Exploratory factor analysis

Based on items distribution, average correlation with other items, and item-total correlations (Clark & Watson, 1995), this data was suitable for factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (.81) and the significance of Bartlett's test of sphericity of the present study ($\chi^2_{(190)}$= 4862.534, p<.001) indicated that this data had adequate factorability. The results of the factor analysis indicated that five factors – which explained 61.03% of the total variance – should be extracted. As shown in Table 2, all 20 items in the FSSI had good-to-excellent factor loadings. Cronbach's alphas had adequate values (see Table 2). The five factors identified were the same as the original version: Sexual body-esteem (Factor 1), Sense of entitlement to sexual pleasure from self (Factor 2), Sense of entitlement to sexual pleasure from partner (Factor 3), Self-efficacy in achieving sexual pleasure (Factor 4), Sexual self-reflection (Factor 5).

Confirmatory factor analysis

To verify the factor structure identified through PCA, a CFA was performed on the second subsample (n = 702, age M = 22.19 SD = 3.38). Results showed an acceptable fit for the five-factor solution ($\chi^2_{(160)}$= 586.90, p<.001; χ^2/df = 3.66; RMSEA [90% CI] = .06 [.05;.07]; CFI = .94; SRMR = .05). Standardized factor loading ranged from .34 to .87, all of which were significant at the .001 level, as well as the estimated correlations between the five factors (see Figure 1).

Convergent validity

We examined convergent validity by considering bivariate correlations between FSSI scores and scores on the BSQ-14, the Self-surveillance subscale of the OBCS and the RSES (see Table 3).

The Sexual body-esteem subscale positively correlated with self-esteem and negatively correlated with self-surveillance and body dissatisfaction. The Sense of entitlement to pleasure from partner and from the self subscales were positively correlated with self-esteem. The Self-efficacy in achieving pleasure subscale was positively associated with self-esteem and negatively associated with self-surveillance. The Sexual self-reflection subscale was positively associated with self-surveillance. Being religious correlated negatively with feeling entitled to sexual pleasure from a partner and from the self and with sexual self-reflection, whereas no significant associations were found with Sexual body-esteem or Self-efficacy in achieving sexual pleasure. No significant associations were found between FSSI factors and age.

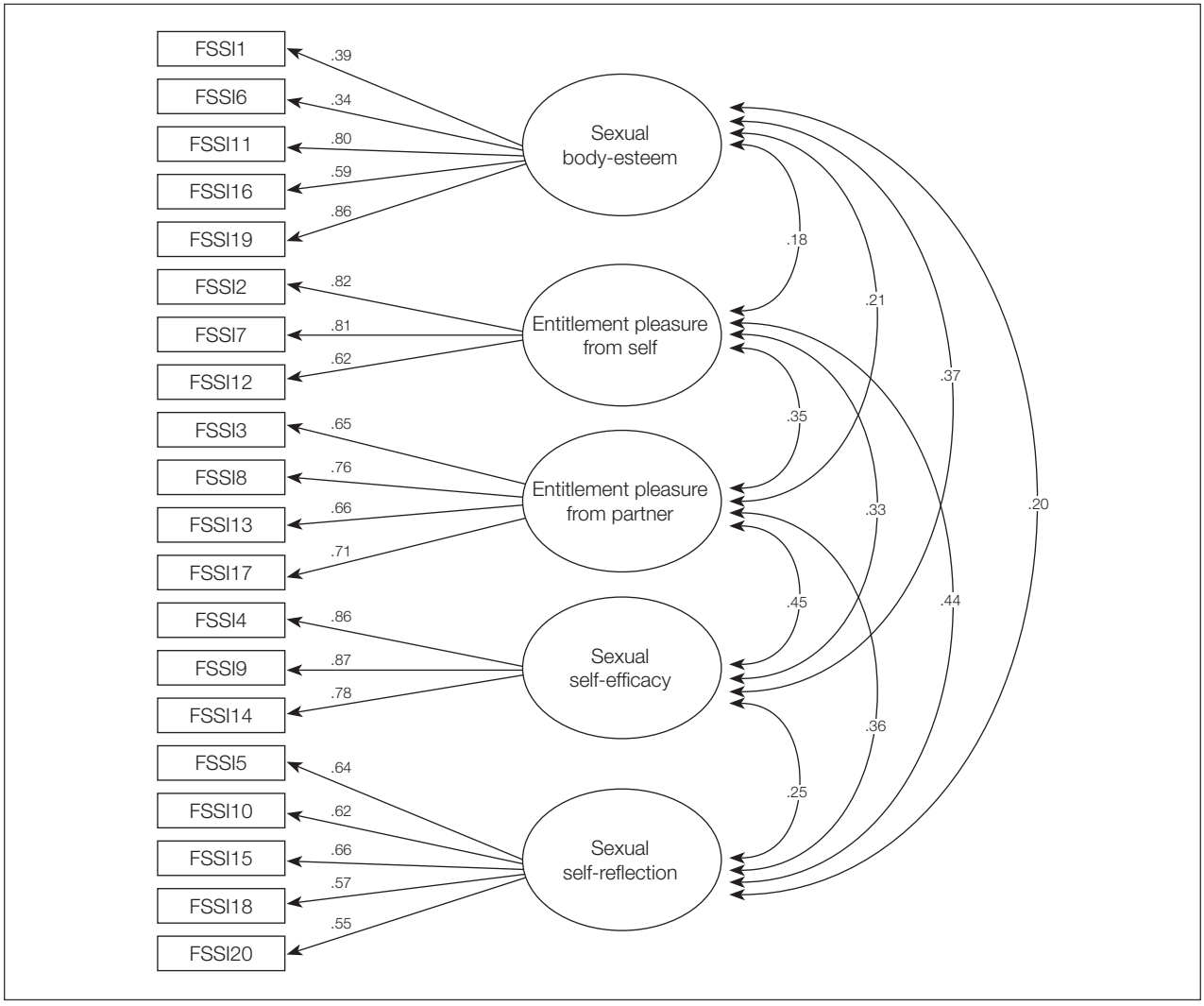
Table 1 – Descriptive statistics of Female Sexual Subjectivity Inventory (FSSI) (N = 702)

	M	SD	Skewness	Kurtosis
FSSI1	2.69	1.14	.48	−.64
FSSI2	4.30	.95	−1.54	2.07
FSSI3	4.34	.77	−1.29	2.11
FSSI4	4.13	1.00	−1.12	.60
FSSI5	3.74	1.00	−.75	.14
FSSI6	2.87	1.21	.31	−.90
FSSI7	4.29	.91	−1.44	2.04
FSSI8	4.39	.69	−1.19	2.02
FSSI9	3.94	1.04	−.89	.15
FSSI10	4.07	.89	−.82	.25
FSSI11	3.26	.94	−.44	.05
FSSI12	4.82	.50	−1.54	1.52
FSSI13	4.57	.67	−1.77	3.91
FSSI14	4.08	.84	−.94	1.14
FSSI15	4.10	.92	−1.04	.95
FSSI16	3.70	1.04	−.65	−.07
FSSI17	4.62	.56	−1.39	2.70
FSSI18	4.02	.95	−.89	.40
FSSI19	3.00	1.00	−.14	−.52
FSSI20	4.11	1.00	−1.19	1.03

Table 2 – Female Sexual Subjectivity Inventory: Principal components analysis with Oblimin rotation

	Factors				
Item	1	2	3	4	5
FSSI1	**.59**	−.03	−.36	−.15	.00
FSSI6	**.52**	.06	−.26	−.22	−.01
FSSI11	**.83**	−.06	.11	.15	.04
FSSI16	**.64**	.07	.19	−.11	−.04
FSSI19	**.85**	−.08	.10	.13	.03
FSSI2	.02	**−.88**	−.04	−.03	−.02
FSSI7	.01	**−.84**	.07	−.01	.02
FSSI12	−.01	**−.77**	−.02	−.01	.00
FSSI3	.01	−.04	**.76**	.05	.04
FSSI8	.03	−.07	**.78**	−.01	.05
FSSI13	−.03	.03	**.65**	−.25	−.02
FSSI17	.17	−.03	**.64**	−.15	.09
FSSI4	−.01	−.06	.02	**−.87**	.01
FSSI9	−.03	−.05	.03	**−.87**	.01
FSSI14	.02	−.01	.18	**−.76**	.08
FSSI5	−.02	−.06	−.03	−.01	**.70**
FSSI10	.04	.02	.01	.02	**.75**
FSSI15	−.01	−.12	.06	−.07	**.65**
FSSI18	.00	.05	.02	.00	**.71**
FSSI20	−.03	.06	−.05	.02	**.76**
Explained variance (%)	12.30	7.76	24.90	6.83	9.25
Cronbach's alpha	.74	.77	.77	.85	.76

Figure 1 – Confirmatory factor analysis of the Italian FSSI



DISCUSSION

The purpose of this study was to evaluate the psychometric properties of the Italian version of the *Female Sexual Subjectivity Inventory* (Horne & Zimmer-Gembeck, 2006) and to determine whether the FSSI can be used to investigate female sexual subjectivity in the Italian context. The factor structure, internal consistency, convergent validity and reliability of the Italian FSSI were explored.

The Italian version of the FSSI comprises the same 20 items as the original version (Horne & Zimmer-Gembeck, 2006). Exploratory factor analysis and confirmatory factor analysis confirmed the five-factor structure of the scale. The first FSSI factor (Sexual body-esteem) assesses women's levels of self-confidence in regard to their sexual attractiveness. The second factor (Sense of entitlement to sexual pleasure from self) investigates whether a woman feels entitled to satisfy her sexual needs through self-masturbation. The third factor (Sense of entitlement to sexual pleasure from partner) investigates whether a woman feels entitled to experience sexual pleasure from the partner and whether she expects a sexual partner to be sensitive to her sexual needs and feelings. The fourth factor (Self-efficacy in achieving sexual pleasure) investigates whether a woman is comfortable in expressing her sexual needs to a sexual partner. The fifth factor (Sexual self-reflection) investigates a woman's proneness to reflect upon her sexuality and her sexual experiences.

All FSSI subscales had adequate to high internal

Table 3 – Descriptive statistics and correlations (Pearson's coefficients) between the five factors of the FSSI, Self-esteem, Self-surveillance, Body dissatisfaction, Age and Religiosity (N = 702)

FSSI Factors	M (SD)	Self–esteem	Self–surveillance	Body–shape dissatisfaction	Age	Religiosity
Factor 1 – Sexual body esteem	3.12 (.74)	.49**	–.39**	–.47**	.02	–.03
Factor 2 – Entitlement to pleasure from the self	4.45 (.66)	.12**	–.06	–.03	.06	–.19**
Factor 3 – Entitlement to pleasure from partner	4.51 (.51)	.09*	–.06	.06	–.02	–.15**
Factor 4 – Self–efficacy in achieving sexual pleasure	4.07 (.86)	.19**	–.13**	–.07	–.01	–.07
Factor 5 – Sexual self–reflection	4.04 (.66)	.07	.09*	–.03	–.06	–.10**

Note. Religiosity was coded as a dummy variable with non-religious = 0 and religious = 1; *p<.05; **p<.01

consistencies and were found to correlate with theoretically related constructs, consistently with previous findings (Horne & Zimmer-Gembeck, 2006; Moyano et al., 2020). In particular, women who scored higher on the Sexual body-esteem subscale of the FSSI showed significantly higher levels of general self-esteem, and lower levels of body dissatisfaction and self-surveillance tendencies. Moreover, women who reported feeling more entitled to experience sexual pleasure from their own selves (e.g., through self-masturbation) and those who felt more self-agentic in achieving pleasure showed greater levels of self-esteem. None of the FSSI subscales was found to correlate with age. This result differs from previous studies who reported a positive association between age and sense of entitlement to sexual pleasure from a partner (Hewitt-Stubbs et al., 2016; Zimmer-Gembeck et al., 2011) and between age and sense of entitlement to sexual pleasure from the self (Moyano et al., 2020; Zimmer-Gembeck et al., 2011). However, we believe that the absence of correlation found in the current study might be due to the fact that the average age was higher in our sample. In fact, the association between sexual subjectivity and age is likely to be mediated by an increase in sexual experiences and sexual subjectivity was found to increase steadily when sexual activity is first initiated (Hewitt-Stubbs et al., 2016; Zimmer-Gembeck et al., 2011). Thus, as the women in our sample were older than those who participated in previous studies, they might have been all sexually experienced and therefore their sexual subjectivity scores did not vary as a function of age. Further research is needed to clarify whether age has an effect on sexual subjectivity and whether this relation is fully or partially mediated by an increase in sexual experiences.

In our sample, being religious was associated with lower levels of entitlement to sexual pleasure from a partner and from the self, and lower levels of sexual self-reflection. To the best of our knowledge, no previous study has investigated the associations between religiosity and sexual subjectivity, thus these findings are important because they suggest that religious women might have more difficulties in developing a healthy sense of sexual subjectivity. This could be due to the fact that, according to the Catholic religion, sex should only occur for procreational purposes and having sexual experiences only for the sake of pleasure is considered sinful. Therefore, young religious women might feel less entitled to experience sexual pleasure and less prone to reflect on their sexual life, because they might deem that it is not appropriate. This explanation would be in line with the findings of Marcinechová and Záhorcová (2020), who found that intrinsic religiosity was associated with diminished sexual permissiveness and increased sexual shame.

The psychometric properties of the Italian FSSI are comparable to those reported by Horne and Zimmer-Gembeck (2006). This result seems to suggest that the structure and the

psychometric properties of the FSSI remain relatively stable across different cultural contexts. The FSSI has been adapted to the Spanish language and its psychometric properties have been tested on a sample of Ecuadorian women (Moyano et al., 2020). Moyano and colleagues (2020) found that after deletion of two items, the Spanish version of the FSSI revealed a five-factor structure and psychometric properties comparable to those of the original version. However, the authors also noted that Ecuadorian women scored significantly lower than Australian women on the Entitlement to pleasure from self subscale, which they attributed to the rigid patriarchal norms that characterize Latin American countries (Moyano et al., 2020). These results may indicate that the construct of sexual subjectivity, or at least some of its factors, are sensitive to cultural changes. Thus, further studies are warranted to test the cross-cultural invariance of the FSSI, and researchers employing the FSSI should be mindful of the possible effects that different cultural contexts can have on FSSI scores.

This study features some important limitations. First, the majority of women who took part in our study were recruited by the means of an Instagram page that posts daily content related to sexology and sexual wellbeing. This may represent a sampling bias, which may have altered the generalizability of our findings to the general population of young Italian women. Indeed, there is a concrete risk that women who follow a sex-education Instagram profile are more open-minded and knowledgeable about sexuality and therefore more prone to reflect on their sexuality or to feel entitled to experience sexual pleasure. However, this recruiting procedure also presented considerable advantages, in fact, it enabled us to recruit a very large and diversified sample in terms of socio-demographic characteristics (e.g., level of education), which would not have been the case if we had carried out the recruitment procedure on a university campus. Another limitation of current study is that the women in our study sample had been in a romantic relationship with a male partner in the six months preceding recruitment, thus, results cannot be generalizable to women with no partner or with different sexual orientations, such as lesbian or asexual women. Finally, this study only focused on women between 18 and 35 years of age and therefore cannot be generalizable to adolescents or older adults. Hence, studies featuring more diversified samples in terms of age, sentimental status, and sexual orientation should be conducted, to further support the validity of the current findings.

Despite these limitations, the present findings indicate that the FSSI is an adequate instrument to assess sexual subjectivity among young Italian heterosexual women and that sexual subjectivity significantly relates to other important areas of women's wellbeing.

Given that significant rates of sexism against women have been documented among Italian University students (Rollero & Tartaglia, 2018) and on Italian media (Ragnedda & Budd, 2015; Tartaglia & Rollero, 2015), and considering that sexual double standard persists to exist among Italian youth (Migheli & Pronzato, 2020), more research is warranted to investigate the effect that gender stereotypes play on the sexual well-being of young Italian women. Using the Italian versions of the FSSI will allow future researchers to gain a better understanding of how gender stereotypes may influence the sexual subjectivity and the sexual well-being of young women in Italy. Moreover, as noted by numerous authors, most of the research that has been conducted on young female sexuality has taken a problem-oriented approach and has focused on the occurrence/prevention of negative outcomes (Horne & Zimmer-Gembeck, 2006; Rostosky, Dekhtyar, Cupp & Anderman, 2008). The FSSI, instead, will enable future researchers to focus on the positive and health enhancing outcomes of young women' sexuality, an important area of study that has not yet been sufficiently considered in the Italian context.

References

BAY-CHENG, L., BRUNS, A. & MAGUIN, E. (2018). Agents, virgins, sluts, and losers: The sexual typecasting of young heterosexual women. *Sex Roles*, *79* (11-12), 699-714. doi:10.1007/s11199-018-0907-7

BOND, J., MORRISON, D. & HAWES, S. (2020). Sexual self-efficacy and entitlement to pleasure: The association of the Female Sexual Subjectivity Inventory with sexual risk taking and experience of orgasm. *Archives of Sexual Behavior*, *49* (3), 1029-1038. doi:10.1007/s10508-019-01563-3

BREAKWELL, G. & MILLWARD, L. (1997). Sexual self-concept and sexual risk-taking. *Journal of Adolescence*, *20* (1), 29-41. doi:10.1006/jado.1996.0062

BRISLIN, R.W. (1986). The wording and translation of research instruments. In W.L. Lonner & J.W. Berry (Eds.), *Cross-cultural research and methodology series, Vol. 8. Field methods in cross-cultural research.* Sage Publications.

BURCH, B. (1998). Lesbian sexuality/female sexuality: Searching for sexual subjectivity. *Psychoanalytic Review*, *85*, 349-372.

CALTABIANO, M., ROSINA, A. & DALLA-ZUANNA, G. (2006). Interdependence between sexual debut and church attendance in Italy. *Demographic Research*, *14*, 453-484. doi:10.4054/demres.2006.14.19

CLARK, L.A. & WATSON, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, *7* (3), 309-319. doi:10.1037/1040- 3590.7.3.309

CURRAN, P.J., WEST, S.G. & FINCH, J.F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods*, *1* (1), 16-29. doi:10.1037/1082-989X.1.1.16

DAKANALIS, A., TIMKO, A., CLERICI, M., RIVA, G. & CARRÀ, G. (2016). Objectified Body Consciousness (OBC) in eating psychopathology. *Assessment*, *24* (2), 252-274. doi:10.1177/1073191115602553

DE SANTIS, G., MALTAGLIATI, M. & SALVINI, S. (2015). A measure of the cultural distance between countries. *Social Indicators Research*, *126* (3), 1065-1087. doi:10.1007/s11205-015-0932-7

DOWSON, J. & HENDERSON, L. (2001). The validity of a short version of the Body Shape Questionnaire. *Psychiatry Research*, *102*, 263-271. doi:10.1016/s0165-1781(01)00254-2.

EMMERINK, P.M.J., VANWESENBEECK, I., VAN DEN EIJNDEN, R.J.J.M. & TER BOGT, T.F.M. (2015). Psychosexual correlates of sexual double standard endorsement in adolescent sexuality. *The Journal of Sex Research*, *53* (3), 286-297. doi:10.1080/00224499.2015.1030720

FINE, M. (1988). Sexuality, schooling, and adolescent females: The missing discourse of desire. *Harvard Educational Review*, *58*, 29-53. doi:10.17763/haer.58.1.u0468k1v2n2n8242

GLICK, P. & FISKE, S.T. (1997). Hostile and benevolent sexism. *Psychology of Women Quarterly*, *21* (1), 119-135. doi:10.1111/j.1471-6402.1997.tb00104.x

HEWITT-STUBBS, G., ZIMMER-GEMBECK, M., MASTRO, S. & BOISLARD, M. (2016). A longitudinal study of sexual entitlement and self-efficacy among young women and men: Gender differences and associations with age and sexual experience. *Behavioral Sciences*, *6* (1), 4. doi:10.3390/bs6010004

HORNE, S. & ZIMMER-GEMBECK, M. (2005). Female sexual subjectivity and well-being: Comparing late adolescents with different sexual experiences. *Sexuality Research and Social Policy*, *2* (3), 25-40. doi:10.1525/srsp.2005.2.3.25

HORNE, S. & ZIMMER-GEMBECK, M. (2006). The Female Sexual Subjectivity Inventory: Development and validation of a multidimensional inventory for late adolescents and emerging adults. *Psychology of Women Quarterly*, *30* (2), 125-138. doi:10.1111/j.1471-6402.2006.00276.x

HU, L. & BENTLER, P.M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6* (1), 1-55. doi:10.1080/10705519909540118

ISTAT (2019). *Gli stereotipi sui ruoli di genere e l'immagine sociale della violenza sessuale*. Retrieved from: https://www.istat.it/it/files//2019/11/Report-stereotipi-di-genere.pdf

KIM, J., LYNN SORSOLI, C., COLLINS, K., ZYLBERGOLD, B., SCHOOLER, D. & TOLMAN, D. (2007). From sex to sexuality: Exposing the heterosexual script on primetime network television. *Journal of Sex Research*, *44* (2), 145-157. doi:10.1080/00224490701263660

KREAGER, D.A., STAFF, J., GAUTHIER, R., LEFKOWITZ, E.S. & FEINBERG, M.E. (2016). The double standard at sexual debut: Gender, sexual behavior and adolescent peer acceptance. *Sex Roles*, *75* (7-8), 377-392. doi:10.1007/s11199-016-0618-x

LEFKOWITZ, E.S., GILLEN, M.M., SHEARER, C.L. & BOONE, T.L. (2004). Religiosity, sexual behaviors, and sexual attitudes during emerging adulthood. *The Journal of Sex Research*, *41* (2), 150-159. doi:10.1080/00224490409552223

MALTBY, L., HALL, M., ANDERSON, T. & EDWARDS, K. (2010). Religion and sexism: The moderating role of participant gender. *Sex Roles*, *62* (9-10), 615-622. doi:10.1007/s11199-010-9754-x

MARCINECHOVÁ, D. & ZÁHORCOVÁ, L. (2020). Sexual satisfaction, sexual attitudes, and shame in relation to religiosity. *Sexuality & Culture*, *24* (6), 1913-1928. doi:10.1007/s12119-020-09727-3

MARKS, M.J., YOUNG, T.M. & ZAIKMAN, Y. (2019). The sexual double standard in the real world. *Social Psychology*, *50* (2), 67-79. doi:10.1027/1864-9335/a000362

MASTRO, S. & ZIMMER-GEMBECK, M. (2015). Let's talk openly about sex: Sexual communication, self-esteem and efficacy as correlates of sexual well-being. *European Journal of Developmental Psychology*, *12* (5), 579-598. doi:10.1080/17405629.2015.1054373

MATERA, C., NERINI, A. & STEFANILE, C. (2013). Misurare l'insoddisfazione corporea: Validazione della versione italiana del Body Shape Questionnaire-14 (BSQ-14). *Counseling*, *6* (2), 235-244.

MAYERS, A. (2013). *Introduction to statistics and SPSS in psychology.* Harlow: Pearson

McKINLEY, N. & HYDE, J. (1996). The Objectified Body Consciousness Scale. *Psychology of Women Quarterly*, *20* (2), 181-215. doi:10.1111/j.1471-6402.1996.tb00467.x

MIGHELI, M. & PRONZATO, C. (2020). Thinking as the others do: Persistence and conformity of sexual double standard among young Italians. *Genus*, *76* (1). doi:10.1186/s41118-020-00095-2

MINELLO, A., CALTABIANO, M., DALLA-ZUANNA, G. & VIGNOLI, D. (2020). Catching up! The sexual behaviour and opinions of Italian students (2000-2017). *Genus*, *76* (1). doi:10.1186/s41118-020-00085-4

MIKOŁAJCZAK, M. & PIETRZAK, J. (2014). Ambivalent sexism and religion: Connected through values. *Sex Roles*, *70* (9-10), 387-399. doi:10.1007/s11199-014-0379-3

MORGAN, M.Y. (1987). The impact of religion on gender-role attitudes. *Psychology of Women Quarterly*, *11* (3), 301-310. doi:10.1111/j.1471-6402.1987.tb00905.x

MOYANO, N., GRANADOS, R., VÉLEZ-SCHEMANKEWITZ, M. & DIB-FAYAD, N. (2020). Are you sexually empowered? Validation of the Female Sexual Subjectivity Inventory for Spanish-speaking women. *Revista Latinoamericana de Psicología*, *52*. doi:10.14349/rlp.2020.v52.9

PREACHER, K.J. & MacCALLUM, R.C. (2003). Repairing Tom Swift's electric factor analysis machine. *Understanding Statistics*, *2* (1), 13-43.

PREZZA, M., TROMBACCIA, F.R. & ARMENTO, R. (1997). La scala dell'autostima di Rosenberg: Traduzione e validazione italiana [Rosenberg's self-esteem scale: Italian translation and validation]. *Bollettino di Psicologia Applicata*, *223*, 35-44.

RAGNEDDA, K. & BUDD, K.M. (2015). Invisible violence: Media (re)production of gender inequality in Italy. *Communication Papers*, *4* (07), 11. doi:10.33115/udg_bib/cp.v4i07.22045

ROLLERO, C. & TARTAGLIA, S. (2018). The effect of sexism and rape myths on victim blame. *Sexuality & Culture*, *23* (1), 209-219. doi:10.1007/s12119-018-9549-8

ROSENBERG, M. (1965). *Society and the adolescent self-image*. Princeton University Press.

ROSTOSKY, S.S., DEKHTYAR, O., CUPP, P. & ANDERMAN, E. (2008). Sexual self-concept and sexual self-efficacy in adolescents: A possible clue to promoting sexual health? *Journal of Sex Research*, *45* (3), 277-286. doi:10.1080/00224490802204480

SAGEBIN BORDINI, G. & SPERB, T.M. (2012). Sexual double standard: A review of the literature between 2001 and 2010. *Sexuality & Culture*, *17* (4), 686-704. doi:10.1007/s12119-012-9163-0

SATINSKY, S. & JOZKOWSKI, K. (2014). Female sexual subjectivity and verbal consent to receiving oral sex. *Journal of Sex & Marital Therapy*, *41* (4), 413-426. doi:10.1080/0092623x.2014.918065

SEABROOK, R., WARD, L., REED, L., MANAGO, A., GIACCARDI, S. & LIPPMAN, J. (2016). Our scripted sexuality: The development and validation of a measure of the heterosexual script and its relation to television consumption. *Emerging Adulthood*, *4* (5), 338-355 doi:10.1177/2167696815623686

SESSUOLOGIA [@sessuologia]. (n.d.). *Posts [Instagram profile]*. Retrieved from https://www.instagram.com/sessuologia/

STRANGES, M. & VIGNOLI, D. (2020). Like a virgin: Correlates of virginity among Italian university students. *Genus*, *76* (1). doi:10.1186/s41118-020-00082-7

TABACHNICK, B. & FIDELL, L. (2013). *Using multivariate statistics (6th ed.)*. Pearson.

TARTAGLIA, S. & ROLLERO, C. (2015). Gender stereotyping in newspaper advertisements. *Journal of Cross-Cultural Psychology*, *46* (8), 1103-1109. doi:10.1177/0022022115597068

TERZERA, L., RIMOLDI, S. & BARBIANO DI BELGIOJOSO, E. (2020). Sexual satisfaction among Italian university students. *Genus*, *76* (1). doi:10.1186/s41118-020-00096-1

TOLMAN, D.L. (1994). Doing desire: Adolescent girls' struggles for/with sexuality. *Gender & Society*, *8* (3), 324-342. doi:10.1177/089124394008003003

TOLMAN, D.L. (2002). *Dilemmas of desire*. Harvard University Press.

ZIMMER-GEMBECK, M., DUCAT, W. & BOISLARD-PEPIN, M. (2011). A prospective study of young females' sexual subjectivity: Associations with age, sexual behavior, and dating. *Archives of Sexual Behavior*, *40* (5), 927-938. doi:10.1007/s10508-011-9751- 3

ZIMMER-GEMBECK, M., SEE, L. & O'SULLIVAN, L. (2014). Young women's satisfaction with sex and romance, and emotional reactions to sex. *Emerging Adulthood*, *3* (2), 113-122. doi:10.1177/2167696814548060

APPENDIX

Items of the Female Sexual Subjectivity Inventory (Italian version in brackets)

Item	Factor
1 It bothers me that I am not better looking. (Mi disturba il fatto di non essere fisicamente più attraente.)	Sexual body-esteem, reverse
2. It is okay for me to meet my own sexual needs through Self-masturbation. (Per me va bene soddisfare i miei bisogni sessuali tramite l'auto-masturbazione.)	Entitlement pleasure from self
3. If a partner were to ignore my sexual needs and desires, I'd feel hurt. (Se il mio partner ignorasse i miei bisogni e desideri sessuali mi sentirei ferita.)	Entitlement pleasure from partner
4. I would not hesitate to ask for what I want sexually from a romantic partner. (Non mi farei problemi a chiedere al partner quello che desidero sessualmente.)	Sexual self-efficacy
5 I spend time thinking and reflecting about my sexual experiences. (Trascorro del tempo pensando e riflettendo sulle mie esperienze sessuali.)	Sexual self-reflection
6. I worry that I am not sexually desirable to others. (Mi preoccupo di non essere sessualmente desiderabile agli occhi degli altri.)	Sexual body-esteem, reverse
7. I believe self-masturbating can be an exciting experience. (Credo che l'automasturbazione possa essere un'esperienza eccitante.)	Entitlement pleasure from self
8. It would bother me if a sexual partner neglected my sexual needs and desires. (Mi disturberebbe se un partner sessuale trascurasse i miei bisogni e desideri sessuali.)	Entitlement pleasure from partner
9. I am able to ask a partner to provide the sexual stimulation I need. (Sono capace di richiedere ad un partner il tipo di stimolazione sessuale di cui ho bisogno.)	Sexual self-efficacy
10. I rarely think about the sexual aspects of my life. (Penso raramente agli aspetti sessuali della mia vita.)	Sexual self-reflection, reverse
11. Physically, I am an attractive person. (Da un punto di vista fisico, sono una persona attraente.)	Sexual body-esteem
12. I believe self-masturbation is wrong. (Credo che sia sbagliato automasturbarsi.)	Entitlement pleasure from self, reverse
13. I would expect a sexual partner to be responsive to my sexual needs and feelings. (Mi aspetto che un partner sessuale sia sensibile rispetto ai miei bisogni sessuali e ai miei sentimenti riguardo al sesso.)	Entitlement pleasure from partner
14. If I were to have sex with someone I'd show my partner what I want. (Se avessi un rapporto sessuale con qualcuno gli farei capire ciò che voglio.)	Sexual self-efficacy
15. I think about my sexuality. (Rifletto sulla mia sessualità.)	Sexual self-reflection

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Item	Factor
16. I am confident that a romantic partner would find me sexually attractive. (Mi sento sicura del fatto che un partner sentimentale mi considererebbe sessualmente attraente.)	Sexual body-esteem
17. I think it is important for a sexual partner to consider my sexual pleasure. (Penso sia importante che il partner consideri il mio piacere sessuale.)	Entitlement pleasure from partner
18. I don't think about my sexual behaviour very much. (Non rifletto molto sui miei comportamenti sessuali.)	Sexual self-reflection, reverse
19. I am confident that others will find me sexually desirable. (Sono sicura che gli altri possano trovarmi sessualmente desiderabile.)	Sexual body-esteem
20. My sexual behaviour and experiences are not something I spend time thinking about. (I miei comportamenti e le mie esperienze sessuali non sono qualcosa su cui rifletto.)	Sexual self-reflection, reverse

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Convergent validity of Workplace Attachment Style Questionnaire and Leader as Security Provider Scale in Slovak sample

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ABSTRACT. Questo studio ha indagato in un campione slovacco la validità convergente della versione ridotta del *Workplace Attachment Style Questionnaire* e della *Leader as Security Provider Scale*, verificandone la relazione con l'efficacia percepita della leadership e l'appartenenza all'organizzazione. Le caratteristiche base sicura e rifugio sicuro hanno mostrato una correlazione negativa con stili insicuri e una correlazione positiva con uno stile sicuro. Stili insicuri e stress da separazione hanno predetto l'appartenenza. La base sicura e il rifugio sicuro con uno stile ansioso hanno predetto l'efficacia percepita. Pur riguardando variabili simili sulla leadership o l'appartenenza i risultati indicano che WASQ e LASPP sono diversi tra loro.

SUMMARY. We aimed to examine the convergent validity of the shortened version of the Workplace Attachment Style Questionnaire and the Leader as Security Provider Scale verifying the relationship of these scales with perceived leadership effectiveness and belonging to the organization in Slovak sample. The relationship between Leader as Security Provider Scale and Workplace Attachment Style Questionnaire confirmed a negative correlation between secure base and safe haven and insecure styles and positive correlations with a secure style. The insecure styles and separations distress predicted belonging to the organization. Secure base and safe haven and preoccupied style were predictors of the perceived effectiveness of the leader. The results suggest that although these two methodologies are related to similar variables dealing with leadership or belonging, they are unique. It is necessary to examine both constructs with other variables such as satisfaction, work engagement, or performance.

Keywords: *Workplace attachment, Leadership, Relationships in work*

INTRODUCTION

Attachment is widely studied construct rooted in the biological nature of humans. According to Bowlby (1969), children have the ingrained essence of seeking safety and comfort that affect the primary relationship person from the first days of our lives. The attachment constructs explain how individuals react in interactions with others concerning stress management (Mikulincer & Florian, 1995). Based on the care of the primary person in times of distress, individuals create internal working models of themselves and others that include individuals' feelings, opinions, or behaviors (Zimberoff & Hartman, 2002). If individuals have experienced adequate manifestations of the primary person, which has always been available, they developed a secure style of attachment (Hazan & Shaver, 1990). Conversely, inadequate immediate responses and lack of availability are associated with preoccupied or dismissive attachments (Hazan & Shaver, 1990).

The attachment studies primarily focused on the emotional journey between mother and child (Bowlby, 2010). Over time, the field of research has shifted to the transfer of a relationship from childhood to adulthood and close relationships (Hazan & Shaver, 1994). Subsequently, the attachment process extended to various objects such as animals (Crawford, Worsham & Swinehart, 2006; Pralong, 2004), intangible objects (Fournier, 1998; Lacœuilhe, 2000), places (Lewicka, 2010; Scannell & Gifford, 2010; Scrima, di Stefano, Guarnaccia & Lorito, 2015; Scrima, Moffat & Rioux, 2015; Scrima, Moffat & Rioux, 2016) or tangible objects in the workplace (Rioux, 2017). Today, we have several studies and scientific data in the field of attachment in childhood and adulthood. Considerable attention is pay to its research. However, what is not so much research is the work area. In this regard, the research focused mainly on personality. However, the importance of attachment styles as a specific domain of character, which could also influence the results of our working lives, was somehow overlooked (Harms, 2011). Attachment styles should consider an essential part of social relationships in the workplace because of their ability to influence relationships between individuals (Collins & Read, 1990).

According to Allen (2020), early attachment experiences shape an individual's sense of belonging. Baumeister and Leary (1995) differ between the need to belong and attachment. Belonging need depends on close relationships based on an accumulation of intimacy and shared experience where one person can be replaced by any other. Belonging in adulthood is not dependent on the early association with the mother, as Bowlby (1969) states. However, same as attachment, belonging is the fundamental human need. According to the connection with a specific locality, belonging to the community is tied to the place and characterized by the reluctance to leave (Bollen & Hoyle, 1999; Hughey & Bardo, 1984; Grance & Ming, 2001; Naništová & Mesárošová, 2000). The place's characteristics become essential in the cognitive assessment of the sense of belonging, taking into account the environment, the place attachment, identity, and satisfaction. There is also a view of belonging to the community that concerns the emotional aspect of belonging, such as friendship, belonging to a group of people which is more important than a place (McMillan & Chavis, 1986). Research results show that place attachment predicts the sense of belonging (Naništová & Mesárošová, 2000), that belonging indicates place attachment (Hidalgo & Hernández, 2001) and also that there is a mutual relationship (Pretty, Chipuer & Bramston, 2003). Place attachment also describes the emotional attachment between a person and place (Swim et al., 2011), and Scrima, Rioux and di Stefano (2017) supported the idea, "that the bonds that an individual form with workplace can be classified as attachment bonds" (p. 944).

Hazan and Shaver (1990) were among the first to apply attachment theory to the work environment. They focused on transferring attachments from close relationships to workplace relationships. They used a typological measure and contributed to the knowledge that securely attached workers are happier at work. Their relationships in the workplace are of better quality, feel competent, and experience less fear in working life. Conversely, anxious employees are more afraid of rejection due to their low self-esteem and higher job turnover. Anxiously attached leaders show less efficiency in performing tasks. Dismissive attached workers try to avoid social interactions, do not seek emotional support under stress, but they are more satisfied at work than anxious workers though less than securely attached workers. Dismissive leaders tend to be task-oriented and less effective in relationship management (Davidovitz, Mikulincer, Shaver, Izsak & Popper, 2007; Hazan & Shaver, 1990; Little, Nelson, Wallace & Johnson, 2011).

Nevertheless, there are other theoretical prerequisites for the study of attachment in work. From the perspective of environmental psychology, the term place attachment is defined as a strong emotional relationship to place, which

is significant for its symbolism (Naništová, 1998). Rioux (2006) defines a job position as an emotional bond arising from the dynamic interaction between the employee and the organizational environment and is an important aspect of the quality of working life. It is considered a resource for employees (Rioux & Pignault, 2013), whereas strong attached individuals are happier at work, less likely to quit their job, and achieve their next performance (Dinç, 2007; Le Roy & Rioux, 2012). Workplace attachment was examined based on one-dimensional scales (Bonaiuto, Fornara & Bonnes, 2003; Rioux & Mokounkolo, 2005; Velasco & Rioux, 2010). One of the most famous scales based on one-dimensionality is the *Workplace Attachment Scale* (Rioux, 2006).

Scrima and colleagues (Scrima, 2018; Scrima et al., 2017; Scrima, Rioux & Lorito, 2014) addressed investigating attachment to the workplace based directly on Bowlby's attachment theory. He was the first to develop a methodology for measuring workplace attachment styles called the *Workplace Attachment Style Questionnaire* (*WASQ*), which was based on a two-dimensional understanding founded on the work of Bartholomew and Horowitz (1991). He emphasized the quality of attachment, focusing on exploring attachment styles in the workplace (Scrima, 2018). The model consisted of thoughts of itself and thoughts of a place with a positive and negative charge. Their combination creates four types of attachment styles: a secure, preoccupied, dismissive, and fearful style (Scrima et al., 2017; Scrima, 2018). Employees whose working conditions are sufficient in terms of safety, atmosphere, or productivity achieve less concern about workplace conditions. These working conditions could ultimately lead to a more positive perception of their workplace, greater attachment to such a workplace, and increased daily productivity (Dinç, 2007). Thus, securely attached workers have a more positive attitude towards work, are more committed, adaptable to changes in the organization, and have a higher quality of working life. Preoccupied attached workers are more empowered with manifestations of anxiety related to job loss (Scrima, Moffat et al., 2015). It has been found that the more employees are attached to the workplace, the more they help their colleagues and are more teammate players (Rioux & Pavalache-Ilie, 2013).

Examining the attachment in terms of relationships or workplace attachments has an irreplaceable role that can further specify workers' behavior. However, relationships in the workplace are influenced by the own style of attachment of the leader and subordinate, and they include the dynamics of attachment (Mayseless, 2010). The specificity of the relationship between a leader and a subordinate is its asymmetricity, mutual interpretations and expectations, and purpose specificity (Harms, 2011). Mayseless (2010) argues that leader provides particular safety and cares for subordinates, especially in difficult and stressful situations. Thus, the leader should be sensitive to the needs of the subordinate, support and motivate, strengthen success, and develop their autonomy (Popper & Mayseless, 2003). The contribution of attachment orientation in leaders is connected with subordinates' performance (Davidovitz et al., 2007). For example, the compatibility of the relationship between leader and subordinate concerning various variables of organizational behavior (Davidovitz et al., 2007; Keller, 2003).

Molero et al. (2019) sought to determine whether subordinates perceive their leaders as attachment persons. They have thus developed a scale that examines the extent to which subordinates perceive their leaders as safe attachment persons in the organizational environment. In creating the individual items in the questionnaire, the authors theoretically relied on five basic characteristics of a leader who is a security provider: secure base, safe haven, responding warmly to proximity seeking, emotional ties, separation distress. All items were formulated so that the participants focused on their direct superior. Within the correlations with other variables, they demonstrated a significant correlation with transformational and transactional leadership. The higher the participants perceived their leader as a secure attachment person, the more they perceived him/her as a transformational and transactional leader. The less they perceived him/her as a passive and avoidant leader. They also found that the higher the scores achieved by the participants in the LSPS scale, the more they perceived their leader as effective and the more satisfied they were with his leadership.

Taking the position of a leader is a challenging task, not only in terms of responsibility and influence on others to achieve the set goals but also because such activity is increasingly challenging. Depending on the leader's actions, the organization can either prosper and achieve its goals or, conversely, enter a recession. Therefore, it is essential to know what influences leaders in being effective (Gomes, 2014). Gomes (2016) proposed a three-phase model of leadership efficiency that explains the effectiveness of

leaders in terms of the linear relationship between the three main components. The first factor includes the leader's ideas, principles, and goals and is named the leadership philosophy. The second factor comprises behavior that leads the leader to achieve valuable ideas, directions, and goals and is called leadership practice. The last factor is the leadership criteria showing the indicators used by leaders to evaluate the implementation of their leadership. If these three components work in an integrated way, it is assumed that leaders will more effectively meet the requirements of the organization following the requirements of subordinates (Gomes, 2014). The three-phase model works based on two cycles of the leadership process. The conceptual cycle evaluates how a leader should behave, and the practical cycle evaluates how a leader behaves right now. Suppose there is a relationship between the conceptual (what should be done) and the practical cycle (what is happening). In that case, there is mutual unity which leads to the higher efficiency of the leader. Based on this model, Gomes (2016) created a self-explanatory questionnaire called the *Leader Effectiveness Questionnaire*.

AIM OF THE STUDY

Due to the increasing attractiveness of workplace attachment research about various variables, we considered contributing with a more systematic approach of evaluating these psychological constructs by verifying reliable methods for their measurement. The WASQ and LSPS scales have already been described in terms of their factor characteristics. Still, to date, no study confirms the relationship between them and other psychosocial variables. Our work aims to examine the convergent validity of the shortened version of the WASQ from (Mrázková & Lisá, 2021) and the *Leader as Security Provider Scale* from Molero et al. (2019) in Slovak translation. After that, we will verify the relationships of WASQ and LSPS with demographic variables, perceived leadership effectiveness, and belonging to the organization.

- We hypothesize significant relationships, weakly to moderately practical significance, between the WASQ and LSPS questionnaires (Scrima, 2015).
- We hypothesize that workplace attachment is related to the perceived effectiveness of a leader (Molero et al., 2019).
- We hypothesize that workplace attachment is related to belongings to the organization (Hidalgo & Hernández, 2001; Naništová & Mesárošová, 2000; Pretty et al., 2003).

METHODS

Measurement

- *The Workplace Attachment Style Questionnaire* (*WASQ*) measures attachment to the workplace (Scrima, 2018). It contains 15 items that represent three styles of workplace attachments, with five items for each style: dismissive (e.g., I dread going back to my workplace after a holiday), secure (e.g., I'm attached to my workplace) and preoccupied workplace attachment style (e.g., I often feel anxious in my workplace) (Scrima, 2018). The questions are answered on a 5-point Likert scale from 0 = I do not agree to 4 = I completely agree. We worked with an abbreviated version of the WASQ of nine items (Mrázková & Lisá, 2021).
- *The Leader as Security Provider Scale* (*LSPS*) measures how employees perceive their leader as a security provider (Molero et al., 2019). It contains 15 items (e.g., My leader is the person I count on most for useful advice at work) with 5-point scale ranging from 0 = I do not agree to 4 = I completely agree. The one-factor structure was demonstrated, where the final score is calculated as an average (Cronbach's alpha = .96).
- *The Leadership Cycle Questionnaire* (*LCQ*) measures perceived leadership effectiveness (Gomes, 2016). It consists of a practical leadership cycle, of "real behavior" which contains a leadership philosophy (e.g., Tells us the ideas she/he values the bridge), leadership practice (e.g., Acts in accordance with the ideas valued) and leadership criteria (e.g., Evaluates if his/her ideas were executed) and "preferred behavior" which also contains the dimensions mentioned above. These three dimensions are divided into six finite subscales. 15 items are answered on a 5-point Likert scale from 1 = never to 5 = always. The scores of both parts of the questionnaire are calculated as an average. The efficiency index for each subscale is calculated by subtracting the value obtained in the preferred behavior from the value obtained in the current behavior. Subsequently, the total efficiency index is calculated by adding the resulting efficiency indices from the three subscales. The perceived effectiveness of

the leader has the higher level the closer the average score is to zero. The Cronbach's alpha was (α = .83) for leader philosophy in the current behavior, and (α = .85) for the preferred behavior. The leadership practice was (α = .87) in the current behavior and (α = .89) for preferred. The leadership criteria reached (α = .89) in current behavior and (α = .86) for preferred (Gomes, 2016). The WASQ, LSPS, and LCQ questionnaires were translated into Slovak by two independent researchers, psychologists. The translation of ambiguous cases was determined by consensus.

– *The Scale of Belonging to the Organization* (*SBO*) consists of 6 items divided into two dimensions (Kretová, 2005; Lisá, 2020). Four items measure the community place (e.g., I would like to work precisely in the building where we work) and two items the relationships in the community (e.g., There, where I work, people can be trusted). The scale measures the intensity of belonging to the organization on a 5-point Likert scale from 1 = never to 5 = always (α = .77).

In addition to the questionnaires, participants also filled in sociodemographic variables such as age, sex, organizational tenure, and work position.

Participants and procedure

The research sample consisted of 645 participants who were working adults or part-time workers from various labor markets (finance, business, education). To verify the internal structure of the questionnaires, we randomly divided the research sample into two halves, where the first half was used for exploratory factor analysis and the second for confirmatory factor analysis.

The first half of the sample consisted of 323 participants aged 16 to 78 years (M = 37.09; SD = 11.74). There were 42.4% men and 53.9 women. The organizational tenure ranged from .20 years to 40 years (M = 5; SD = 5.47). 13.6% of the sample were leaders, and 86.4% were subordinates.

The second half of the research sample consisted of 322 participants aged 18 to 70 years (M = 38.63, SD = 10.85). Men made up 41.1% and women 47.5%. The organizational tenure ranged from less than a year to 27 years (M = 5.77; SD = 5.19). 14.6% of the sample were leaders, and 85.3% were subordinates.

We analyzed the relationship of WASQ to other scales on the whole sample of participants (N = 645). Paper questionnaires were thrown into electronic form by three psychology students. Participants ranged in age from 16 to 78 years, (M = 37.84, SD = 11.34). There were 43.4% men and 50.7% women. The organizational tenure ranged from less than a year to 40 years (M = 5.37; SD = 5.34). 14.2% of the sample were leaders, and 85.8% were subordinates.

Ethical approval

All procedures performed in studies involving human participants were following the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments. Written informed consent was obtained from all individual participants included in the study.

Data analysis

We verified the internal structure of LSPS using the principal axis factoring extraction method with direct Oblimin rotation. We calculated the internal consistency of extracted factors as Cronbach's alphas. After verifying the relationships between the questionnaires' variables through Spearmen correlation analysis and multiple linear regression analysis, we used the Mann Whitney U test and the Kruskal Wallis test for the differences between gender and job position in the individual variables of the questionnaires.

We performed a CFA for LSPS, SBO, and LCQ based on structural equation modeling (SEM) to confirm the factor structure. The robust maximum likelihood (ML) method estimated the parameters, and we used the lavaan software (Satorra & Bentler,1994). Parameters by robust Tucker-Lewis index (TLI), where the value should be greater than .90, then the robust comparative fit index (CFI), where values range from 0 to 1. A value greater than .95 indicates a good model fit (Hu & Bentler, 1999). The robust Root Mean Square Error of Approximation (RMSEA) ranges from 0 to 1, and a smaller value indicates a better model fit. According to Brown (2015), the value of .06 or less is a good model fit (Brown, 2015). Lastly, we used robust, Standardized Root Mean Square Residual (SRMR), ranging from 0 to 1, while values smaller than .08 are a criterion of an acceptable model (Hu & Bentler, 1999).

RESULTS

Verification of the structure of questionnaires

WASQ questionnaire showed reliability values for the secure workplace attachment style α = .647, the preoccupied workplace attachment style α = .757, and the dismissive workplace attachment style α = .803.

LSPS, originally from Molero et al. (2019), corresponding to a one-factor solution. In our case, none of the fit indices met the required limit for one-factor solution. In EFA, we excluded items that saturated both or no factors. The reduced model showed RMSEA = .06 and TLI = .966, which we consider being excellent values. KMO = .883, from which we concluded that the questionnaire is suitable for factor analysis. Table 1 shows the final two-factor model. The factors explained 54.91% of the variance. Factor 1, which we called Secure base and safe haven (A*M* = 15.66, *SD* = 4.40), saturated items number 5, 9, 10, 12, 14, 15 (e.g., I think my leader would support my growth and advancement on the job), with a 44.93% variance. The second factor, called Separation distress (A*M* = 4.68, *SD* = 2.74), saturated items 6, 7, 8 (e.g., If my leader moved to another organization or another position in this organization, I would try to go with him/her), with 9.98% of explained variance. Cronbach's alpha ranges from .799 to .857. Factors correlated strongly positively (ρ = .546). A weak correlation was also confirmed between the Separation distress and organizational tenure levels (ρ = .114).

Table 1 compares the one-factor and two-factor model of the LSPS. The one-factor model does not meet any required values of fit indices except for SRMR (.065). In contrast, a two-factor model containing six items in the secure base and safe haven and three items in the separation distress meets all required criteria, thus it is suitable for a two-factor solution. Figure 1 shows a graphical representation of the CFA for LSPS.

We verified the suitability of the three-factor model of the LCQ within the current behavior as well as the preferred behavior by CFA. Based on the values CFI = .956, TLI = .947, SRMR = .040 and RMSEA = .072, the scale of LCQ current behavior is suitable for a three-factor solution. The values of Cronbach's alpha ranged from .88 to .92. Preferred behavior also showed good data fit (CFI = .975, TLI = .969, SRMR = .034 and RMSEA = .052). Cronbach's alpha values ranged from .86 to .91. The Slovak version of the LSPS questionnaire is available upon request from authors.

CFA of the SBO confirmed good data fit for two-factor solution (place and relationships), where CFI = .997, TLI = .994, SRMR = .016 and RMSEA = .034. The values of Cronbach's alpha ranges from .79 to .87. All items correlated with factors at $p<.001$. A strong positive correlation was confirmed between the factors of the SBO at ρ = .69 and $p<.000$.

Convergent validity of WASQ and LSPS

The WASQ confirmed a positive correlation between two insecure styles (ρ = .556, $p<.001$), the secure style was negatively correlated with a preoccupied (ρ = −.220, $p<.001$) and a dismissive (ρ = −.137, $p<.001$) (see Table 2). Secure base and secure haven negatively correlated with insecure styles of WASQ (ρ = −.293, −.233, $p<.001$) and, with secure positively (ρ = .339, $p<.001$). The separation distress correlated with the secure style (ρ = .431, $p<.001$).

The SBO scales correlated with all scales of the WASQ, where place to the community negatively correlated with preoccupied style (ρ = −.425, $p<.001$), with dismissive style (ρ = −.275, p<.001) and positively with secure style (ρ = .505, $p<.001$). Relationships negatively correlated with preoccupied style (ρ = −.279, $p<.001$), dismissive (ρ = −.223, $p<.001$) and positively with secure style (ρ = .278, $p<.001$).

Weak positive correlations were also between the perceived effectiveness of the leader with preoccupied (ρ = .255, $p<.001$), dismissive (ρ = .238, $p<.001$) and secure style (ρ = .114, $p<.001$). The secure style was negatively correlated with the organizational tenure (ρ = −.166, $p<.001$). The higher the score in insecure attachment, the higher the perceived effectiveness of the leader. The higher the secure attachment, the lower the perceived effectiveness of the leader.

Weak positive relations were also between secure base and safe haven with scales of the SBO (place: ρ = .303, $p\leq.001$, and relationships: ρ = .295, $p<.001$). The separation distress positively correlated with place (ρ = .291, $p<.001$) and community relationships (ρ = .254, $p<.001$). The perceived effectiveness of the leader negatively correlated with the secure base and safe haven (ρ = −.374, $p<.001$), and with separation distress (ρ = −.198, $p<.001$). There was a weak correlation between organizational tenure and separation distress (ρ = .115, $p<.001$).

Table 1 – Exploratory factor analysis of LSPS

EFA			1	2
Item 5			.730	
Item 6				.603
Item 7				.877
Item 8				.758
Item 9			.429	
Item 10			.581	
Item 12			.580	
Item 14			.763	
Item 15			.885	
Explained variance			44.93%	9.98%
Cronbach's alpha			.857	.799
Model	CFI	TLI	SRMR	RMSEA (lower-upper)
1 factor	.86	84	.065	.106 (.094 – .119)
2 factors	.96	.94	.048	.07 (.053 – .104)

Note. All items (structural parameters) correlated with two factors at the level of $p<.001$. A strong positive correlation was confirmed between LSPS factors ($\rho = .546$, $p<.000$).

The place of community ($\rho = -.293$, $p<.001$) and the relationships in the community ($\rho = -.316$, $p<.001$) correlated with the perceived effectiveness of the leader. There was also a weak correlation between age and place ($\rho = .139$, $p<.001$). The organizational tenure strongly correlated with age ($\rho = .491$, $p<.001$).

Table 3 shows the multiple linear regression, where the SBO place entered as a dependent variable and the dimensions of the WASQ and LSPS as predictors, showed a significant regression. The results show that Adjusted R^2 is the highest in the third model, which contains two dimensions of the WASQ (secure and preoccupied) and the separation distress from the LSPS. Looking at the third model ($F = 105.709$, $p<.001$) with an adjusted $R^2 = .377$ and a 37.7% variance, the secure style was the strongest predictor of the community place ($\beta = .393$, $p<.001$). Likewise, the predictor

Figure 1 – Confirmatory factor analysis of LSPS

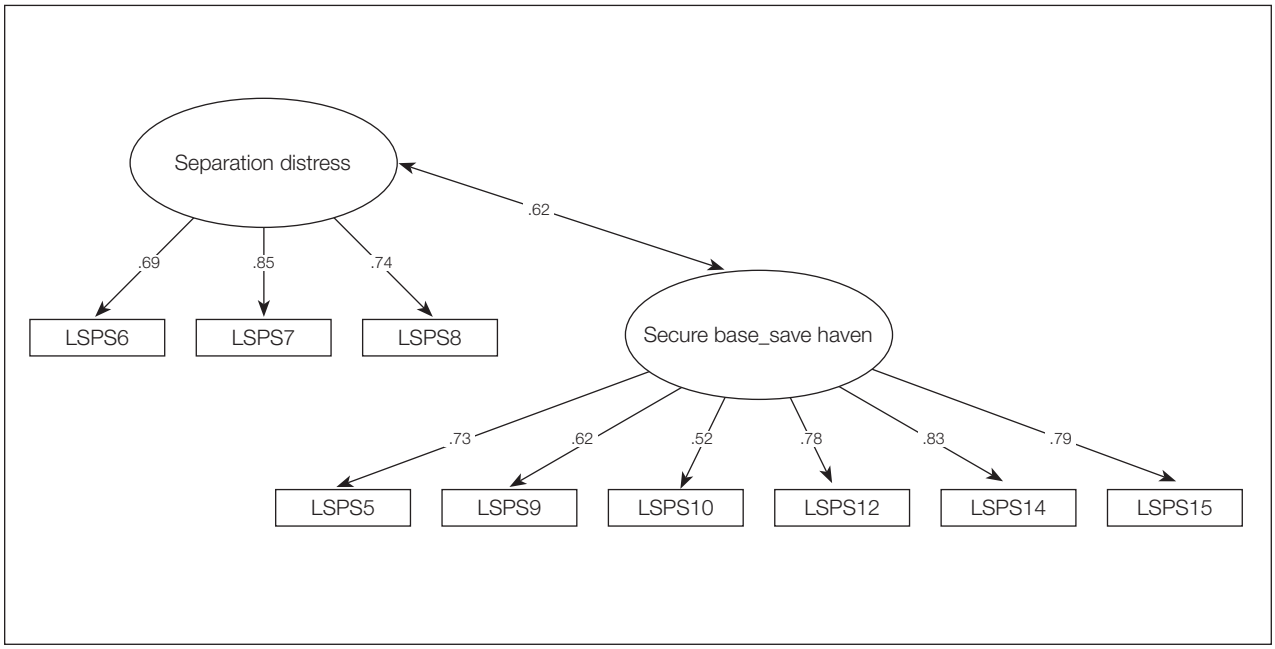

Table 2 – Correlations between WASQ, LSPS, LCQ, SBO and sociodemographic variables

	1	2	3	4	5	6	7	8	9
1. Preoccupied style	–								
2. Dismissive style	.556**	–							
3. Secure style	−.220**	−.137**	–						
4. Secure base & safe haven	−.293**	−.233**	.339**	–					
5. Separation distress	−.040	−.011	.431**	.537**	–				
6. Relations to the community	−.279**	−.223**	.278**	.295**	.254**	–			
7. Place to the community	−.425**	−.275**	.505**	.303**	.291**	.575**	–		
8. Percieved efectivity of leader	.255**	.238**	−.166**	−.374**	−.198**	−.316**	−.293**	–	
9. Organizational tenure	.006	.085	.135**	.015	.115**	.009	.084	.073	–
10. Age	−.047	.002	.035	.016	−.042	.038	.139**	−.040	.491

**$p<.01$

Table 3 – Multiple linear regression of place to the community with dimensions of WASQ and LSPS

Model		Beta	Sig.	F	Adjusted R^2
1	Secure style	.511	.000	182.792	.260
2	Secure style	.439	.000	153.229	.370
	Preoccupied style	–.342	.000		
3	Secure style	.393	.000	105.709	.377
	Preoccupied style	–.346	.000		
	Separation distress	.102	.005		

a. Predictors: Secure style.

b. Predictors: Secure style, Preoccupied style.

c. Predictors: Secure style, Preoccupied style, Separation distress.

d. Dependent Variable: Place to the community.

is a preoccupied style (β = –.336, p<.001), with a negative charge. The separation distress predicates the dimension of community place (β = .102, p<.001).

Multiple linear regression with relationships in the community as dependent variable and dimensions of WASQ and LSPS as predictors shows Table 4. The Adjusted R^2 was highest in the fourth model, which contains three dimensions of the WASQ (secure, preoccupied, and dismissive) and the separation distress dimension from the LSPS (F = 24.131, p<.001, adjusted R^2 = .151 and a variance of 15.1%). The preoccupied style was the strongest significant predictor of the relationships in the community (β = –.192, p<.001), the second predictor is separation distress (β = .171, p<.001). This is followed by secure style (β = .135, p<.001) and the last one is dismissive (β = .105, p<.005).

Table 5 shows multiple linear regression in terms of perceived effectiveness of leader as a dependent variable and WASQ and LSPS as predictors confirmed a significant regression in the secure base and safe haven (F = 85.283, p<.001) model with an adjusted R^2 = .153 (β = –.394, p<.001). Adjusted R^2 = .171 was higher in the second model where the predictors were secure base and safe haven and preoccupied style where secure base and safe haven (β = –.354, p<.001) and in preoccupied style (β = .141, p<.001, F = 85.283, p<.001). Secure base and safe haven and preoccupied style are thus predictors of perceived effectiveness of the leader.

When examining the gender differences based on the Mann-Whitney U test, we found the difference only in the secure base and safe haven scale from the LSPS questionnaire where U = 27310.5, p<.05, with weak practical difference (r_m = .109).

When comparing differences in job position, we used the *Kruskal Wallis Test*, where we confirmed statistically significant differences in dismissive style (KW = 58.51, p<.001). The correlation rate of practical significance was (r_m = .303), which we consider a medium practical difference to a dismissive style. There was also a statistically significant difference in the secure workplace attachment style (KM = 44.921, p<.005, r_m = .267). The last statistically significant difference was in the dimension of separation distress where (KM = 51.096, p<.007) and the correlation rate of practical significance reached the value (r_m = .305).

Table 4 – Multiple linear regression of relations to the community with dimensions of WASQ and LSPS

Model		Beta	Sig.	F	Adjusted R^2
1	Preoccupied style	–.289	.000	47.343	.082
2	Preoccupied style	–.275	.000	40.506	.132
	Separation distress	.228	.000		
3	Preoccupied style	–.249	.000	30.430	.145
	Separation distress	.168	.000		
	Secure style	.139	.003		
4	Preoccupied style	–.192	.001	24.131	.151
	Separation distress	.171	.000		
	Secure style	.135	.003		
	Dismissive style	–.105	.033		

a. Predictors: Preoccupied style.

b. Predictors: Preoccupied style, Separation distress.

c. Predictors: Preoccupied style, Separation distress, Secure style.

d. Predictors: Preoccupied style, Separation distress, Secure style, Dismissive style.

e. Dependent Variable: Relations to the community.

Table 5 – Multiple linear regression of effectiveness of leader with dimensions of WASQ and LSPS

Model		Beta	Sig.	F	Adjusted R^2
1	Secure base & safe haven	–.387	.000	84.956	.148
2	Secure base & safe haven	–.347	.000	49.011	.166
	Preoccupied style	.145	.001		

a. Predictors: Preoccupied style.

b. Dependent Variable: Perceived effectiveness of the leader.

DISCUSSION

The article aimed to examine the convergent validity of the WASQ from Scrima (2018) and the LSPS (Molero et al., 2019) with two other constructs. The LCQ (Gomes, 2016) examines the perceived effectiveness of a leader, and the SBO (Kretová, 2005; Lisá, 2020), examines belonging to a community/organization. First, we performed an EFA of the LSPS (Molero et al., 2019). The analysis showed that the questionnaire corresponds to a two-factor solution with dimensions of secure base and safe haven and separation distress. We verified the goodness of fit indices for the two-factor solution using a CFA, which confirmed the suitability of the two-factor solution. In contrast, Molero et al. (2019) came up with the suitability of a one-factor solution. The creation of questions was based on five characteristics of the perception of the leader as a provider of safety, namely safe base, safe haven, the search for proximity, emotional ties, and separation distress (Bowlby, 2010). We have preserved the original basis of the theoretical model in our work while we determined the dimensions in terms of semantic similarity based on the five characteristics mentioned above. Thus, we have named the two factors as the dimensions of secure base and safe haven and separation distress.

In verifying the convergent validity of the shortened version of WASQ from Mrázková and Lisá (2021), a moderately statistically significant relationship between the two preoccupied and dismissive styles was confirmed, and a secure style was weakly negatively related to dismissive and preoccupied, both relationships were statistically significant. The same connections were published in the original work by Scrima (2018). In terms of attachment styles, dismissive and preoccupied styles are a kind of opposition to the secure one. This arises from the disruption of the natural development of the attachment when the individual does not receive enough attention and emotion in terms of his needs and subsequently persists throughout the individual's life with limited opportunities to change them (Ainsworth, Blehar, Waters & Wall, 2015; Bowlby, 2010). The primary precondition for the suitability of a methodology focused on attachment styles is thus the mutual non-linear connection between safe and insecure attachment styles. The reliability of the given methodology, which in our case reached a satisfactory value up to the secure style, where the value was just below the required limit of .700, also suggests this suitability. Another assumption is the validity of the methodology we tried to answer based on established hypotheses.

When answering the first hypothesis, "We assume significant relationships, weakly to moderately significant, between the dimensions of the WASQ and LSPS" (Scrima, 2015), the relationships confirmed that the more individuals are dismissive and preoccupied attached to the workplace, the less they perceive their leader as a safe base and safe haven. The secure style was related to the perception of its leader as a secure base and safe haven positively. However, the second dimension of separation distress was moderately related only to secure style. The results confirm that workplace attachment can be considered in the sense of the attachment, as defined by Bowlby (Scrima, 2018), based on the emotional component of the construct. Proven correlations suggest a more remarkable similarity between attachment styles and secure base and safe haven than between attachment styles and separation distress. Despite the weak correlations, the results indicate the difference between the two constructs and the legitimacy of their measurement.

Second hypothesis: "We assume that the workplace attachment predicts belongings to the organization" (Hidalgo & Hernández, 2001; Naništová & Mesárošová, 2000; Pretty et al., 2003), was also confirmed. The place belonging was strongly moderately related to preoccupied style, weakly negative with dismissive style, and medium strongly positive with a secure style. Relationships in the community were similarly negatively related to insecure styles and weakly positive to secure styles. With a secure attachment, the need to belong to the community grows. We also found that secure and preoccupied workplace attachment styles and separation distress were predictors of belonging to the place of community/organization.

Similarly, the dismissive and preoccupied workplace attachment styles and separation distress were predictors of belonging to the relationships within community/organization. As Allen (2020) mentioned, there is no significant difference between attachment and a sense of belonging. Both are human needs, with belonging to the community being closely tied to the place. In this case, their interrelationship is highly probable, even though the workplace attachment is based on Bowlby's attachment theory, which speaks of its dependence on the child-mother relationship (Baumeister & Leary, 1955; Grance & Ming, 2001; Naništová & Mesárošová, 2000).

In answering the third hypothesis: "We assume that the workplace attachment is related to the perceived effectiveness

of the leader" (Gomez, 2016), we confirmed the relationships between the perceived effectiveness of the leader and the perception of the leader as a safe figure (Molero et al., 2019). Secure base and safe haven, and preoccupied style were predictors of the perceived effectiveness of the leader.

The LSPS confirmed relationships between the two dimensions. Weak positive relationships were also demonstrated between the two dimensions of SBO and the dimension of secure base and safe haven and separation distress. The perceived effectiveness of a leader was negatively related to both dimensions of the LSPS questionnaire, which is known that the more employees are attached to their leader, the more they perceive him/her as an effective leader. Similar results are suggested in Molero et al. (2019), where significant relationships with the perceived effectiveness of the leader and the overall satisfaction with the leader were demonstrated. According to Molero et al. (2019), this may be because these two constructs see the leader as a secure base and safe haven. The leader's perceived effectiveness was also related to both dimensions of belonging to the organization, where the relations were weak to medium-strong. The dimensions of community/organization place indicate the need to belong somewhere and relationships within the community, to maintain these relationships, suggesting the importance of the relationship between leader and subordinate (McMillan & Chavis, 1986). Therefore, when the emotional aspect of the need to maintain relationships is fulfilled in the community, then the perceived effectiveness of the leader increases.

The results suggest that although LSPS and WASQ are related to other similar variables dealing with leadership or belongings, they are unique. Within LSPS, we can confirm this based on the strongest Beta coefficient in the regression equation at the leader's perceived effectiveness. Similar results are indicated in work by Molero et al. (2019). LSPS thus contributes to explaining the perceived effectiveness of the leader. On the other hand, the WASQ dimensions were the strongest predictor within the dimensions of belonging to the organization, which suggests its importance in need to belong to the organization.

Limitations and future research

Verification of the convergent validity of both constructs on the Slovak population is a significant benefit. However, it is necessary to look at the examined constructs connected with other variables such as satisfaction (Scrima et al., 2015), work engagement, or performance (Harms, 2011; Sartori, Costantini, Ceschi & Tommasi, 2021) at work. It would also be interesting to look at these two variables related to personality, which we know is often measured concerning organizational behavior (Costantini et al., 2017).

In the future, it would be appropriate to look at the divergent validity of these two methodologies. Limitation of the work was collecting data before the Covid-19 pandemic. It is known that the activation of behavioral attachment systems occurs in situations where individuals experience complex life situations (Bowlby, 2010). We consider it essential in future research to take a closer look at the different styles of attachment to the workplace in the current pandemic situation when individuals often lose their jobs, are forced to work from the home office, or work is significantly hampered by several hygiene measures based on the current pandemic situation. For this reason, the perception of a leader as a security provider may increase in these times. Furthermore, it is precisely secure individuals who are likely to cope with the changing conditions of working life better. It is also essential to look at the similarities/differences in attachment between the leader and the subordinate. Several authors point out the increase in work efficiency due to the compatibility of attachment styles between the leader and subordinates (Keller, 2003; Mikulincer & Florian, 1995; Shah, Fonagy & Strathearn, 2010). The future intention is also to take a closer look at the perception of a leader as a security provider in terms of teams and individuals.

CONCLUSION

In conclusion, our work confirmed the convergent validity of WASQ and LSPS questionnaires and their connection with belongings to the organization and the perceived effectiveness of a leader in the Slovak population. We verified the internal structure of the LSPS questionnaire, which is also suitable for a two-factor solution. We have contributed by validating these methodologies to the theory of attachment, whith focus to the leadership, that is increasingly justified today (Bresnahan & Mitroff, 2007), and attachment theory in the workplace. The study results can help HR managers better understand the individual manifestations of employees in terms of their personality and the theory of relationships and attachments.

References

AINSWORTH, S.M.D., BLEHAR, M.C., WATERS, E. & WALL, S.N. (2015). *Patterns of attachment: A psychological study of the strange situation*. New York: Psychology Press. doi.org/10.4324/9780203758045

ALLEN, K. (2020). *The psychology of belonging*. Routledge.

BARTHOLOMEW, K. & HOROWITZ, L.M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, *61* (2), 226-244. doi.org/10.1037/0022-3514.61.2.226

BAUMEISTER, R.F. & LEARY, M.R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117* (3), 497-529. doi.org/10.1037/0033-2909.117.3.497

BOLLEN, K.A. & HOYLE, R.H. (1990). Perceived cohesion: A conceptual and empirical examination. *Social Forces*, *69* (2), 479. doi.org/10.2307/2579670

BONAIUTO, M., FORNARA, F. & BONNES, M. (2003). Indexes of perceived residential environment quality and neighbourhood attachment in urban environments: A confirmation study on the city of Rome. *Landscape and Urban Planning*, *65* (1-2), 41-52. doi.org/10.1016/s0169-2046(02)00236-0

BOWLBY, J. (1969). *Attachment & loss. Volume 1: Attachment*. Basic Books.

BOWLBY, J. (2010). *Vazba: Teorie kvality ranných vztahů mezi matkou a dítětem*. Portál.

BRESNAHAN, C.G. & MITROFF, I.I. (2007). Leadership and attachment theory. *American Psychologist*, *62* (6), 607-608. doi.org/10.1037/0003-066x62.6.607

COLLINS, N.L. & READ, S.J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology*, *58* (4), 644-663. doi.org/10.1037/0022-3514.58.4.644

COSTANTINI, A., DE PAOLA, F., CESCHI A., SARTORI, R., MENEGHINI, A.M. & DI FABIO, A. (2017). Work engagement and psychological capital in the Italian public administration: A new resource-based intervention programme. *SA Journal of Industrial Psychology*, *43* (1), 1-11.

CRAWFORD, E.K., WORSHAM, N.L. & SWINEHART, E.R. (2006). Benefits derived from companion animals, and the use of the term "attachment". *Anthrozoös*, *19* (2), 98-112. doi.org/10.2752/089279306785593757

DAVIDOVITZ, R., MIKULINCER, M., SHAVER, P.R., IZSAK, R. & POPPER, M. (2007). Leaders as attachment figures: Leaders attachment orientations predict leadership-related mental representations and followers performance and mental health. *Journal of Personality and Social Psychology*, *93* (4), 632-650. doi.org/10.1037/0022-3514.93.4.632

DINÇ, P. (2007). Spatial and behavioral variables that affect "emotional attachment" of users: A multi-dimensional approach for private offices. *Gazi University Journal of Science*, *20* (2), 41-50. dergipark.org.tr/en/download/article-file/83019

FOURNIER, S. (1998). Consumers and their brands: Developing relationship theory in consumer research. *Journal of Consumer Research*, *24* (4), 343-353. doi.org/10.1086/209515

GOMES, A.R. (2014). Leadership and positive human functioning: A triphasic proposal. In A.R. Gomes, R. Resende & A. Albuquerque (Eds.), *Positive human functioning from a multidimensional perspective: Promoting high performance*. Nova Science.

GOMES, A.R. (2016). *Questionário de Eficácia da Liderança (QEL)*. Unpublished technical report. Braga: Escola de Psicologia, Universidade do Minho.

GRANGE, A.L. & MING, Y.N. (2001). Social belonging, social capital and the promotion of home ownership: A case study of Hong Kong. *Housing Studies*, *16* (3), 291-310. doi.org/10.1080/02673030120049689

HARMS, P.D. (2011). *Adult attachment styles in the workplace*. University of Nebraska.

HAZAN, C. & SHAVER, P.R. (1990). Love and work: An attachment theoretical perspective. *Journal of Personality and Social Psychology*, *59* (2), 270-280. doi:10.1037//0022-3514.59.2.270.

HAZAN, C. & SHAVER, P.R. (1994). Attachment as an organizational framework for research on close relationships. *Psychological Inquiry*, *5* (1), 1-22. doi.org/10.1207/s15327965pli0501_1

HIDALGO, M. & HERNÁNDEZ, B. (2001). Place attachment: Conceptual and empirical questions. *Journal of Environmental Psychology*, *21* (3), 273-281. doi.org/10.1006/jevp.2001.0221

HU, L. & BENTLER, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6 (1), 1-55. doi.org/10.1080/10705519909540118

HUGHEY, J.B. & BARDO, J.W. (1984). The structure of community satisfaction in a Southeastern American City. *The Journal of Social Psychology*, *123* (1), 91-99. doi.org/10.1080/00224545.1984.9924517

KELLER, T. (2003). Parental images as a guide to leadership sensemaking: An attachment perspective on implicit leadership theories. *Leadership Quarterly*, *14* (2), 141-160. doi.org/10.1016/S1048-9843(03)00007-9.

KRETOVÁ, E. (2005). *Psychosociálne aspekty príslušnosti k rómskej komunite na Slovensku*. Unpublished doctoral dissertation, Trnava University.

LACŒUILHE, J. (2000). L'attachement a la marque: Proposition d'une echelle de mesure. *Recherche et Applications en Marketing*, *15* (4), 61-77. doi.org/10.1177/076737010001500404

LE ROY, J. & RIOUX, L. (2012). The mediating role of workplace attachment in the relationship between organizational commitment and organizational citizenship behavior. *Revue Internationale de Psychologie Sociale*, *25* (3-4), 211-233.

LEWICKA, M. (2010). What makes neighborhood different from home and city? Effects of place scale on place attachment. *Journal of Environmental Psychology*, *30* (1), 35-51. doi.org/10.1016/j.jenvp.2009.05.004

LISÁ, E. (2020, november 30). *The scale of sense of belonging to a community - dimensionality and validity*. Paper presentation, Conference community psychology in Slovakia. Available at: https://fses.uniba.sk/fileadmin/fsev/uap/dokumenty/workshop/20_21/Book_of_abstracts_2020_23_11.pdf

LITTLE, L.M., NELSON, D.L., WALLACE, J.C. & JOHNSON, P.D. (2011). Integrating attachment style, vigor at work, and extra-role performance. *Journal of Organizational Behavior*, *32* (3), 464-484. doi.org/10.1002/job.709

MAIN, M., KAPLAN, N. & CASSIDY, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development*, *50* (1/2), 66. doi.org/10.2307/3333827

MAYSELESS, O. (2010). Attachment and the leader-follower relationship. *Journal of Social and Personal Relationships, 27* (2), 271-280. doi.org/10.1177/0265407509360904.

McMILLAN, D.W. & CHAVIS, D.M. (1986b). Sense of community: A definition and theory. *Journal of Community Psychology*, *14* (1), 6-23. doi.org/10.1002/1520-6629(198601)14

MIKULINCER, M. & FLORIAN, V. (1995). Appraisal of and coping with a real-life stressful situation: The contribution of attachment styles. *Personality and Social Psychology Bulletin*, *21* (4), 406–414. https://doi.org/10.1177/0146167295214011

MRÁZKOVÁ, K. & LISÁ, E. (2021, April). The Workplace Attachment Styles Questionnaire in shortened 9-item version. In C. Pracana & M. Wang (Eds.), *Psychological Applications and Trends 2021*. doi.org/10.36315/2021inpact051

NANIŠTOVÁ, E. (1998). Človek a príroda: Enviromentálna psychológia. In.J. Výrost & I. Slaměník (Eds.). *Aplikovaná sociální psychologie I. Portal.*

NANIŠTOVÁ, E. & MESÁROŠOVÁ, B. (2000). Analýza väzby na miesto a environmentálnych dispozícií detí z vidieka a mesta. *Psychológia a patopsychológia dieťaťa*, *35* (1), 3-22.

PANKSEPP, J. & BIVEN, L. (2012). *The archaeology of mind: Neuroevolutionary origins of human emotions*. W.W. Norton & Company.

POPPER, M. & MAYSELESS, O. (2003). Back to basics: Applying a parenting perspective to transformational leadership. *The Leadership Quarterly*, *14* (1), 41-65. doi.org/10.1016/s1048-9843(02)00183-2

PRALONG, D. (2004). La relation homme-animal: Un lien jusqu'au bout de la vie. *Revue Internationale de Soins Palliatifs*, *19* (1), 9-12. doi.org/10.3917/inka.041.0009

PRETTY, G.H., CHIPUER, H.M. & BRAMSTON, P. (2003). Sense of place amongst adolescents and adults in two rural Australian towns: The discriminating features of place attachment, sense of community and place dependence in relation to place identity. *Journal of Environmental Psychology*, *23* (3), 273-287. doi.org/10.1016/s0272-4944(02)00079-8

RIOUX, L. (2006). Construction of a scale of commitment to the workplace: An exploratory step. *Canadian Journal of Behavioural Science - Revue Canadienne des Sciences du Comportement*, *38*, 325-336. doi:10.1037/cjbs2006018

RIOUX, L. (2017). Comfort at work: An indicator of quality of life at work. In G. Fleury-Bahi, E. Pol & O. Navarro (Eds.), *International handbooks of quality-of-life. Handbook of environmental psychology and quality of life research*. Springer International Publishing AG. doi.org/10.1007/978-3-319-31416-7_22

RIOUX, L. & MOKOUNKOLO, R. (2005) Neighbourhood attachment and adolescence: A comparative study carried out in two neighbourhoods presenting a great cultural diversity. *Bulletin de Psychologie, 57* (6), 611-620.

RIOUX, L. & PAVALACHE-ILIE, M. (2013). Workplace attachment and organizational commitment - are they predictors of organizational citizenship behavior? Study on French health care workers. *Annals of the Al. I. Cuza University, Psychology Series, 22* (1), 5-18. https://www.psih.uaic.ro/anale-psih/wp-content/uploads/sites/10/2021/01/Workplace-attachment-and-organizational-commitment-are-they.pdf

RIOUX, L. & PIGNAULT, A. (2013). Workplace attachment and meaning of work in a French secondary school. *The Spanish Journal of Psychology*, *16*. https://doi.org/10.1017/sjp.2013.42

SARTORI, R., COSTANTINI, A., CESCHI, A. & TOMMASI, F. (2021). Social representation and assessment of salespeople personality for job performance: An overview and an Italian piece of research. *Italian Sociological Review*, *11* (1), 19-38.

SATORRA, A. & BENTLER, P.M. (1994). Corrections to test statistics and standard errors in covariance structure analysis. In A. von

Eye & C.C. Clogg (Eds.), *Latent variables analysis: Applications for developmental research*. Sage Publications, Inc.

SCANNELL, L. & GIFFORD, R. (2010). Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology*, *30* (1), 1-10. doi.org/10.1016/j.jenvp.2009.09.006

SCRIMA, F. (2015). The convergent-discriminant validity of the Workplace Attachment Scale (WAS). *Journal of Environmental Psychology*, *43*, 24-29. doi.org/10.1016/ j.jenvp. 2015.05.009

SCRIMA, F., DI STEFANO, G., GUARNACCIA, C. & LORITO, L. (2015b). The impact of adult attachment style on organizational commitment and adult attachment in the workplace. *Personality and Individual Differences*, *86*, 432-437. doi.org/10.1016/j.paid.2015.07.013

SCRIMA, F., MOFFAT, E. & RIOUX, L. (2015). Italian validation of the scale of satisfaction with the work environment. *BPA-Applied Psychology Bulletin*, *274*, 35-48.

SCRIMA, F., MOFFAT, E. & RIOUX, L. (2016). The relationship between environmental satisfaction in the workplace and job satisfaction. A reciprocal longitudinal model. *Psicologia Sociale*, *11* (2), 141-158. doi.org/10.1482/84096

SCRIMA, F., RIOUX, L. & DI STEFANO, G. (2017). I hate my workplace but I am very attached to it: Workplace attachment style: An exploratory approach. *Personnel Review, 46* (5), 936-949. doi.org/ 10.1108/PR-05-2015-0128

SCRIMA, F., RIOUX, L. & LORITO, L. (2014). Three-factor structure of adult attachment in the workplace: Comparison of British, French, and Italian samples. *Psychological Reports*, *115* (2), 627-642. doi.org/10.2466/49.pr0.115c25z2

SHAH, P.E., FONAGY, P. & STRATHEARN, L. (2010). Is attachment transmitted across generations? The plot thickens. *Clinical Child Psychology and Psychiatry, 15* (2), 329-345. doi.org/10.1177/1359104510365449.

SWIM, J.K., STERN, P.C., DOHERTY, T.J., CLAYTON, S., RESER, J.P., WEBER, E.U., GIFFORD, R. & HOWARD, G.S. (2011). Psychology's contributions to understanding and addressing global climate change. *American Psychologist*, *66* (4), 241-250. doi.org/10.1037/a0023220

VELASCO, L. & RIOUX, L. (2010) Psychosocial approach to workplace attachment: A study carried out among hospital staff. *Estudios de Psicologia*, *31* (3), 309-323.

ZIMBEROFF, D. & HARTMAN, D. (2002). Attachment, detachment, nonattachment: achieving synthesis. *Journal of Heart-Centered Therapies*, *5* (1), 3-94. doi:10.1.1.469.2175&rep=rep1&type=pdf