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Factorial invariance of Satisfaction with Family Life Scale in adolescents from Peru and Portugal

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ABSTRACT

The Satisfaction with Family Life Scale (SWFLS) is a measure of a person's satisfaction with their family life as a whole that has been used in different cultural contexts. However, its internal structure and factorial invariance have not been investigated simultaneously in culturally different samples from America and Europe. The current study aims to evaluate the internal structure and factorial invariance of the SWLFS in adolescents from Peru and Portugal, through a multi-group confirmatory factor analysis. The study was conducted on 439 adolescents from Peru ($N = 232$; $Age_{average} = 15.50$, S.D. = 0.65) and Portugal ($N = 207$; $Age_{average} = 16.16$, S.D. = 0.81). First, the confirmatory factorial analysis for each group was carried out, followed by the multi-group confirmatory factorial analyses. Results indicated that the one-factor structure of the SWLFS presents a good adjustment to the data, in addition to an adequate internal consistency. Moreover, the presence of configural, metric, scalar and strict invariance is demonstrated across culturally different samples. The SWLFS is a brief and valid measure of satisfaction with family life that is useful for intercultural comparisons between samples of adolescents from Peru and Portugal.

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Adolescents; invariance; Peru; Portugal; satisfaction with family life

Introduction

Satisfaction with life (SWL) is the cognitive dimension and the most stable index of subjective well-being (Emerson, Guhn, & Gadermann, 2017; Lu, Schellenberg, Hou, & Helliwell, 2015), defined as a person's overall assessment of their life (Diener & Diener, 1996; Diener & Ryan, 2009). Studies concerning the satisfaction with life of school-age adolescents have increased in recent years (Delgado, 2019; Suldo, Savage, & Mercer, 2014), primarily because the construct provides a general overview of the individual's mental health, not limited only to the identification of

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psychopathological symptoms, but also positive features (Antaramian, Huebner, Hills, & Valois, 2010; Gilman & Huebner, 2003). The research on SWL of school-age adolescents and its relationship with correct psychological, educational, social and physical functioning, has important implications for school psychological practice (Gilman & Huebner, 2003; Huebner, 2004; Suldo, Huebner, Friedrich, & Gilman, 2009).

In fact, high levels of SWL in addition to the absence or low-levels of psychopathology in school-age adolescents is associated with better educational achievement, even when controlling for socioeconomic status (Diseth, Danielsen, & Samdal, 2012; Ng, Huebner, & Hills, 2015; Salmela-Aro & Tynkkynen, 2010; Steinmayr, Crede, McElvany, & Wirthwein, 2015; Suldo & Shaffer, 2008). However, a recent meta-analysis suggests that under-performing students do not necessarily exhibit low levels of well-being, nor do high-performing students necessarily experience high levels of well-being (Bücker, Nuraydin, Simonsmeier, Schneider, & Luhmann, 2018). On the other hand, SWL is related to more favorable attitudes toward teachers and school, greater cognitive commitment and academic aspirations (Gilman & Huebner, 2006; Lewis, Huebner, Malone, & Valois, 2011; Proctor, Maltby, & Linley, 2011), as well as greater student participation in school (Lewis et al., 2011). Similarly, SWL plays a mediating role between perceived school performance and hopelessness (Shek & Li, 2016), allows adolescents to be less vulnerable to the effects of family unemployment (Frasquilho, Matos, Neville, Gaspar, & Almeida, 2016) and is associated with the presence of positive self-assessments (Jianfeng, Wu, Hongwei, & Yulan, 2016). Finally, high levels of SWL in students lead to a lower likelihood of engaging in risky behavior (Çakar, Tagay, & Karataş, 2015) and being victims of bullying (Totan, Özer, & Özmen, 2017).

The SWL also covers the overall assessment of some specific life domains that include: work, friends, physical activity, love, sex, among others (Balaguer, Castillo, & Duda, 2008; Huebner, Suldo, & Gilman, 2006), which have not been sufficiently studied (Bardo & Yamashita, 2014). Actually, one of these domains is satisfaction with family life (SWFL) defined as the conscious cognitive evaluation of family life, relying on individual criteria (Zabriskie & Ward, 2013). Indeed, family relationships are one of the main sources of SWL (Ruiz et al., 2009; Schimmack, Diener, & Oishi, 2002). Thus, several studies have reported that people satisfied with their family life are more content than their peers and score high on the SWL (Easterlin, 2006; Moss & Willoughby, 2018); while other studies suggested that higher levels of SWFL are associated with a greater satisfaction in the financial, work and community environments (Moss & Willoughby, 2018). Family satisfaction is also linked to health indicators, improved quality of life, stress management strategies, greater family cohesion, adaptability,

communication and family functioning in general (Guillén et al., 2011; Poff, Zabriskie, & Townsend, 2010)

During adolescence, the family is the main provider of support, security and protection (Barboza-Palomino et al., 2017; González, Valdez, & Zavala, 2008), becoming more crucial than that of the partner, school or religion (Serrano & Flores, 2004). Still, its influence is usually greater during infancy and childhood than in adolescence and youth (Arias, Quispe, & Ceballos, 2016). In samples of school-age adolescents, it has been found that higher levels of family satisfaction facilitate the presence of positive affects, the affective-cognitive evaluation of life and the satisfaction with specific domains of life (monetary, friendship, work-life, health, school). It also suppresses the expression of negative affects such as negative expressiveness and emotionality, nervousness, etc. Likewise, family satisfaction is associated with improved family cohesion, low frequency of parent-adolescent conflict (Bernal, Arocena, & Abundis, 2013; Luna, 2012) and increased engagement in family activities (Hodge et al., 2018; Zabriskie, Aslan, & Williamson, 2018; Zabriskie & Ward, 2013).

There are several measures designed to assess family satisfaction including the Family Satisfaction Scale (Olson & Wilson, 1982), the Family Satisfaction by Adjectives Scale (Barraca, Yarto, & Olea, 2000), the Kansas Family Life Satisfaction Questionnaire (McCollum, Schumm, & Russell, 1988; Schumm, McCollum, Bugaighis, Jurich, & Bollman, 1986), and the Family Satisfaction Scale (Carver & Jones, 1992). Most of these measures possess between 10 and 27 items. However, there are briefer instruments, such as the KFLSQ, that possess limited evidence of validity and reliability and are applicable in families with four or more members, including married couples with at least two children (Schumm et al., 1986).

In this sense, a brief instrument that measures SWFL in adolescents from different cultural contexts is indeed a valuable tool. In fact, the development and use of brief scales to evaluate a broad set of psychological constructs in clinical and non-clinical contexts (Kruyen, Emons, & Sijtsma, 2013) is becoming increasingly demanded. The use of these scales translates into the saving of time and costs during an evaluation (Kemper, Trapp, Kathmann, Samuel, & Ziegler, 2019); the improvement of the participation rates in studies (Edwards, Roberts, Sandercock, & Frost, 2004), and a reduction of fatigue and other negative reactions of participants that could lead to the collection of low quality data (Credé, Harms, Niehorster, & Gaye-Valentine, 2012).

Recently, Zabriskie and Ward (2013) suggested the Satisfaction with Family Life Scale (SWFLS) as a brief and global measure of SWFL that consists of five items with 7 response options in which higher scores indicate greater satisfaction with family life. Actually, the SWFLS is a modified

version of the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). There, the word "life," from the original SWLS, was replaced by the expression "family life". For instance, the item "I am satisfied with my life" became "I am satisfied with my family life". This same procedure was used previously by Alfonso, Allison, Rader, and Gorman (1996) to construct a sub-scale for satisfaction with family life which formed a part of the Extended Satisfaction with Life Scale (ESWLS). The first four items of the ESWLS which measure satisfaction with family life are the same as the first four in the SWFLS; the fifth item, however, is different. While the fifth item in the ESWLS is: "I am generally pleased with the quality of my family life," in the SWFLS it is "If I could live my family life over, I would change almost nothing". The ESWLS also includes subscales for satisfaction with life in the following areas: social, sexual, relational, personal, physical appearance, school life and work satisfaction. This study used the SWFLS by Zabriskie and Ward (2013)

Although the SWFLS was originally administered to American parents and adolescents from 11-15 years of age, it has also been administered to people between the ages of 26 and 73 (Melton, Ellis, & Zabriskie, 2016) and in different cultural contexts, such as Chilean adolescents and university students (Schnettler, Lobos, et al., 2017; Schnettler, Miranda-Zapata, et al., 2017). Moreover, the psychometric properties of the SWLFS have been studied in adolescents from many countries, and the results of these studies supported the presence of a single-factor and adequate reliability, with reliability coefficients ranging from .82 to .94 (Caycho-Rodríguez et al., 2018; da Costa & Neto, 2019; Schnettler, Lobos, et al., 2017; Zabriskie & Ward, 2013), in agreement with the SWLS from which it is derived (Chinni & Hubley, 2014; Whisman & Judd, 2016). Likewise, prior studies demonstrated that the SWLFS is significantly correlated with family funcioning, family communication, leisuretime activites as a family and other family satisfcation measures (Zabriskie & Ward, 2013), as well as satisfaction with life, self-esteem, perceived social support (da Costa & Neto, 2019) and satisfaction with life related to foods (Schnettler, Lobos, et al., 2017). This suggests that, despite the criticisms against the global approach toward satisfaction with life (Strack, 1999), the SWFLS presents psychometric robustness and it is recommended for implementation in different cultures (Zabriskie & Ward, 2013). However, in order to assess the comparability of a self-reported measure between countries, the items of the scale (in this case the SWFLS) must be shown to be psychometrically equivalent (i.e., have the same meaning) for the respondents from those countries.

Currently, factorial invariance is the most commonly used procedure to evaluate the equivalence of items in a scale from different groups (countries in our case), which is based on stepwise multi-group confirmatory factor

analyses (Bowen & Masa, 2015; Brown, 2015). Indeed, through factorial invariance, one can interpret that the differences between compared groups result from the inherent differences in the construct evaluated. On the other hand, the lack of invariance implies a likelihood of measurement bias toward one of the groups as a result of the psychometric differences in the responses to the items. The latter would drastically compromise the validity of the study's conclusions (Byrne, 2008).

Furthermore, the evidence suggests that cultural experiences may influence the development of people's well-being (Diener, Diener, & Diener, 2009; Diener & Suh, 2002; Proctor, Linley, & Maltby, 2009). Currently, several studies have reported statistically significant differences in self-informed life satisfaction among adolescents from various countries (e.g., Esnaola, Benito, Antonio-Agirre, Ballina, & Lorenzo, 2019; Ferguson, Kasser, & Jahng, 2011; Jiang, Fang, Stith, & Huebner, 2019; Stankov, 2013; Zeng, Ling, Huebner, He, & Fu, 2018). Actually, Oishi, Diener, Suh, and Lucas (1999) suggest that culture as displayed through an individual's values, determines the relative importance of different domains of life for overall life satisfaction. In this sense, when a domain is valued more highly than others, a person is more likely to consider it important to achieving greater satisfaction with life. Hence, people from cultures in which feelings and personal interests are highly esteemed, consider that the domains related to themselves are more important to their cognitive assessment of their lives. These people tend to take care of themselves, their nuclear family and their closest relationships. On the other hand, in the most collectivist cultures, compliance with family norms and social expectations are the main sources of satisfaction with life (Esnaola et al., 2019). Here, the family is constituted by all family members (not only nuclear members), where friends and other close people play an important role in everyday life (Lin, Hirschfeld, & Margraf, 2019).

In Peru, the family is one of the most important sources to achieve happiness and is considered as an affective network that involves feelings of affection, support, and protection against negative external events, where the warmest affective expressions are parental love and reciprocity of children toward parents (Alarcón, 2002). In this sense, the identification of adolescents with their parents is clear (Alarcón, 2006), where the absence of a parental figure could generate in the adolescent the perception of little emotional closeness with the rest of the family system (Villarreal-Zegarra & Paz-Jesús, 2017). These are highly generalized lifestyles in the traditional Peruvian family (Alarcón, 2017). In Portugal, satisfaction with family life is considered one of the main predictors of life satisfaction (da Costa & Neto, 2019; Moreno-Maldonado et al., 2020). The modernization of Portuguese society has generated a series of changes in the structure and functioning

of the family, with an increase in the number of families but a decrease in their members, characterized by the presence of only one child. (Delgado & Wall, 2014; Guerreiro, 2011, 2014). In addition, as a result of the 2008 economic crisis, about 47% of people between 18 and 34 years old still live with their parents, which can generate dependency and problems in family dynamics (Guerreiro, 2014).

In order to conduct research on satisfaction with family life in adolescents from different cultures, valid transcultural measures are required. That is, instruments possessing ecological validity (Van de Vijer & Leung, 1997). This may be particularly difficult to achieve because values, attitudes, norms and cognition tend to vary from culture to culture (Henrich, Heine, & Norenzayan, 2010; Oishi et al., 1999). Therefore, this study aims to evaluate the factorial invariance of the SWFLS in Peruvian and Portuguese adolescents by using multi-group confirmatory factorial analysis.

Methods

Participants

Two samples of adolescents were chosen, one from Peru and the other from Portugal. The inclusion criteria were the following: (1) being an adolescent between 14 and 18 years of age and (2) consent to participate in the study and have parental consent. On the other hand, the exclusion criteria included: (a) participants with serious physical problems or apparent disability; (b) adolescents who reported having been diagnosed with any mental health problems or having undergone psychiatric treatment in the year prior to the investigation; (c) those who failed to complete the questionnaire. Sample size was determined following the suggestions of Muthén and Muthén (2002), in which a minimum of 150 participants are required per group for simple one-dimensional models.

The Peruvian sample consisted of 232 adolescents from the city of Lima, 128 (55.2%) males and 104 (44.8%) females, from 14 to 17 years old ($age_{average}$ = 15.50, S.D. = 0.65). No statistically significant differences nor effect size ($t_{(230)}$ = 0.911; sig.= 0.363; d = .12 [CI95%: −.14; .38]) were observed in comparing the average ages of men ($age_{average}$ = 15.54, S.D.= 0.63) and women ($age_{average}$ = 15.46, S.D.= 0.67). The sample from Portugal consisted of 207 adolescents from Porto 108 males (52.2%) and 99 females (47.8%), between 14 and 18 years of age ($age_{average}$ = 16.16, S.D.= 0.81). Similarly, there were no statistically significant differences nor effect size ($t_{(205)}$ = −0.229; sig.= 0.765; d = 0.04 [CI95%: −0.24; 0.31]) when comparing the average ages of men ($age_{average}$ = 16.15, S.D. = 0.81) and women ($age_{average}$ =16.18, S.D.= 0.80).

Table 1. Original SWFLS Version Used in Peru ad Portugal.

SWFLS Peru	SWFLS Portugal
1. En la mayoría de los aspectos, mi vida familiar está próxima a mi ideal. (*In most ways my family life is close to my ideal*)	Em nuitos aspectos a minha vida familiar aproxima-se dos meus ideais.
2. Las condiciones de mi vida familiar son excelentes. (*The conditions of my family life are excellent*)	As condições da minha vida familiar são excelentes.
3. Estoy satisfecho(a) con mi vida familiar. (*I am satisfied with my family life*)	Estou satisfeito(a) com a minha vida familiar.
4. Hasta ahora, he logrado las cosas importantes que quería en mi vida familiar. (*So far I have gotten the important things I want in my family life*)	Até agora consegui obter aquilo que era importante na minha vida familiar.
5. Si pudiera vivir mi vida familiar otra vez, no cambiaría casi nada. (*If I could live my family life over, I would change almost nothing*)	Se pudesse viver a minha vida familiar de novo, não mudaría quase nada.

Measures

Satisfaction with Family Life Scale (SWFLS; Zabriskie & Ward, 2013). The translated Spanish (Caycho-Rodríguez et al., 2018; Schnettler, Lobos, et al., 2017) and Portuguese (da Costa & Neto, 2019) versions of the SWFLS were used. The single-factor model and reliability were shown to be adequate in both Peru ($\chi^2 = 3.49$, $df = 5$, $p = 0.63$, $\chi^2/df = 0.69$, $CFI = 1$; $RMSEA = 0.00$, $SRMR = 0.01$; Cronbach's coefficient alpha = .84, $\omega = 0.84$) and Portugal ($\chi^2 = 19.81$, $df = 5$, $\chi^2/df = 3.96$, $CFI = 0.99$; $RMSEA = 0.06$, $SRMR = 0.02$; Cronbach's coefficient alpha = .92, $\omega = 0.XX$). The SWFLS is comprised of five items on a Likert-like scale of seven points (1 = strongly disagree; 2 = disagree; 3= slightly disagree; 4= neither agree nor disagree; 5= slightly agree; 6= agree; 7 = strongly agree). The sum of the score from all five items gives a total score, which ranges from a minimum of 5 to a maximum of 35, where a higher score expresses a higher degree of satisfaction with family life. Zabriskie and McCormick (2003) suggest that values about 20 puntos indicate a general satisfaction with family life. For the sake of completeness, Table 1 presents the Peruvian, English and Portuguese versions of the SWFLS.

Procedure

The research protocol was approved by the Ethics Committee of the corresponding author's university (N° 20194003). Both SWFLS translations followed the recommendations for intercultural studies (Beaton, Bombardier, Guillemin, & Ferraz, 2000; Brislin, 2000) which are described in detail in previous studies (Caycho-Rodríguez et al., 2018; da Costa & Neto, 2019). Initially, for both countries, the permission from the educational institutions' authorities to apply the measures was formally requested. Thus, we informed the Ethics Committee of the objective of the study, the

characteristics of the SWFLS and the data collection process. Once obtained, parental consent was also requested of the participants in the study. Both parents and adolescents were informed about the purpose of the research study, emphasizing its voluntary participation, the anonymity of the responses and the right to withdraw from the study at any time. This whole process was in accordance with the Helsinki Declaration. The questionnaires were administered to adolescents who agreed to participate in the study. The study was carried out collectively in the classrooms, allowing students to take the time necessary to complete the questionnaire. The average time required to complete the evaluation ranged from 15 to 20 min.

Data analyses

The analyses were performed using the Statistical Package for Social Sciences (IBM-SPSS) version 23. Invariance testing was carried out using the R (R Development Core Team, 2011) statistical software. Specifically, the packages *lavaan*, for CFA with latent variables, and *semTools*, for testing the invariance (Oberski, 2014; Pornprasertmanit, Miller, Schoemann, & Rosseel, 2015; Rosseel, 2012) were employed.

Descriptive statistics (mean [M], standard deviation [SD], skewness [g1] and kurtosis [g2] were computed for all items and each sample. Moreover, coefficient omega (ω; McDonald, 1999), Cronbach's alpha coefficient, the corrected item-to-total (r_{itc}), and the average variance extracted from the factor (AVE) were calculated to estimate the internal consistency of the SWFLS. Magnitudes of ω >.80 (Raykov & Hancock, 2005), and average variance extracted (AVE) >.50 (Bhattacherjee & Premkumar, 2004) are considered adequate.

The SWFLS measurement invariance was tested by using the CFA and multi-group CFA. First, the fit indices of the SWFLS single-factor model were tested in the global sample and, separately, in each country. Due to the ordinal nature of the SWFLS items, the CFA was performed with the Diagonally Weighted Least Squares with Mean and Variance estimator (WLSMV; Finney & DiStefano, 2006; Flora & Curran, 2004; Li, 2016). The one-dimensional model was evaluated through the chi-square (χ^2) test. The data adjustment is adequate when the value of χ^2 is not statistically significant ($p > .05$). However, because the χ^2 increases with the sample size, there is a tendency to reject the model. Indeed, the evaluation of the model relies on a joint analysis of other goodness-of-fit indices, such as the root mean square error of approximation (RMSEA) and the comparative fit index (CFI). CFI values above .90 (better above 0.95; Schermelleh-Engel, Moosbrugger, & Müller, 2003) and RMSEA under 0.08 (better below 0.05;

Marsh, Hau, & Wen, 2004) reflect an appropriate fit for the model (Hu & Bentler, 1999). In addition, the weighted root mean square residual (WRMR) is considered adequate when working with ordinal data (Muthén & Muthén, 1998–2015,). A value of WRMR less than 0.90 (Yu, 2002) and even 1.0 (DiStefano, Liu, Jiang, & Shi, 2018) is also an indicator of an adequate fit. The factorial loads (λ) were interpreted following Comrey and Lee (1992) recommendations for CFA, where $\lambda > 0.71$ is excellent, $\lambda > 0.63$ very good, $\lambda > 0.55$ good, $\lambda > 0.45$ fair, and $\lambda > 0.32$ poor.

The factorial invariance was carried out in a hierarchical way (Byrne & Van de Vijver, 2010; Van de Schoot, Lugtig, & Hox, 2012), evaluating more restricted CFA models: configural invariance, metric (or weak) invariance, scalar (or strong) invariance and strict invariance. The configural invariance evaluates whether the factorial structure is the same between the compared groups, in addition to serving as an initial reference model. Metric invariance tests the configural model with equal factorial loads. Scalar invariance evaluates a model with equal factorial loads and intercepts. Strict invariance assesses a model in which factorial loads, intercepts, and residues are equal. Due to $\Delta\chi^2$ being extremely sensitive to the sample size, the evidence of invariance between the least restrictive model and the most restrictive model is verified through the differences in CFI (ΔCFI). Specifically, CFI values less than or equal to 0.01 indicate that the invariance hypothesis must be accepted (Chen, 2007; Cheung & Rensvold, 2002). After testing invariance, the latent means were compared (Dimitrov, 2010). Student's *t* test was used, and effect sizes were calculated by means of Cohen's *d* (Cohen, 1992), where $d = 0.20$ is a small effect size, $d = 0.50$ medium and $d = 0.80$ large.

Results

Descriptive statistics and reliability of the SWFLS

Table 2 shows the descriptive statistics (mean, standard deviation, skewness and kurtosis), standardized factorial loads and reliability coefficients of the

Table 2. Descriptive Statistics, Factorial Loads and Reliability Coefficients of Both Studied Samples.

	Peruvian adolescents ($N = 232$)[a]					Portuguese adolescents ($N = 207$)[a]					Total sample				
Item	*M*	*SD*	g_1	g_2	λ	*M*	*SD*	g_1	g_2	λ	*M*	*SD*	g_1	g_2	λ
1	4.82	1.51	−0.59	0.01	0.73	4.87	1.74	−0.69	−0.51	0.86	4.85	1.62	−0.64	−0.28	0.79
2	5.01	1.41	−0.79	0.26	0.81	5.22	1.60	−0.91	0.09	0.88	5.11	1.51	−0.83	0.13	0.84
3	5.36	1.53	−1.05	0.64	0.80	5.32	1.61	−1.05	0.29	0.96	5.35	1.57	−1.05	0.44	0.88
4	4.84	1.51	−0.81	0.18	0.73	5.15	1.55	−0.83	0.05	0.89	4.99	1.54	−0.79	0.08	0.79
5	4.68	2.03	−0.39	−1.20	0.68	4.71	1.95	−0.33	−1.19	0.77	4.69	1.99	−0.36	−1.19	0.72

[a]Cronbach's $\alpha = 0.83$; $\omega_{Perú} = 0.87$.
[b]Cronbach's $\alpha = 0.92$; $\omega_{Portugal} = 0.94$.

Table 3. Confirmatory factorial analysis and invariance factorial model of the SWFLS.

Model	χ^2 (df)	$\Delta\chi^2$ (Δdf)	*p*	RMSEA [CI 90%]	(ΔRMSEA)	CFI	(ΔCFI)
Total sample	13.82 (5)	–		.06 [.03, .11]		.99	–
Peru:	9.93 (5)	–		.07 [.00, .13]		.99	–
Portugal	8.00 (5)	–		.05 [.00, .13]		.99	–
Invariance analysis:							
Configural	12.186 (10)	–		.078	–	.995	–
Metric	15.113 (14)	3.529 (4)	.47	.070	.008	.997	.002
Scalar	41.842 (38)	26.729 (24)	.01	.070	.000	992	.005
Strict	64.794 (43)	22.952 (5)	.00	.091	.021	.985	.007

total sample and each group of adolescents. The values of the alpha and omega coefficients were suitable for each sample (Cronbach's $\alpha_{\text{Perú}} = .83$; $\omega_{\text{Perú}} = .87$; Cronbach's $\alpha_{\text{Portugal}} = .92$; $\omega_{\text{Portugal}} = .94$). The AVE values were 0.56 and 0.77 for samples from Peru and Portugal respectively. The item-test correlations for both samples were greater than .30.

Unidimensionality of the SWFLS

The single factor model of the SWFLS presents a satisfactory adjustment to the total sample ($\chi^2 = 13.827$, $df = 5$, $p = 0.02$; $\chi^2/df = 2.77$; CFI = 0.99; RMSEA = 0.06 (CI90%: 0.03–0.11]; WRMR = 0.32), where all λ were greater than 0.721, and $\lambda_{\text{average}} = 0.808$ (Table 2). Prior to the multi-group factor analysis, the single-factor model was tested separately in Peruvian and Portuguese adolescents (Table 3). The model presented an adequate adjustment in both samples: Peruvian adolescents ($\chi^2 = 9.93$, $df = 5$, $p = 0.07$; $\chi^2/df = 1.99$; CFI = 0.99; RMSEA = 0.07 (CI90%: $0.00 - 0.13$]; WRMR = 0.32) and Portuguese adolescents ($\chi^2 = 8.00$, $df = 5$, $p = 0.00$; $\chi^2/df = 1.60$; CFI = 0.99; RMSEA = .05 [CI90%: 0.00–0.12]; WRMR = 0.45). Subsequently, the more restricted CFA models were estimated and tested.

Factorial invariance

The results and comparisons of the models for the transcultural measurement invariance of the SWFLS are shown in Table 2. Once the single factor structure was demonstrated to be adequate for both groups, the configural invariance model was examined. Here no equality constraints on parameter estimation across groups are considered, thus it serves as a baseline for the evaluation of other models. The results indicate that the overall fit of this model was acceptable ($\chi^2 = 12.19$, $df = 10$, CFI = 0.99; RMSEA = 0.08).

Next, we examined the metric invariance which adds a constraint to the configural model, where all factorial loads are equal in the compared groups. This model presented a good fit of the data while the ΔCFI between the restricted (metric invariance) and the unconstrained model

(configural invariance) was below the established cutoff ($\Delta CFI \leq 0.01$). Likewise, the RMSEA slightly improved. Once the metric invariance was established, the scalar invariance was evaluated. Here, along with the factorial loads, the intercepts were also equivalent between the groups. The $\Delta\chi^2$ between the metric and scalar model was statistically significant ($p > 0.05$) but the differences for the CFI were minimal. Finally, the residues of the model were matched between the groups in order to evaluate the strict invariance. Despite the significant difference of $\Delta\chi^2$, the ΔCFI between strong and strict invariance models was within the expected range. The results show that the progressive restrictions imposed did not significantly modify the adjustment of the single factor model. Therefore, one can assume the factorial invariance of the SWFLS between the groups of Peruvians and Portuguese adolescents. Table 3 presents the results of the factorial invariance between the different countries.

Once the invariance was verified, the latent means were compared, in view of the fulfillment of the strict invariance (Dimitrov, 2010). Therefore, the mean of the first group was set to zero and that of the second was left free. The results reveal that there is no significant difference ($t = 9.45$, $p \geq 0.05$, $d = 0.04$ [95%CI −1.49, 0.23]) when comparing the satisfaction with family life of Peruvian ($M = 4.96$, $SD = 1.52$) and Portuguese ($M = 5.02$, $SD = 1.63$) adolescents.

Discussion

We studied the factorial invariance of the SWFLS Spanish and Portuguese translations in Peruvian and Portuguese adolescents. The results supported the single factor structure of the SWFLS for both samples. This is in agreement with previous studies conducted in Peru (Caycho-Rodríguez et al., 2018), Portugal (da Costa & Neto, 2019), the United States, Canada, the United Kingdom, Australia and New Zealand (Zabriskie & Ward, 2013). Although the average load factor of the Peruvians ($\lambda_{average} = .75$) is lower than that of the Portuguese ($\lambda_{average} = .87$), both can be considered excellent as they would represent more than 50% of the explained variance (Comrey & Lee, 1992). In this sense, high load factors would indicate that most of the SWFL variation can be explained by the items included in the SWLFS, which supports the reliability of the scale. However, item 5 shows the lowest load factor in both samples ($\lambda_{item\ 5\text{-}\ Peru} = .68$; $\lambda_{item\ 5\text{-}\ Portugal} = .77$). This might be related to the fact that this item is oriented to the past in comparison to the others that are oriented to the present (see item 5 in Table 1). The same trend has been reported previously in studies conducted on adolescents using the SWFLS (Caycho-Rodríguez et al., 2018; da Costa & Neto, 2019) and the SWLS, from which the former

is derived (Moksnes, Løhre, Byrne, & Haugan, 2014). The reliability coefficients were also adequate for both samples, in agreement with previous studies.

The evaluation of the factorial invariance in the samples showed that the adjustment of the model was appropriate even when a set of constraints were imposed. In particular, in both samples there is evidence supporting the configural invariance, which supports the presence of the same latent factor in the two countries. Therefore, the results suggested that adolescents from Peru and Portugal conceptualize satisfaction with family life in a similar way (Cheung & Rensvold, 2002). It is worth mentioning that in terms of the interbehavioral theory (Kantor & Smith, 1975), in the psychological event of responding to a measure, there is an interaction between the items (stimulus function) and the responses (answering function), so that satisfaction with family life would be a similarly mapped phenomenon among participants from Peru and Portugal. Concerning the equivalence of factor loadings, the metric invariance in the two cultural groups was demonstrated. This suggests that the latent construct is related to the SWFLS items in the same way for the adolescents from both countries. The subsequent constraints that match intercepts (scalar invariance) and residuals (strict invariance) resulted in poor adjustment according to the χ^2 test. Nevertheless, the CFI adjustment rates varied only slightly after adding the constraints to the model of reference. The above findings suggest that intercepts and residuals may be the same in Peruvian and Portuguese adolescents, supporting the assumption of a strict invariance between the two groups. Establishing strict invariance suggests that the SWFLS measures satisfaction with family life with an equivalent measurement error among adolescents in both countries. Furthermore, it allows for comparisons between groups based on the sum of observed scores and by estimating latent mean differences, since the observed variance is the result of the variance of the actual score and the residual variance. In this sense, it is also worth noting that strict invariance provides complementary information for the estimation of reliability, since it evaluates the variability coming from random errors and systematic variability, product of the unspecified sources of variation (Wu, Zhen, & Zumbo, 2007). Therefore, the findings also suggest that the SWFLS items are equally reliable among both groups. While the ESWLS factor invariance was recently assessed among young adults in the United States and Hungary, and within it, the family satisfaction subscale (Hittner, Swickert, Silver, Hevesi, & Kövi, 2018), this is the first study to assess the SWFLS factor invariance by Zabriskie and McCormick (2003). It should be noted that the factor invariance test seeks to determine whether a scale measures a particular construct with the same structure among different groups. Therefore, when checking for the

presence of factor invariance, the instrument is referred to as invariant (Van de Schoot et al., 2012).

This has an important implication, as the means and correlations at the latent variable level can be comparable between the countries. Although the marked cultural and religious differences, as well as the different education levels of the countries can, in principle, generate several different interpretations of quality of life indices (Atienza et al., 2016; Inglehart, Foa, Peterson, & Welzel, 2008; Zanon, Bardagi, Layous, & Hutz, 2014), these do not seem to be strong enough to have a significant impact, as the values and aspirations assumed by the adolescents when reading the SWFLS items are valid in both groups.

Considering that this is the first study to evaluate the invariance of the SWFLS between two countries, some limitations can be mentioned. First, although the samples were very similar in terms of age and number of males and females, it was limited to school-age adolescents from Lima (Peru) and Porto (Portugal). It was a non-probabilistic sampling, so the results cannot be generalized to the general population of adolescents in both countries. To achieve generalization, further studies should use random sampling procedures and larger and more representative samples in both countries. Examination of other models of invariance in order to evaluate the differences across age groups and gender is also suggested. Second, the study was conducted in two collectivist countries, where family values are highly regarded. However, it would be ideal to replicate the study in collectivist and individualistic cultural contexts. Third, in accordance with the terminology of the Educational and Psychological Testing standards (American Educational Research Association, American Psychological Association, National Council on Measurement in Education, 2014), the study only focused on evaluating the evidence of validity based on the internal structure of the SWFLS in both countries. Other sources of evidence of validity such as content and relationships with other variables were not examined. Fourth, the data was collected by self-report, so the answers may present some bias for social expediency. Therefore, it would be helpful to correlate the scores obtained on the scale with the opinions off the participant's peers, teachers or relatives. Fifth, the scale was only administered in two different languages, so more studies should be conducted to obtain a brief and totally international measure of satisfaction with family life in adolescents. Sixth, the temporal stability of the scale scores was not evaluated with a test-retest study. Furthermore, the study was not longitudinal so the invariance analysis does not provide any evidence that the latent construct of satisfaction with family life is measured in the same way and in the same metric along different periods of time (Liu et al., 2017). Future studies should satisfaction with family life over

time. In addition, because of the presence of different changes as the individual grows and develops which may affect family satisfaction, future studies should evaluate the temporal stability of the SWFLS as a preliminary step to the evaluation of overall cognitive judgment of family life satisfaction. Finally, this study did not evaluate other important aspects that contribute to family satisfaction, such as family cohesion and communication (Lin & Yi, 2019; Relva, Alarcão, Fernandes, Carvalho, & Fauchier, 2019). Therefore, future studies should use other complementary measures of family satisfaction together with the SWFLS in order to obtain a broader assessment of this construct.

Despite these limitations, we conclude that the SWFLS presents factorial invariance in adolescents from samples in Peru and Portugal. The results provide additional information about the usefulness of the SWFLS for making cross-cultural comparisons. In this sense, different theoretical and practical implications can be identified. At the theoretical level, factor invariance tests in cross-cultural studies provide important information about the similarity and differences in the understanding of satisfaction with family life in Peru and Portugal. The results of this study suggest that the differences between the SWFLS scores in the two countries can be attributed to real differences in satisfaction with family life and not to other characteristics of the scale, such as understanding of the items or familiarity with their response formats.

Furthermore, on a practical level, its short duration (less than 5 min) and ease of interpretation allows the SWFLS to be used in different situations, such as initial psychological assessments or national surveys. Finally, the SWFLS is a short, simple, and meaningful measure of family satisfaction for psychologists and other family related health professionals who need to obtain data in a way that does not subject adolescents to cognitive overload. Additionally, having a measure to make meaningful international comparisons of family life satisfaction in adolescents in Peru and Portugal can provide information to serve as a basis for the development of common policies that seek to improve family life related well-being in these countries. In this sense, the findings have practical meaning for health professionals, who can now have a better understanding of family life satisfaction and its influence on other variables such as depression (Stavropoulos, Lazaratou, Marini, & Dikeos, 2015), quality of diet (Schnettler, Lobos, et al., 2017), family communication and cohesion (Hernández, González, San Pedro, & Ganén, 2017), among others. The SWFLS is also a useful measure within educational and intervention programs to detect possible family problems. Thus, psychologists, educators, social workers, or other professionals involved in family welfare issues should be aware of the cultural factors that influence family satisfaction.

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