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Reliability and Validity of the Satisfaction with Life Scale (SWLS) in a Greek Sample

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Abstract:

The Satisfaction with Life Scale (SWLS) was developed by Diener et al. (1985) in order to assess the cognitive component of subjective well-being and is probably the most used scale in scientific literature on life satisfaction worldwide. The scale includes five items which assess the overall level of the individual's satisfaction with life. Respondents answer in a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Items are added up in order to yield a total score of life satisfaction. The possible range of scores is between 5 and 35, with greater scores signifying higher satisfaction with life. The objective of the present study was to evaluate the psychometric properties of the SWLS and specifically to assess (1) the internal structure and reliability, (2) the factorial structure, and (3) the construct validity of the scale. Finally, the study seeks to establish normative ranges for scores on the SWLS. The study was carried out in a sample of 1797 Greek adults (40.4% men, 59.6% women), aging from 18 to 67 years old. Results showed that the SWLS has satisfactory inter-item correlations, reliability and validity. The psychometric properties of the scale were similar to those of validation studies in other countries, thus allowing us to establish a global and cross-cultural notion of Life satisfaction as well as to enhance the utilization of the scale for the measurement of satisfaction with life in Greek population.

Keywords: *Life satisfaction, satisfaction with life scale, SWLS, subjective well-being, positive psychology, validation, reliability, norms, factorial structure, greek population*

1. Introduction

Happiness has been one of the most fervent human quests throughout the ages. Although the notions of happiness and of the good life have concerned philosophers for more than two millennia (Kesebir & Diener, 2008), the scientific study of happiness in psychology has started in the 1970's (Diener, 1984) and has burgeoned since the advent of positive psychology (Seligman & Csikszentmihalyi, 2000). One of the most robust and well-researched concepts of happiness in psychology is subjective well-being (Diener, 1984). Subjective well-being is a construct that reflects the evaluation of a person's quality of life. It is a multifaceted concept that is comprised of two dimensions: an affective or emotional dimension and a cognitive or evaluative dimension (Diener, Emmons, Larsen, Griffin, 1985. Lucas, Diener, & Suh, 1996). The affective dimension refers to the positive and negative emotions that a person is experiencing while the cognitive component has to do with the global evaluation of the degree of satisfaction with his/ her life.

The Satisfaction with Life Scale (SWLS) was developed by Diener et al. (1985) in order to assess the cognitive component of subjective well-being. The scale does not focus on specific domains of an individual's life, but assesses a global level of life satisfaction, according to the subjective criteria that the person has established for himself or herself. Diener et al. (1985) developed the SWLS in order to overcome the limitations of previous scales which were either based on single items, or they did not discriminate between the affective and cognitive components of subjective well-being. The SWLS is probably the scale most used in scientific literature on life satisfaction worldwide (Vásquez, Duque, & Hervás, 2013). Indeed, the SWLS has been translated and used in numerous countries such as Spain (Vásquez et al., 2013), Brazil (Gouveia, Milfont, da Fonseca, & de Miranda Coelho, 2009), Malaysia (Swami & Chamorro-Premuzic, 2009), Sweden (Hultell & Gustavsson, 2008), and Taiwan (Wu & Yao, 2006), among many others.

The SWLS includes five items which assess the overall level of the individual's satisfaction with life (Diener et al., 1985). Respondents answer in a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Items are added up in order to yield a total score of life satisfaction. The possible range of scores is between 5 and 35, with greater scores signifying more satisfaction with life.

Diener et al. (1985) have shown that the scale has good psychometric properties, a high test-retest coefficient and a good level of internal consistency. Subsequent research has confirmed the good psychometric properties of the SWLS in a wide range of samples (Pavot & Diener, 2008). For example, many studies have shown high internal consistency with Cronbach's alpha indexes ranging from 0.79 to 0.91 (Clench-Aas, Nes, Dalgard, & Aarø, 2011. Hultell & Gustavsson, 2008. Pavot & Diener, 1993, 2008). A number of studies have also tested the factor structure of the scale. Diener et al. (1985) assessed factorial structure using principal axis factor analysis, which resulted in a single component explaining 66% of the variance of the scale. Many studies have generally replicated the unidimensional structure of the scale (Clench-Aas et al., 2011. Pavot, Diener, Colvin, & Sandvik, 1991. Pavot & Diener, 1993. Vásquez et al., 2013). In some of these studies, however, the fifth item of the scale has the weakest association with the latent life satisfaction construct and shows lower factor loadings than the rest of the items (e.g. Pavot & Diener, 1993. Vásquez et al., 2013). Researchers attribute this finding either to the past orientation of this item, in contrast to the other items that refer to the present (Pavot & Diener, 1993), or to the fact that it probably denotes desire to change and not satisfaction with life per se (Vásquez et al., 2013).

The concurrent, convergent and divergent validity of the SWLS have also been examined in previous studies. The SWLS has demonstrated adequate correlations with other measures of life satisfaction (Pavot et al., 1991. Pavot & Diener, 1993) and happiness (Lyubomirsky & Lepper, 1999). For example, the SWLS has showed high correlation coefficients with the Life Satisfaction Index (LSI-A, Neugarten, Havinghurst, & Tobin, 1961) which range from 0.75 (Abdallah, 1998) to 0.81 (Pavot et al., 1991). Regarding the relationship between life satisfaction and happiness, Lyubomirsky and Lepper (1999) have found correlation coefficients ranging from 0.61 to 0.72 between the Subjective Happiness Scale and the SWLS in 4 separate samples. Several studies have also examined the relation between the SWLS and other measures of well-being and positive health. For example, the scale has been reported to correlate significantly with meaning in life. Steger, Frazier, Oishi and Kaler (2006) have found a correlation coefficient of 0.46 between life satisfaction and the presence of meaning subscale of the Meaning in Life Questionnaire. The relationship between life satisfaction and hope has also been examined in research. For example, Bailey and Snyder (2007) have found that the SWLS and the Hope Scale (Snyder et al., 1991) have a positive correlation coefficient of 0.51, suggesting that people who are hopeful are also satisfied with their life. In general, research has also shown that satisfaction with life is positively correlated with resilience (Abolghasemi & Varaniyab, 2010. Cohn, Fredrickson, Brown, Mikels & Conway, 2009).

Although life satisfaction and positive and negative affect have been shown to be discriminable constructs (Lucas et al., 1996), research has reported that they interrelate to comprise a person's global subjective well-being. Pavot et al. (1991) have reported a stronger correlation coefficient between the SWLS and self-reported positive affect ($r=0.62$) than between the SWLS and self-reported negative affect ($r=-0.30$). Kuppens, Realo, and Diener (2008) have sought the role of positive and negative emotions in life satisfaction evaluation across 46 different countries. Results showed that positive emotions contributed twice as much as negative emotions to the satisfaction with life that a person experiences. The authors conclude that positive emotions may have a stronger association with life satisfaction than negative emotions.

Finally, the SWLS has been shown to be negatively correlated with measures of stress, depression and anxiety. Several studies report a stronger negative correlation between satisfaction with life and depression than between life satisfaction and anxiety or stress. For example, Guney, Kalafat and Boysan (2010) report a correlation index of -0.48 between the SWLS and depression and a correlation index of -0.26 between SWLS and anxiety. Mahmoud, Staten, Hall, and Lennie (2012) used the Depression Anxiety and Stress Scale (DASS-21, Lovibond & Lovibond, 1995) in order to assess the relationship between satisfaction with life and depression, anxiety and stress. They found that SWLS significantly correlated negatively with all three dimensions of the scale. In particular, the SWLS correlated -0.53 with depression, -0.34 with anxiety and -0.39 with stress.

The above research findings show that the SWLS is a reliable and valid scale for the measurement of the cognitive component of subjective well-being. The present study is an attempt to extend the applicability of the SWLS in Greece using a large sample of healthy adults.

The objective of the present study is to evaluate the psychometric properties of the SWLS and specifically to assess (1) the internal structure and reliability, (2) the factorial structure, and (3) the construct validity of the scale. Finally, the study seeks to establish normative ranges for scores on the SWLS.

2. Method

2.1. Participants and Procedure

The sample consisted of 1797 Greek adults (40.4% men, 59.6% women), aging from 18 to 67 years old. The mean age for the total sample was $M_{age} = 38.06$, $SD = 14.12$, for men $M_{age} = 40.38$, $SD = 14.86$ and for women $M_{age} = 39.08$, $SD = 13.22$. The majority of the participants were married (926 married, 39.1%, 696 unmarried, 39.1%, 121 divorced, 6.8%, 39 widowers, 2.2%), employed (5059 employed, 80.5%, 1172 unemployed, 18.6%), university graduates (493 school graduates, 27.8%, 13 university students, 7.3%, 743 university graduates, 41.9%, 221 postgraduates, 12.5%).

The present data are a subset of a larger data bank of an ongoing longitudinal study, which started in 2008, examining the effects of the economic crisis on the psychological health of Greeks in relation to several variables including positive and negative emotions. The present data were collected during the years 2008 to 2014 with the help of undergraduate psychology students, who volunteered to administer the battery of tests. The volunteers were told that the purpose of the study was to examine the effects of the economic crisis on the well-being of Greeks and they were trained on the distribution, administration and collection of the questionnaires. Each student administered the battery of tests to 15 adult individuals among their social milieu. Every year approximately 100 students participated, resulting in the annual collection of approximately 1500 participants. Administration was done individually and was

completed in approximately 20 minutes. The data were recorded on answer sheets and scanned using the 6th Version of Remark Office OMR.

In order to examine the criterion validity of the test, some participants also filled in other scales, which were used as criteria.

2.2. Measures

2.2.1. Life Satisfaction

The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) examines the global assessment of a person's quality of life according to his/her chosen criteria using five items rated on a 7-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree (e.g., "I am satisfied with my life"). We used the Greek version of the scale (Stalikas & Lakioti, 2012), which demonstrated good internal consistency in our sample ($\alpha = .86$).

2.2.2. Positive and Negative Emotions

The mDES (Fredrickson et al., 2003) asks participants to recall the past two weeks and rate their strongest experience of each of 20 specific emotions on a 5-point Likert scale (1-Not At All to 5-Extremely). We used the Greek version of the instrument (mDES, Galanakis, Stalikas, Pezirkianidis, & Karakasidou, 2016). The Greek mDES measures nine positive (joy, hope, love, contentment, pride, interest, gratitude, amusement and sexual desire), eight negative (anger, sadness, disgust, shame, guilt, contempt, embarrassment and fear) and three separate emotions (awe, sympathy and surprise). In our sample, the subscales demonstrated good internal consistency (Positive Emotions subscale, $\alpha = .86$, Negative Emotions subscale, $\alpha = .77$).

2.2.3. Hope

The Greek version of the Hope Scale (HS; Snyder et al., 1991; Moustaki & Stalikas, 2012a) was used to measure individuals' sense of successful goal-directed determination and planning of ways to meet goals using eight items rated on a 4-point Likert scale ranging from "Definitely False" to "Definitely True" (e.g., "I energetically pursue my goals", "There are lots of ways around any problem"). In our sample, the scale demonstrated good internal consistency ($\alpha = 0.87$).

2.2.4. Presence of Meaning in Life

The subscale of Meaning in Life Questionnaire (MLQ; Steger, Frazier, Oishi, & Kaler, 2006) was used to measure the presence of meaning (how much respondents feel their lives have meaning) using five items rated on a 7-point Likert-type scale ranging from 1 (Absolutely True) to 7 (Absolutely Untrue) (e.g., "My life has a clear sense of purpose"). We used the Greek version of the instrument (Pezirkianidis, Galanakis, Karakasidou, & Stalikas, 2016). In our sample, the subscale demonstrated good internal consistency ($\alpha = 0.83$).

2.2.5. Subjective Happiness

The Greek version of Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999; Karakasidou, Pezirkianidis, Stalikas, & Galanakis, 2016) was used to examine the subjectivity of persons' global happiness using four items rated on a 7-point Likert scale with higher scores reflecting greater happiness (e.g., "Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?"). In our sample, the scale demonstrated good internal consistency ($\alpha = .72$).

2.2.6. Psychological Health

The Greek version of the Depression Anxiety and Stress Scale (DASS; Stalikas & Flora, 2012; Lovibond & Lovibond, 1995) was used to measure three related negative emotional states: depression (e.g., "I couldn't seem to experience any positive feeling at all"), anxiety (e.g., "I found myself in situations that made me so anxious I was most relieved when they ended") and tension/stress (e.g., "I found it difficult to relax"). Participants were asked to indicate the presence of 21 symptoms "over the previous week". Each item was rated from 1 (Did Not Apply to Me At All) to 4 (Applied to Me Very Much or Most of the Time). Each of the three subscales consisted of seven items. In our sample, the three subscales demonstrated high internal consistency ($\alpha = .84, .86$ and $.83$, respectively).

2.2.7. Psychological Resilience

The Greek version of the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003; Dimitriadou & Stalikas, 2012) was used to measure individuals' stress coping ability and recovery from stress using 25 items rated on a 5-point Likert scale, with higher scores reflecting greater resilience (e.g., "Can handle unpleasant feelings"). In our sample, the scale demonstrated high internal consistency ($\alpha = 0.91$).

2.2.8. Statistical Analysis

The data collected was analyzed using the Statistical Package for the Social Sciences vol. 21. First of all, we have conducted an item analysis estimating and checking the variances, means and standard deviations of the five items. Then, we checked the item-test and inter-item correlations, and the internal consistency reliability. The above, provided useful information about the structure of the scale. Moreover, we have created two databases from the original one, in order to conduct an Exploratory Factor Analysis and a

Confirmatory Factor Analysis (using IBM SPSS Amos, version 21) so as to finalize the factorial structure of the scale. Finally, we further examined the criterion and construct validity of the scale.

3. Results

3.1. Item Analysis

In order to examine item quality and probability of dysfunctional items or polarization, we estimated the variances, means and standard deviations of the five SWLS items. We expected variances ranging from 1.5 to 3.0, indicative of a normal distribution regarding the given answers (reports of satisfaction with life were rated on a 7-point scale). Moreover, we were expecting means ranging from 3 to 5 also indicative of a normal distribution regarding the answers in the validation sample. Results shown in Table 1 indicate that all items have a normal distribution regarding the sample's answers. Some concerns can be risen regarding item No.5 (If I could live my life over, I would change almost nothing.), since it's variance is higher than the expected (3.56). However, the reliability analysis and factor analysis that follow, will provide us further information regarding whether this item poses a threat to the psychometric properties of the scale or not.

The average score obtained in the SWLS was 22.25, $SD= 6.42$. Other validation studies of the same scale found total score means 24.16, $SD= 5.73$ (Spain; Vazquez, Duque, & Hervas, 2013), 23.00, $SD=6.40$ to 25.2, $SD=5.80$ (USA student samples; Pavot & Diener, 1993), 23.60, $SD= 6.10$ to 25.1, $SD= 7.20$ (USA adult samples; Pavot & Diener, 1993), 26.05, $SD= 6.10$ (Netherlands; van Beuningen, 2012). All item-test correlations were between .74 to .84, suggesting good psychometric properties.

3.2. Inter-item correlations

To further examine item quality, we carried out a correlational analysis between the five scale items. We were expecting to find positive statistically significant correlations between the items ranging from .30 to .60. This particular strength and direction of the correlation is indicative of items that measure the same variable and are complementary to one another regarding the factor variable. Negative correlations are indicative of opposite variables measurement, while null correlations are indicative of irrelevancy to the main variable. Extremely high correlations ($r > .60$) are indicative of items that probably measure the exact same thing and therefore one of them could be omitted without losing any psychometric properties.

According to the results shown in Table 1, all of the inter-item correlations in the SWLS were positive and statistically significant ($p < .001$), ranging from $r = .44$ to .64. Between items 1, 2 and 3 there were quite higher inter-correlations than expected ($r = .62$ to $r = .64$). These findings will be evaluated combined with the reliability and factor analysis results, in order to decide whether one or more of the items could be omitted. The above findings, however, are indicative of adequate construct validity.

Items	1	2	3	4	5	Mean	SD	Var
1. In most ways, my life is close to my ideal.	1					4.45	1.61	2.61
2. The conditions of my life are excellent.	.62	1				4.15	1.62	2.63
3. I am satisfied with my life.	.63	.64	1			4.80	1.49	2.22
4. So far, I have gotten the important things I want in life.	.46	.47	.57	1		4.80	1.59	2.52
5. If I could live my life over, I would change almost nothing.	.45	.44	.49	.45	1	4.07	1.89	3.56

Table 1: Inter-Item Correlations, Means, Standard Deviations and Variances of the SWLS Items

(1=Strongly Disagree to 7=Strongly Agree; $N = 1,797$).

*Every correlation is significant at .001 level

3.3. Reliability

We estimated the scale reliability using the Cronbach alpha index, which was $\alpha = .84$. Other SWLS validation studies found Cronbach alpha indexes: $\alpha = .88$ (Sweden; Hultell & Gustavsson, 2008), $\alpha = .88$ (Spain; Vazquez, Duque, & Hervas, 2013) $\alpha = .85$ (Netherlands; van Beuningen, 2012), $\alpha = .83$ (Malaysia; Swami & Chamorro-Premuzic, 2009), $\alpha = .82$ (Chile; Vera-Villarreal, Urzua, Pavez, Celis-Atenas, & Silva, 2012).

Further item analysis exploring the possibility to strengthen the scale reliability if any of the items was deleted gave negative results. The alpha values if item deleted ranged between .78 and .83. According to the results, the SWLS can be used as a reliable tool for the assessment of life satisfaction in the Greek population.

3.4. Factor Analysis

In order to examine the factorial structure of the scale we proceeded, firstly, to Exploratory Factor Analysis and, secondly, to Confirmatory Factor Analysis. We created two databases from the original one ($N = 1,797$). The first database consisting of 1,000 participants was used in EFA. The second database was used in CFA ($N = 797$). Based on the factorial structure of the original version of the test we expected factor loadings in a single factor. Table 2 shows the results of the exploratory factor analysis.

Item No.	Items	Factor 1
1	In most ways, my life is close to my ideal.	.856
2	The conditions of my life are excellent.	.814
3	I am satisfied with my life.	.808
4	So far, I have gotten the important things I want in life.	.746
5	If I could live my life over, I would change almost nothing.	.703
	Eigen value	3.098
	Total Variance Explained	61.96%

Table 2: SWLS Item loadings (EFA)
Extraction method: Principal Component Analysis

According to the factor analysis and the Kaiser criterion (eigenvalues greater than 1) there seem to be one principal factor in the scale which explains 61.96% of the variable variance. The same conclusion can also be drawn from the scree plot and the Monte Carlo PCA for Parallel Analysis (only one of the SWLS factors' eigenvalues are greater than random eigenvalues). Thus, the exploratory factor analysis confirms the original factorial structure of the scale. Diener, Emmons, Larsen and Griffin (1985) performed a Principal Component Analysis and found one component, which explained 66% of the total variance.

Furthermore, we conducted a Confirmatory Factor Analysis, in order to test whether the original Diener, Emmons, Larsen and Griffin (1985) model is consistent with the scale measures in a Greek sample. In order to assess model fit, standardized root mean-square residual (SRMR; Hu & Bentler, 1995), root mean-square error of approximation (RMSEA; Browne & Cudeck, 1993), comparative fit index (CFI; Bentler, 1990) and Tucker-Lewis Index (TLI; Tucker & Lewis, 1973) were analyzed. According to Hu and Bentler (1999), the ideal cut-off values should be: SRMR and RMSEA values close to .06 or lower than .08, CFI and TLI values should be close to or higher than .95.

Results indicated that the original model consisted of five items (and their errors) is confirmed to load in a single factor, life satisfaction. This loading structure was proved very good fitting. More specifically, the regression weights were statistically significant, the item loadings ranged from .58 to .81 and the model fit indices were great: $CFI = .99 (>.95)$, $TLI = .98 (>.95)$, $RMSEA = .06 (<.06)$, $SRMR = .02 (<.06)$. Taking everything into account, the Greek version of the SWLS shows adequate construct validity.

3.5. Convergent, Divergent and Concurrent Validity Analysis

To further examine the validity of the scale we used as criteria other variables, so as to evaluate the convergent and divergent validity. We hypothesized that Satisfaction With Life score (SWL) would correlate negatively to Negative Emotions (NE), Stress (STR), Depression (DEP) and Anxiety (ANX), and positively to Subjective Happiness (SH), Psychological Resilience (RES), Hope (HO), Positive Emotions (PE) and Presence of Meaning in life (M). Moreover, we examined the correlation between the SWLS and the Life Satisfaction Index (LSI), in order to evaluate the concurrent validity of the scale. Results are presented in Table 3.

	NE	STR	DEP	ANX	SH	RES	HO	PE	M	LSI
SWL	-.26	-.27	-.42	-.24	.61	.46	.60	.41	.47	.77
N	1,797	1,797	1,797	1,797	1,313	1,797	464	1,797	1,333	461

Table 3: Convergent, Divergent and Concurrent Validity of the SWLS
*Every correlation is significant at .001 level

Results indicate that the SWLS has satisfactory construct validity. More specifically, SWLS has good divergent validity, since it showed low to moderate negative correlation to experiencing of negative emotions ($r = -.26$), stress ($r = -.27$), depression ($r = -.42$) and anxiety ($r = -.24$). Moreover, the SWLS showed moderate positive correlation to subjective happiness ($r = .61$), psychological resilience ($r = .46$), hope ($r = .60$), experiencing of positive emotions ($r = .41$) and presence of meaning in life ($r = .47$), which are indicative of good convergent validity. Finally, the SWLS showed adequate concurrent validity, since the correlation index with LSI was $r = .77$.

3.6. Norms

In order to help mental health professionals to interpret the SWLS scores, we calculated the normalized scores using the Stanscore4 program. In Table 4, professionals and researchers can match the raw score of SWLS to a Sten Score ranging from 1 to 10 so as to compare the individual's score with the norm.

Satisfaction with life Raw Score Range	Sten Equivalent	Description
0 to 9	1	Very Low
10 to 13	2	Low
14 to 17	3	Low
18 to 21	4	Medium
22 to 24	5	Medium
25 to 27	6	Medium
28 to 29	7	Medium
30 to 31	8	High
32 to 33	9	High
34 to 35	10	Very High

Table 4: SWLS Norms

3.7. Comparison to other Greek Studies

The results of the current study confirm previous research findings in Greece. Lyrakos and his colleagues (2013) made an effort to translate and validate the SWLS in order to use it for primary care and during treatment assessment in patients with diabetes mellitus and emotional disorder. As Table 5 depicts, the present study further confirms the psychometric properties of the SWLS in a Greek sample and provides vital information about the structure of the scale in the general population. More specifically, the reliability and validity estimations in both studies support the use of the translated scale in the Greek setting.

	Present study	Lyrakos et al.
Sample	1797 adults (general population)	809 adults (patients with diabetes mellitus, emotional disorders and general population)
Factorial Structure	EFA: Single factor (61.96% of variance explained) CFA: Confirmation of the single factor model	EFA: Single factor (68% of variance explained)
Cronbach's α	.84	.83

Table 5: Comparison to Lyrakos et al. (2013) validation study

4. Discussion

This study provides empirical support for the reliability and validity of the Greek version of the Satisfaction with Life Scale (SWLS). Adaptation was based on data collected from 1797 individuals residing in urban areas, using common component analysis. Results showed that the scale's items have satisfactory psychometric qualities. Mean scores ranged from 4.07 to 4.80 while variance ranged from 2.22 to 3.56 per item. Mean scores per item in relation to standard deviations and variances are indicative of normal distribution as far as participants' answers are concerned. Some concerns can be risen regarding item No.5 (If I could live my life over, I would change almost nothing.), since it's variance is higher than the expected (3.56). Nevertheless, this particular item has similar qualities in the original as well as in other countries validation studies.

To further examine the scale items, we estimated item inter correlations expecting positive statistically significant correlations ranging from 0.1 to 0.6. According to the results, all of the inter-item correlations in the SWLS were positive and statistically significant ($p < .001$), ranging from $r = .44$ to $.64$. Between items 1, 2 and 3 there were quite higher inter-correlations than expected ($r = .62$ to $r = .64$). This finding is indicative of construct validity. The fact that the correlations between the items are quite higher than normally expected can be explained through the unidimensionality of the scale as well as the small number of items.

As far as reliability is concerned, the scale has satisfactory levels. Specifically, the Cronbach Alpha index for the scale was $\alpha = .84$. Other SWLS validation studies found similar Cronbach alpha indexes: $\alpha = .88$ (Sweden; Hultell & Gustavsson, 2008), $\alpha = .88$ (Spain; Vazquez, Duque, & Hervas, 2013) $\alpha = .85$ (Netherlands; van Beuningen, 2012), $\alpha = .83$ (Malaysia; Swami & Chamorro-Premuzic, 2009), $\alpha = .82$ (Chile; Vera-Villarreal, Urzua, Pavez, Celis-Atenas, & Silva, 2012).

Factorial structure of the SWLS was examined through exploratory and confirmatory factor analysis. According to the factor analysis and the Kaiser criterion (eigen values greater than 1) there seem to be one principal factor in the scale which explains 61.96% of the variable variance. Furthermore, we conducted a Confirmatory Factor Analysis, in order to test whether the original Diener, Emmons, Larsen and Griffin (1985) model is consistent with the scale measures in a Greek sample. Results indicated that the original model consisted of five items (and their errors) is confirmed to load in a single factor, life satisfaction. This loading structure was proven to have very good fitting. More specifically, the regression weights were statistically significant, the item loadings ranged from $.58$ to $.81$ and the model fit indices were high: $CFI = .99$ ($> .95$), $TLI = .98$ ($> .95$), $RMSEA = .06$ ($< .06$), $SRMR = .02$ ($< .06$). Taking everything into account, the Greek version of the SWLS shows adequate construct validity.

To further examine the validity of the scale we used as criteria other variables, so as to evaluate the convergent and divergent validity. We hypothesized that Satisfaction With Life Scale scores (SWLS) would correlate negatively to Negative Emotions (NE), Stress (STR), Depression (DEP) and Anxiety (ANX), and positively to Subjective Happiness (SH), Psychological Resilience (RES), Hope (HO), Positive Emotions (PE) and Presence of Meaning in life (M). Moreover, we examined the correlation between the SWLS and the Life Satisfaction Index (LSI), in order to evaluate the concurrent validity of the scale. According to the results, SWLS has good

divergent validity, since it showed low to moderate negative correlation to experiencing of negative emotions ($r = -.26$), stress ($r = .27$), depression ($r = -.42$) and anxiety ($r = -.24$). Moreover, the SWLS showed moderate positive correlation to subjective happiness ($r = .61$), psychological resilience ($r = .46$), hope ($r = .60$), experiencing of positive emotions ($r = .41$) and presence of meaning in life ($r = .47$), which are indicative of good convergent validity. Finally, the SWLS showed adequate concurrent validity, since the correlation index with LSI was $r = .77$.

Regarding the limitations of our study we should mention that reliability indexes were not calculated using test – retest methodology but only simultaneously using the Cronbach Alpha Index. Moreover, all criteria validity measures were concurrent while we could also estimate validity measures over a period of time and regarding future results.

The study provides useful insights regarding the utilization of the SWLS in future studies in Greek speaking populations and it could enhance positive psychology research in all levels.

We strongly believe that future research regarding the validation of the SWLS in the Greek population could focus in more specific negative and positive emotions measures while also exploring the cultural differences between different populations regarding life satisfaction experiencing. In all, the SWLS – Greek Version can be used as a reliable and valid psychometric tool for the measurement Life Satisfaction in the Greek population.

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