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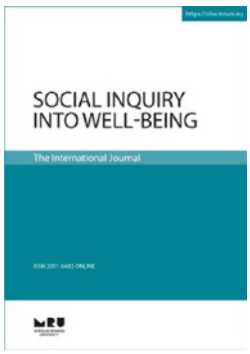

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Satisfaction with Life Scale: Evidence of Validity and Reliability in the Brazilian Context

Emanuela Maria Possidônio de Sousa[a], Walberto S. Santos[a], Guilherme Sobreira Lopes[b], Thicianne Malheiros da Costa[a], Eva Dias Cristino[c]

[a]Federal University of Ceará, Brazil
[b]Oakland University, United States
[c]Federal University of Paraíba, Brazil

*** Corresponding author email address:**
Emanuela Maria Possidônio de Sousa
Federal University of Ceara, Brazil
e-mail address: em.possidonio@gmail.com

Abstract

This study aimed to evaluate construct validity and other psychometric properties of the Satisfaction with Life Scale (SWLS) in the Brazilian context. To do so, three studies were conducted. Study I evaluated the discriminative power and the homogeneity of the items, the factor structure and the internal consistency of the scale. 101 individuals from the general population of Fortaleza (CE) participated, with ages from 18 to 94 years (M = 41.8; SD = 22.6), mostly female (57.4%), single (48.5%) and Catholic (60.4%). Results indicated a single factor structure and satisfactory internal consistency. The second study tested the factor structure through a confirmatory factor analysis. This study counted with 184 individuals from the general population of Fortaleza (CE), aged 18 to 85 years (M = 40.4; SD = 22.8), mostly female (53.3%), single (52.2%) and Catholic (62.5%). Results indicated satisfactory goodness-of-fit indexes, except for the RMSEA. Study III evaluated the temporal stability and convergent validity of the SWLS. 51 students from Fortaleza (CE) participated. The subjects were aged between 18 and 47 years old (M = 22.9; SD = 4.5), mostly male (56%), single (96.1%) and Catholic (48%). 34 participated on the retest. Data collection was performed in classrooms and retest was conducted after 30 days. Results indicated good temporal stability and significant correlations between life satisfaction and positive and negative affect. We conclude that the SWLS presented satisfactory levels of validity and reliability and can be used to predictive models involving mental health in Brazilian context.

Keywords: Satisfaction with Life, Scale, Validity, Reliability.

Subjective well-being refers to the assessment that individuals make of their lives regarding expectations and previous experiences (Woyciekoski, Stenert & Hutz, 2012). It consists of two components (Diener, 1984). The *affective* component involves positive and negative affects, which are related to emotions and mood. The *cognitive* component, refers to the satisfaction that individuals have about their lives (Diener, 1984). Correspondly, life satisfaction is the assessment of how satisfied the individual is in the present moment, based on a standard set by her or him, and based on past experiences (Diener, Emmons, Larsen & Griffin, 1985). Therefore, people who report high levels of satisfaction with life, must have high frequency of positive experience, and low frequency of negative experiences (Diener et al., 1985; Woyciekoski et al., 2012).

Satisfaction with life can bring significant benefits to people's lives. According to the review by De Neve, Diener, Tay & Xuereb (2013), past studies have shown that high levels of satisfaction with life are associated with maintaining healthy lifestyles and with individuals' propensity to donate blood

and money. Positive emotions tend to reduce physiological effects that are harmful to health, and happy individuals are more likely to have higher life expectancy. High levels of satisfaction with life are associated with greater longevity indices (Diener & Chan, 2011), vitality (Brdar & Kashdan, 2010), curiosity, gratitude and hope (Proyer, Ruch & Buschor, 2013). It also, functions as primary protection factor for anxiety (Abdel-Khalek, 2010), burnout and depression (Gomes & Quintão, 2011), obesity, cardiovascular disease (Forste & Moore, 2012), suicide risk (Diener, Inglehart & Tay, 2013), among others. Recent studies suggest that older adults with high satisfaction had fewer symptoms of insomnia and fatigue (Tomomitsu, Perracini & Neri, 2014), and functional independence (Sposito, D'Elboux , Neri & Guariento, 2013).

Several measures of satisfaction with life were developed in the past decades (Andrews & Withey, 1976; Gurin, Veroff & Feld, 1960; Lawton, 1975). They have some limitations, such as being developed for specific samples, or having items that do not address the evaluation of the construct (Diener et al., 1984; 1985). Diener et al. (1985) developed a measure to assess satisfaction with life as an evaluative and cognitive process. Since then, this scale has been used in different countries (Diener, Helliwell & Kahneman, 2010). The Satisfaction with Life Scale – SWLS (Diener et al., 1985) was built from a list of 48 items, from items regarding life satisfaction to items regarding positive and negative affects. From this list, all items related to affects and satisfaction with life with saturation less than .60 were excluded, remaining 10 items. Due to the semantics similarity, five items were excluded, resulting in an instrument with five items, answered in a seven-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree). Factor analysis indicated an one-factor structure, and the items showed saturations between .61 and .84. The items, explained 66% of the total variance, and the item-total correlations varied from .57 to .75. The measure showed satisfactory Cronbach's alpha (.87).

In recent decades, the psychometric properties of SWLS were tested in countries like Germany (Glaesmer, Grande, Braehler & Roth, 2011), Canada (Chow, Ram, Boker, Fujita & Clore, 2005), China (Bai, Wu, Zheng, & Ren, 2011), Spain (Atienza, Pons, Balaguer & García-Merita, 2000; Lucas-Carrasco, Salvador-Carulla, 2012; Núñez, Domínguez & Martín-Albo, 2010), United States (Schimmack, Oishi, Furr & Funder, 2004), Greenland (Vittersø, Biswas-Diener & Diener, 2005), England (Shevlin, Brunsden & Miles, 1998), Malaysia (Swami & Chamorro-Premuzic, 2009), Norway (Clench-Aas, Nes, Dalgard & Aarø, 2011; Sam, 2001), Portugal (Neto, 2001), Sweden (Hultell & Gustavsson, 2008), Taiwan (Wu & Yao, 2006) and Turkey (Durak, Senol-Gencoz & Durak, 2010).

Regarding the validation process of the SWLS in Turkey, for example, the scale has been validated with a sample of college students, prisoners and old agents, being attested internal consistency (Cronbach's alpha = .81), convergent / discriminant and construct validity for the three samples. (Durak et. al., 2010). In China, the psychometric properties of SWLS were evaluated by Bai et al. (2011); the results indicated adequate level of internal consistency (α = .88). In Germany, a longitudinal study involving 2519 participants, found that the SWLS is configured as a precise instrument (Cronbach's alpha = .92), one-dimensional [χ^2 (5) = 212.74, $p \leq .001$; GFI = .97; CFI = .98] and item-total correlations above .50. (Glaesmer et al., 2011).

In Brazil, the SWLS had its psychometric parameters evaluated in several samples, such as elderly living in rural area (Albuquerque, Sousa & Martins, 2010) and general population in the state of Paraíba (Gouveia et al., 2003), university students and military in the state Rio Grande do Sul (Rosa, 2006), representative sample of physicians (Gouveia, Barbosa, Andrade & Carneiro, 2005), teachers and students of high school and universities (Gouveia, Milfont, Fonseca & Coelho, 2009). The results of these studies indicated a single factor structure and satisfactory psychometric parameters, in line with prior research (Athay, 2012; Diener et al., 2013; Glaesmer et al., 2011; Sancho, Galiana, Gutierrez, Francisco & Tomás, 2014).

Thus, although the above mentioned studies considered several samples (e.g medical, military) and different Brazilian states (e.g Paraíba, Rio Grande do Sul), they have not exhausted the testing of the SWLS, as Brazil is configured as a country with wide cultural diversity. In this context, Diener & Suh (1999) and Schimmack, Radhakrishnan, Oishi, Dzokoto & Ahadi (2002) show that satisfaction with life is directly influenced by culture. According to the authors, people living in individualistic, rich and democratic cultures have higher levels of subjective well-being than those living in collectivist cultures, poor and totalitarian.

Among the psychometric parameters evaluated by the aforementioned Brazilian studies, some important psychometric parameters were not evaluated. For instance, the discriminative power has been rarely evaluated. Gouveia, Barbosa, Andrade & Carneiro (2005) analyzed the factor structure, internal consistency and homogeneity of the items. Chaves (2003) condeucted exploratory and confirmatory factor analysis. Athay (2012) and Sancho et al. (2014), analyzed a set of psychometric parameters, such as internal consistency and the factor structure of the measure, although they evaluated criterion validity considering various constructs (social supports, health perceptions, among others). As can be seen, the studies above have not evaluated the discriminative power of the items.

The test-retest reliability is also rarely considered in the SWLS validation studies. Diener et al. (1985) presented a suitable test-retest reliability coefficient (.82) considering an interval of two months. Other publications have shown similar results, with correlations .84 (Pavot, Diener, Colvin & Sandvik, 1991) in a period of four weeks, and .54 at an interval of four years (Pavot & Diener, 1993). It is possible to think that satisfaction with life is stable although environmental factors can influence the assessments that people make about their lives in long-term (Diener et al., 2013).

In this sense, evaluating the psychometric properties of the SWLS in different contexts is configured as a key step to check the appropriateness of the measure as an indicator about how much people are satisfied with their lives. Thus, the present study aims to check the adequacy of this measure to the Ceará context, the current research aims to gather evidence of validity and reliability of the Portuguese version of the SWLS (Gouveia et al., 2009) considering three samples of Ceará, Brazil. Specifically, we aimed to: 1) evaluate the dis-

criminating power and homogeneity of the items, the internal consistency and the factor structure of the measure (Study 1), 2) test the structure found using confirmatory factor analysis (Study 2), and 3) asses temporal stability and convergent validity of the SWLS with positive and negative affects (Study 3).

Study 1

Method

We analyzed the discriminating power (items of SWLS can differentiate people with close scores), homogeneity (each item correlation with the scale), the dimensionality of the SWLS (factor structure) and the internal consistency (the measurement reliability). A more detailed description of this study can be seen in session data analysis.

Participants

Participated in this study were 101 individuals recruited from public places in Fortaleza – CE. Most participants were female (57.4%), single (48.5%) and Catholic (60.4%), with ages ranging from 18 to 94 years (M = 41.8; SD = 22.6). Written informed consent was obtained from participants to complete the self-report questionnaire.

Table 1.
Characteristics of respondents – Study 1 (N=101)

Variables	Level	*n*	%
Gender	Male	43	42.6
	Female	58	57.4
Religion	Catholic	61	60.4
	Protestant	13	12.9
	Spiritist	6	5.9
	None	14	13.9
	Other	7	6.9
Marital Status	Married	37	37.0
	Single	49	49.0
	Widower	8	8.0
	Divorced	4	4.0
	Other	2	2.0

Instruments

Participants answered a booklet containing demographic questions (e.g. gender, educational level, and religion) and the Portuguese version of the Satisfaction with Life Scale – SWLS (Diener et al., 1985). The reader who is interested in a more detailed description of the adaptation of the SWLS to the Portuguese language should see Gouveia et al. (2009). The SWLS evaluates the judgment of how satisfied people are with their present state of affairs, and includes five items (e.g., *In most ways my life is close to my ideal; The conditions of my life are excellent*). The SWLS was rated with a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Gouveia et al. (2009) found a single factor structure for the SWLS, with Cronbach's alphas between .77 and .88 for the samples used in their study.

Procedure

We approached individuals in public places (e.g., parks, shopping centers) and invited them to participate in the survey. On the occasion, only individuals above 18 years old and that signed the informed consent were allowed to participate. In general, 15 minutes were enough to answer the questionnaire.

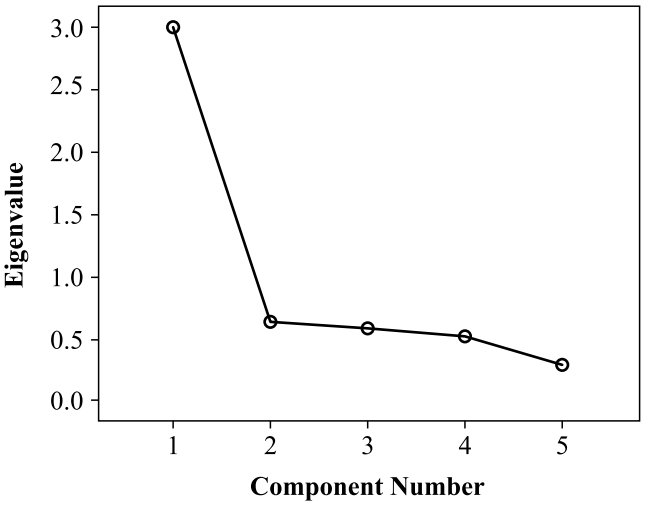
Data analysis

We performed descriptive statistics (measures of central tendency and variability), t-Student tests for independent samples to evaluate the discriminative power of the items, and corrected item-total correlations to calculate the homogeneity of the items. We then calculated Kaiser–Meyer–Olkin (KMO) and Bartlett's sphericity tests to examine the suitability of the data and Principal Components Analysis (PCA) for the factor structure. We used the PCA method because we aimed to identify the maximum explained variance in a minimum number of factors (Hair, Black, Babin & Anderson, 2007). Finally, Cronbach's alpha was calculated to evaluate the internal consistency of the SWLS.

Results

Initially, regarding the discriminative power of the items of the SWLS, we divided the sample into two groups based on the empirical median (Mdn = 5) and calculated the mean differences between the groups for each item with t-Student tests for independent samples. All items showed significant mean differences between the groups ($p \leq .001$). Regarding the homogeneity of the items, Pearson correlations varied

Figure 1.
Scree plot of the SWLS. Scree test of eigenvalues plotted against factors. The plot is appropriately to find the number of factors of the measure.



between .58 (The conditions of my life are excellent) and .72 (In most ways my life is close to my ideal), and were above the minimum recommended in the literature (.40) (Mokken, 1971).

Afterwards, KMO (.81) and Bartlett's sphericity tests [χ^2 (10) = 179.30, $p \leq .001$] confirmed the suitability of the data to conduct a PCA. Then, we performed the PCA without fixing the number of factor. Results indicated one component that met the Kaiser criterion (eigenvalue ≥ 1), explaining 60% of the total variance. In line with the Kaiser criterion, scree plot results indicated one component (Cattell criterion, see Figure 1), also corroborated with parallel analysis (Horn criterion), assuming the same parameters of the data analyzed (101 participants and 5 variables), with 100 random data matrices.

The factor loadings varied from .74 to .85. The single factor presented eigenvalue of 3, and internal consistency (Cronbach's alpha) of .82. The results are summarized in Table 2.

Thereafter, we tested the one-factor structure through a confirmatory factor analysis (CFA), as detailed in Study 2.

Table 2

Psychometric parameters of the items (N = 101)

Items	Factor loadings	h^{2a}	Above *Mdn*[1]		Below *Mdn*[2]		Mean Differences[3]	95% CI[4]	t^5	$r_{i.t}$ [6]
			M	*DP*	*M*	*DP*				
01	.85	.73	5.66	1.04	3.98	1.45	1.68	[1.18, 2.18]	6.70	.72
02	.74	.54	5.72	1.05	3.57	1.40	2.15	[1.66, 2.64]	8.73	.59
03	.77	.59	5.98	1.19	4.33	1.19	1.65	[1.18, 2.12]	6.95	.63
04	.77	.59	6.18	0.75	4.75	1.47	1.43	[0.97, 1.90]	6.21	.61
05	.74	.55	5.86	1.29	3.10	1.69	2.76	[2.17, 3.36]	9.24	.59

Note. a = Communality; 1= Above of median; 2 = Below of median; 3 = Mean diferences between groups; 4 = Confidence Interval; 5 = Student's Test; 6 = Item-total correlations.

Study 2

Method

Considering the results of the exploratory factor analysis, we aimed to test the same model through a confirmatory factor analysis, taking into account the following set of quality indicators: χ^2 (chi-square), χ^2/df), GFI, AGFI, CFI e RMSEA. A more detailed description of this study can be seen in session data analysis.

Participants

We counted with 184 individuals from Fortaleza – CE, aged between 18 and 85 years (*M* = 40.4, *SD* = 22.8), mostly female (53.3%), single (52.2%) and Catholic (62.5%).

Instruments

Participants answered the SWLS and demographic questions (e.g., age, gender).

Procedure

Data collection followed the same procedures as previously described in Study 1.

Data analysis

We performed a confirmatory factor analysis using AMOS 20, considering the covariance matrix as input and the maximum likelihood (ML) as estimator, in line with studies that performed similar analysis (Glaesmer et al., 2011; Gouveia et al., 2005, 2009). The ML is a suitable estimator for the analysis considering the sample size used in this study (Hair et al., 2007). We calculated the following goodness-of-fit indexes:

1) χ^2 (chi-square), which tests the probability of the theoretical model to fit the data; lower values indicate better model fit. To be sensitive to sample size it is important to consider the ratio with the degrees of

Table 3.

Characteristics of respondents – Study 2 (N=184).

Variables	Level	*n*	%
Gender	Male	85	46.4
	Female	98	53.6
Religion	Catholic	115	62.5
	Protestant	25	13.6
	Spiritist	5	2.7
	None	30	16.3
	Other	9	4.9
Marital Status	Married	54	29.8
	Single	96	53.0
	Widower	20	11.0
	Divorced	7	3.9
	Other	4	2.2

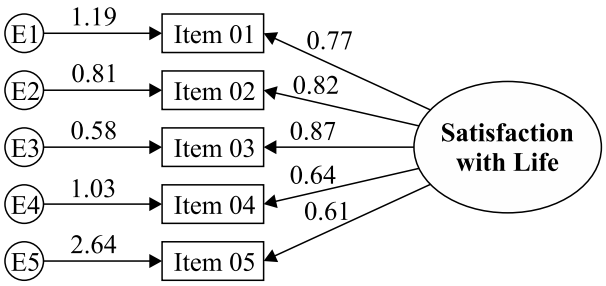
Note. * valid percentage.

freedom (χ^2/df). Values between 2 and 3 indicate a suitable adjustment, with an acceptable amount of up to 5;
2) Goodness-of-Fit Index (GFI) and Adjusted Goodness-of-Fit Index (AGFI), ranging from 0 to 1, with values greater than .90 indicate a satisfactory adjustment;
3) Comparative Fit Index (CFI), which is a comparative index adjustment to the model, with values closer to 1 indicating better fit; .90 or higher values express an adjusted model;
4) Root-MeanSquare Error of Approximation (RMSEA), with its 90% confidence interval (90% CI), values up to .05 and .08 are accepted, but it is possible to admit values up to .10.

Results

All items presented good normality indexes to perform the confirmatory factor analysis with ML estimator (skewness < |3|; kurtosis < |8|) (Kline, 2005). The goodness-of-fit indexes were : χ^2 (5) = 12.34, p ≤ .05, χ^2/df = 2.47, GFI = .97, AGFI = .92, CFI = .98 and RMSEA = .09, 90% CI [.02, .15]. Additionally, all factor weights (lambdas) were statistically different from zero and greater than .30 ($\lambda \neq 0$; z > 1.96, p < .05), indicating that the SWLS is well represented by one factor (Figure 2).

Figure 2.
Factor structure of the SWLS.



Furthermore, we conducted another study to gather evidence of temporal stability and concurrent validity of the satisfaction with life.

Study 3

Method

We evaluated the test-retest reliability and the convergent validity of the SWLS with positive and negative affects. The temporal stability of the scale was tested considering the scores of the participants at two points (t^1 and t^2). If so the correlations (Pearson's *r*) are strong and significant, it is pointed out to the temporal stability of life satisfaction between the two moments of testing. In the case of convergent validity, it was calculated the correlation between life satisfaction and positive and negative affects one of the most important correlates of satisfaction with life. A more detailed description of this study can be seen in session data analysis.

Participants

In this study, we assessed 51 students from different language courses at the Federal University of Ceará. They were aged between 18 and 47 years (*M* = 22.9; *SD* = 4.5), mostly male (56%), single (96.1%) and Catholic (48%). Of these students, 34 participated in the retest. They were aged between 18 and 30 years (*M* = 22.5; *SD* = 3.1), mostly male (57.6%), single (94.1%) and Catholic (55.9%). This sample was non-probabilistic. Participants gave signed informed consent before completing the self-report questionnaires.

Table 4.
Characteristics of respondents – Study 3 – Test (N=51).

Variables	Level	*n*	%
Gender	Male	28	56.0
	Female	22	44.0
Religion	Catholic	24	48.0
	Protestant	7	14.0
	None	17	34.0
	Other	2	4.0
Marital Status	Single	49	96.1
	Married	2	3.9

Characteristics of respondents – Study 3 – Retest (N=34).

Variables	Level	*n*	%*
Gender	Male	19	57.6
	Female	14	42.4
Religion	Catholic	19	55.9
	Protestant	4	11.8
	None	10	29.4
	Other	1	2.9
Marital Status	Single	32	94.1
	Married	2	5.8

Note. * valid percentage.

Instruments

Participants answered a booklet containing the SWLS and demographic questions (e.g. date of birth, gender, religion), as well as the Positive and Negative Affect Scale – PANAS (Sousa, 2013). We used a Portuguese version of the PANAS (Chaves, 2003), which was validated for the state of Ceará (Sousa, 2013). The PANAS evaluates the extent which an individual is experiencing specific emotions (items) in the last few days, and is rated with a 7-points scale, ranging from 1 (Nothing) to 7 (Extremely). Originally, the PANAS consisted in nine adjectives, four positive (e.g. happy, satis-

fied), and five negative (e.g. depressed, frustrated). Chaves (2003) included the item "optimist" to the group of positive adjectives. The validation to the state of Ceará, factor analysis indicated a two-factor structure, presenting good internal consistency (α = .82 e .78 for positive and negative affects, respectively).

Procedure

Data collection occurred collectively in classrooms. However, due to the self-report aspect of the questionnaire, all responses were given individually. In the occasion, we made an introductory explanation, making clear that they should answer the questionnaire after thirty days in order to make our analysis possible. Those who agreed and wrote the informed consent participated of the survey. No more than 20 minutes were necessary to complete the survey. After thirty days, data was collected following the same procedures of the first application. The sample size of the retest group decreased because some students were not in the classroom at the time of the second application. Finally, we paired the questionnaires of each participant in both applications using their date of birth.

Data analysis

We performed descriptive statistics (measures of central tendency and variability) and the following analysis:

Test-retest analysis. We calculated t-Student tests for paired samples to evaluate mean differences in both applications, and Pearson correlation between the first and second application, as suggested by literature (Pasquali, 2010). According to empirical evidence of high temporal stability of the satisfaction with life scale (Diener et al., 1985; Pavot & Diener, 1993; Pavot et al., 1991), we expect non-significant mean differences and significant Pearson correlations.

Concurrent validity. We performed Pearson correlations between satisfaction with life, positive and negative affects, and we expect significant correlations with positive and negative affects. Specifically, there are empirical evidence that individuals with high scores in satisfaction with life tend to present high levels of positive affects and low levels of negative affects (Abdel-Khalek, 2010; Diener et al., 1985; Woyciekoski et al. 2012).

Results

The test-retest was evaluated by t-Student tests for paired samples and Pearson correlation. Results indicated non-significant mean differences (M_{t1} = 4.35, SD = 1.34; M_{t2} = 4.45, SD = 1.41; $p > .05$) and significant Pearson correlation (r = .79; $p \leq .01$). These results indicate high temporal stability of the satisfaction with life.

Additionally, we evaluated the concurrent validity of the SWLS by performing Pearson correlations with positive and negative affects. As expected, results indicated significant correlations ($p \leq .01$) between satisfaction with life and positive (r = .77) and negative affects (r = -.74).

Discussion

This study aimed to gather evidence of validity and reliability of the Brazilian version of the Satisfaction with Life Scale considering three samples of the state of Ceará. Therefore, we analyzed the discriminating power and homogeneity of the items, dimensionality of the measure and internal consistency (Study 1). In addition, we tested the factorial structure through a confirmatory factor analysis (Study 2). Finally, we evaluated the test-retest reliability and the convergent validity of the SWLS with positive and negative affects (Study 3).

Regarding the discriminative power of the items, although the majority of international studies on SWLS have not used this parameter, we decided to use it in line with studies conducted in Brazil, and recommendation in the literature (Pasquali, 2010). This analysis was performed in order to verify whether the scale items can differentiate participants who have close scores. The results found in Ceará sample are similar to those found in other states of Brazil (e.g Paraiba, Rio Grande do Sul), which have different cultural context. The results showed that all items presented satisfactory discriminative power, corroborating the results indicated by Gouveia, Fonsêca, Lins, Lima & Gouveia (2008) and Lima, Saldanha & Oliveira (2009).

The one-factor structure is in line with prior research (Athay, 2012; Gouveia et al., 2009; Sancho et al., 2014; Sousa, 2013). This structure was supported by confirmatory factor analysis. Past studies consider indexes such as χ^2, χ^2 / *df*, CFI and RMSEA (Clench-Aas et al., 2011; Glaesmer et al., 2011; Zanon, Bardagi, Layous & Hutz, 2014) and others also included GFI (Gouveia et al., 2009; Sancho et al., 2014). The current study considered all of them and the results were generally similar to those reported in the literature (Clench-Aas et al., 2011; Glaesmer et al., 2011; Gouveia et al., 2009; Sancho et al., 2014; Zanon et al., 2014). Specifically, the poor value of RMSEA is important to point out that its interpretation has not been consensual (Hu & Bentler, 1999; Rigdon, 1996). At the same time, one should consider that degrees of freedom and small samples can generate results potentially misleading (Kenny, Kaniskan & McCoach, 2015) which does not invalidate the suitability of the model analyzed.

With respect to the factor structure, items 02 (The conditions of my life are excellent) and 05 (If you could live a second time, I would not change almost anything in my life) had the lowest saturation. Similarly, item 05 showed the lowest factor loading in the results presented by Gouveia et al. (2009), Diener et al. (1985) e Zanon et al. (2014). Item 02, in turn, presented lower saturation in a US sample (Zanon et al., 2014). These items are showed less homogeneity, congurent with previous research (Glaesmer et al., 2011; Gouveia et al., 2009; Sancho et al., 2014). Nevertheless, the correlations (r_{it}) found in our study were above the minimum recommended in the literature (Mokken, 1971).

The saturation levels and homogeneity levels of the items 2 and 5 may be related to the content of the items. Item 02 includes the term "excellent", contrary to response bias criteria pointed out by Pasquali (2010). Such item is the only one

that has this aspect (bias), which may explain its low level of homogeneity and factor loadings. Item 05 contains "would not change almost anything", which is not in accordance with the criterion of clarity (Pasquali, 2010). It is possible that the item 05 is confusing to some respondents, damaging its homogeneity and saturation.

The internal consistency (Cronbach's alpha) of the SWLS was adequate in line with past studies (Athay, 2012; Durak et al., 2010), although there are some discrepancies between this and other studies. Specifically, the alpha in the present study (.82) was smaller than the one identified by Zanon et al. (2014) and Glaesmer et al. (2011) (.87 e .92, respectively). The value of the alpha is inflated with increasing variability in the data (Pasquali, 2010). It is possible that these differences are due to the fact that the studies reported here involved a considerably larger sample (1388 Brazilian students and 2519 people from the general population in Germany, respectively). At the same time, the alpha in the present study was higher than the one in Gouveia et al. (2003) and Gouveia et al. (2009) (.72 e .77, respectively). The methodological procedures of these studies did not show aspects that could justify such differences; thus, these results are possibly due to spurious or contextual aspects.

We identified adequate temporal stability of SWLS considering an interval of 30 days (.79), which corroborates the literature (Diener et al., 1985; Núñez et al., 2010; Pavot et al., 1991), despite the disagreement around the suitability of the time intervals between applications (Costa, 2013). Diener et al. (1985), for example, identified a coefficient of .82 in an interval of two months. Other researchers also showed the stability of the SWLS, with correlations of .84 regarding a four-week period (Pavot et al., 1991) and .54 for a period of four years (Pavot & Diener, 1993). Núñez et al. (2010) confirmed the reliability of test-retest SWLS considering a period of four weeks (.69).

Regrding the convergent validity, positive affect should positively correlate with life satisfaction because positive affects are expressed by pleasant emotions. On the other hand, we expected negative correlations between negative affect and satisfaction with life because negative affect is an indicator of low levels of subjective well-being. Our findings corroborate these theoretical assumptions, in line with studies from several countries (Diener et al., 2010), including Brazil (Chaves, 2003; Gouveia et al., 2009; Woyciekoski et al., 2012). Finally, the one-factor solution identified in this study is similar to what has been found in prior studies (Diener et al., 2010; Clench-Aas et al., 2011; Glaesmer et al., 2011).

Therefore, it is observed that the SWLS presented satisfactory levels of validity and reliability, consistent with results presented in international and Brazilian studies. Thus, it can be said that while life satisfaction is influenced by the culture. Studies have demonstrated similar results regarding the psychometric properties and relevance of the measure to assess the cognitive component of subjective well-being, although using samples with different characteristics. Investigating the psychometric parameters of the SWLS may also have applied utility. For instance, such measure can be used in epidemiological studies and in building predictive models involving mental health in the Brazilian context.

Conclusion

In the current research, we gathered evidence of validity and reliability of the SWLS in line with past studies.

This study has limitations. Initially, we evaluated only the cognitive component of the subjective well-being (life satisfaction). Even though the use of the model of Diener et al. (1985) demands validation of the measure of positive and negative affects (Chaves, 2003; Diener & Emmons, 1985), such aspect does not invalidate the contributions of this study.

There was a reduction in the sample size while performing the test-retest (of 51 participants in the first application for 34 in the second), similarly to the reported by Diener et al. (1985). The smaller number of participants, however, exceeds the minimum required to perform the analysis (Bonett & Wright, 2000). Finally, it has been observed the relationship of the SWLS with personality measures (Rosa, 2006), vitality (Brdar & Kashdan, 2010), quality of life (Abdel-Khalek, 2010), among others. Although such comparisons are relevant, the current study considered two constructs that are highly associated with SWLS, namely, positive and negative affects. Moreover, it points out the need to assess the psychometric properties of the Scale of Positive and Negative Affect (affective component of subjective well-being).

Despite these limitations, this study is an important step for the knowledge of life satisfaction in Brazil. As mentioned, cultural and socio economic aspects can significantly influence the levels of people's life satisfaction (Diener & Suh, 1999). Thus, it is unthinkable that data collected in a Brazilian region reflect the reality of this country. Territorial extension of Brazil, associated with the formation processes of its people, provided different cultural settings (Ribeiro, 2000), which can promote different levels of satisfaction with life. Finally, it emphasizes that this instrument can be used in further studies/researchs, especially those considering larger, specific samples, allowing you to test other parameters (e.g. factorial invariance).

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