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SUBJECTIVE HAPPINESS IN SLOVAKIA

Reliability and Validity of Measuring Happiness through the Subjective Happiness Scale**

(Received: 30 November 2017; accepted: 1 July 2018)

The objective of the present research was to assess the possibilities of measuring happiness in Slovakia and verify psychometric properties of the Slovak version of the Subjective Happiness Scale (SHS; LYUBOMIRSKY & LEPPER 1999). Based on a systematic comparison of features of 16 language versions of SHS, satisfactory and interculturally comparable characteristics have been found of the scale, which still does not have a version adapted for the Slovak language environment. Data were collected from 977 respondents (three community samples and four samples of university students) aged 13–75 years. With the use of EFA and CFA, a single-factor structure of SHS was confirmed. SHS showed adequate internal consistency value ($\alpha = 0.773$) and test-retest reliability ($r = 0.615$). Convergent validity was verified a) by comparing with another instrument to measure subjective happiness; b) by correlations with subjective well-being and quality of life; c) by correlations with other variables: personality traits, self-esteem, optimism, depression, religiosity, spirituality, family functions, compliance with and internalisation of norms. No significant differences in SHS values on the basis of gender, religion, and education were detected. It can be concluded that the short four-item scale which was used has satisfactory psychometric properties and offers opportunities for the rapid assessment of subjective happiness.

Keywords: subjective happiness, subjective well-being, reliability, validity, test-retest reliability

1. Introduction

The issue of happiness is currently the focus of attention for many researchers in social sciences. For illustration, ProQuest full-text database contains for the keyword ‘happiness’ (mentioned in the abstract of the studies) more than 170,000 entries, with

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** This work was supported by the Slovak Research and Development Agency under Grant No. APVV-15-0404.

a massive increase in publications in the 1980s of the last century. Despite the ambiguity caused by the overlap between professional and ordinary language, the concept of happiness is often used, and some authors consider happiness to be the best indicator of quality of life (VEENHOVEN 2000).

The overall subjective happiness is 'a global, subjective assessment of whether one is a happy or an unhappy person' (LYUBOMIRSKY & LEPPER 1999, 139). The majority of authors places the concept of happiness in the context of subjective well-being. DIENER (2000) divides it into three components, viz., satisfaction with life, positive affect, and negative affect. In this scheme, happiness is a broader and more holistic category, and can be identified with a subjective assessment of one's own satisfaction. HALLER and HADLER (2006) consider it meaningful to distinguish between life satisfaction and happiness as two separate concepts. Happiness and satisfaction are seen as the result of interaction between individual characteristics and aspirations on the one hand, and between social relations and macro-structures on the other hand. Satisfaction is more the result of the evaluation process, including material and social aspirations and achievements; happiness is the result of positive experiences, especially with close personal relationships. Happiness cannot be equated with the affective component of subjective well-being. A person may feel happy or unhappy regardless of whether s/he recently experienced positive or negative emotions (LYUBOMIRSKY & LEPPER 1999).

In terms of measuring happiness and subjective well-being, an oft-discussed issue is the choice of global or multidimensional instruments. According to VEENHOVEN (2000), multidimensional measures struggle to tackle all relevant domains of a person's life. An appropriate starting point is the construction of measures of a global nature where a person evaluates his/her life as a whole, and not on the basis of selected specific areas. Among the most commonly used global scales belong, for example, BRADBURN's (1969) Affect Balance Scale and The Positive and Negative Affect Schedule (WATSON et al., 1988); these cover, however, only affective components of subjective well-being. Other frequently used scales, such as Satisfaction with Life Scale (SWLS; DIENER et al. 1985), in turn, query satisfaction with life as a whole, and a person's happiness as such. According to LYUBOMIRSKY and LEPPER (1999), a simple sum of recent levels of affect or their satisfaction with life is not identical with a person's happiness. There is a difference between when a person is assessed as very happy and the assessment that s/he lives a happy life (p.140). Another group of methodologies consists of single-issue scales such as Single-Item Measurement of Happiness (ABDEL-KHALEK & LESTER 2006), or the Global Happiness Item (BRADBURN 1969); they are, however, too simple, and do not permit an evaluation of certain psychometric properties.

The most widely used global multi-item measure of subjective happiness is the Subjective Happiness Scale (LYUBOMIRSKY & LEPPER 1999). It contains four items and a 7-point Likert response scale. The authors of the methodology claim excellent psychometric properties for SHS. It has been translated into several languages, and currently exists in English, Russian, German, Spanish, Chinese, Portuguese, Italian,

Japanese, Arabic, Greek, Serbian, Turkish, Malay, and Tagalog versions. An overview of SHS language versions is present in *Table 1*, together with psychometric properties and a summary of information regarding their validation. In comparison with another multi-item scale of subjective happiness, viz., the Oxford Happiness Questionnaire (HILLS & ARGYLE 2001), SHS 'is theory-driven, has a clear unidimensional structure, and does not overlap with similar mental health constructs' (JOVANOVIĆ 2014, 1096).

We offer an overview of 14 studies assessing the psychometric properties of 16 different language versions of SHS. Most commonly the authors, apart from calculations of internal consistency, verified SHS unidimensionality with the use of EFA, and less often with the help of CFA. As a rule, group differences were checked on the basis of gender (and other characteristics such as ethnicity, age, education, confession, etc.). The construct validity was assessed on the basis of correlations with the measures of subjective well-being (life satisfaction, positive and negative affect, the global happiness question) and other rates such as self-esteem, optimism, personality traits, depression, anxiety, meaning in life, family perception, health status, stress, etc. In only two cases was the incremental predictive validity evaluated. According to the criteria of the European Federation of Psychologists Associations – Review model for the description and evaluation of psychological and educational tests (EFPA 2013), the psychometric properties of the available language versions of SHS can be evaluated as follows:

Sample sizes: with the exception of two samples (Russian, Tagalog), sample sizes were adequate (≥ 200) or good (≥ 300); excellent sample sizes (≥ 1000) were used in five studies.

Internal consistency: with the exception of one study (Turkish), Cronbach's Alpha values were adequate (≥ 0.70) and mostly good (≥ 0.80), in one study they were excellent (≥ 0.90).

Test-retest reliability: it was tested in five studies with a time interval of between two weeks and one year; all values were good (≥ 0.70) or excellent (≥ 0.80). Item-total correlations were reported in five studies, all values exceeded 0.20 (0.22–0.74), which represents an acceptable level.

Construct validity: 11 studies reported evidence of unidimensionality of the scale with help of EFA, eight studies reported an acceptable to excellent fit of the data with the help of CFA. Item-total correlations are listed by their authors in five studies. Systematically lowest correlations were demonstrated in item 4, in one of the studies (Spanish), it reached the value of 0.24; in others the correlations were > 0.40 . In terms of group differences, 12 studies reported the absence of gender differences, several studies have verified and confirmed the absence of age, religious, ethnic and marital status differences. To detect convergent validity, the most commonly used were the methodologies measuring satisfaction with life (SWLS), self-esteem (RSES), positive and negative affectivity, and single-item scales of happiness or satisfaction. One study (Turkish), compared the scores of SHS with another multi-item measure of subjective happiness (OHQ), yielding a correlation 0.71. The SHS and SWLS correlations in nine samples ranged between 0.50 and 0.72 (according to

Table 1
Comparison of the psychometric properties of different language versions of SHS

| <i>Authors</i> | <i>LYUBOMIRSKY and LEPPER (1999)</i> | <i>LYUBOMIRSKY and LEPPER (1999)</i> | <i>JOVANOVIĆ (2014)</i> | <i>NAV et al. (2014)</i> | <i>EXTREMERA and FERNÁNDEZ-BERROCAL (2014)</i> |
|---|---|--|--|--|--|
| <i>Language version</i> | English | Russian | Serbian | Chinese | Spanish |
| <i>N</i> | 2602 | 130 | 605 | 2635 | 1155 |
| <i>Sample characteristics</i> | college, high school, adults | college and adult | young adults | > 15 years - cohort study in Hong Kong | high school students, college students, adults |
| <i>Cronbach's Alpha</i> | 0.81 – 0.94 | 0.79 – 0.80 | 0.83 | 0.82 | 0.81 |
| <i>Item-Total Correlation</i> | - | - | 0.58 – 0.74 | 0.52 – 0.73 | 0.43 – 0.76 |
| <i>Test-retest</i> | 0.55 – 0.90 (1 year – 1 month) | - | - | 0.70 (2-weeks) | 0.72 (6–8 weeks) |
| <i>EFA</i> | - | - | explaining 67.71% of the variance; loadings: 0.88, 0.79, 0.72, 0.62 | explaining 65.3 % of the variance; loadings: 0.87, 0.83, 0.83, 0.70 | - |
| <i>CFA</i> | - | - | excellent fit of data (CFI, GFI, NFI) | excellent goodness-of-fit (SRMR, NFI, CFI) | good model fit (RMSEA, CFI, GFI, SRMSR) |
| <i>Group differences</i> | no gender, age differences | no gender, age differences | no age differences | no differences by gender, age, employment status, religion | no gender differences |
| <i>Convergent & discriminant validity</i> | correlations : (+) affect-balance, delight, global happiness, recent happiness, satisfaction with life (SWLS), self-esteem, optimism, positive emotionality, extraversion; (-) negative emotionality, neuroticism, depression; (not be related) college grade, math and verbal ability, stressful live events | correlations : (+) affect-balance, delight, global happiness, satisfaction with life (SWLS) | correlations : (+) subjective well-being (SWLS, PANAS-X, emotional distress), presence of meaning in life, positive expectations, extraversion; (-) unpleasant emotional states, search of meaning in life, neuroticism | correlations : (+) single item happiness, family functions, HrQoL; (-) depression symptoms | correlations: (+) satisfaction with life - SWLS, (-) depression, anxiety |
| <i>Mean Score</i> | 4.62 – 5.62 | 4.02 – 4.84 | 5.15 | 5.07 | 5.09 |
| <i>Additional information</i> | informant reports ($r = 0.41 - 0.66$) | - | incremental predictive validity – predicting meaning in life, emotional distress | incremental predictive validity – predicting mental component score – HrQoL | - |

| <i>Authors</i> | <i>LANI et al. (2014)</i> | <i>SWAMI et al. (2009)</i> | <i>SWAMI et al. (2009)</i> | <i>SWAMI (2008)</i> | <i>MOGHIE and KAZARIAN (2012)</i> |
|---|--|---|--|--|--|
| <i>Language version</i> | Italian | German | Tagalog | Malay | Arabic |
| <i>N</i> | 993 | 1960 | 182 | 559 | 273 |
| <i>Sample characteristics</i> | 18 – 85 years | - | - | Chinese and Malay community sample | Lebanese college students |
| <i>Cronbach's Alpha</i> | 0.79 | 0.82 | 0.78 | 0.93 | 0.74 |
| <i>Item-Total Correlation</i> | | | | | |
| <i>Test-retest</i> | - | - | - | 0.95 (30 days) | - |
| <i>EFA</i> | | explaining 65.7% of the variance; loadings: 0.83, 0.83, 0.81, 0.77 | explaining 53.2% of the variance; loadings: 0.90, 0.82, 0.79, 0.78 | explaining 83.0% of the variance; loadings: 0.93, 0.90, 0.90, 0.90 | - |
| <i>CFA</i> | acceptable fit (NNFI, CFI, RMSEA) | - | - | - | - |
| <i>Group differences</i> | no gender, no geographic differences | no gender differences | no gender differences | no gender, ethnic difference | no gender, age, marital status and birth order differences |
| <i>Convergent & discriminant validity</i> | correlations : (+) satisfaction with various domains of life; (-) psychological distress, anxiety, depression, health problems | correlations : (+) delight, global happiness, satisfaction with life (SWLS), positive affect; (-) negative affect | correlations: (+) delight, global happiness, satisfaction with life (SWLS), self-esteem | correlations: (+) delight, global happiness | correlations : (-) parental rejection |
| <i>Mean Score</i> | 4.77 | 5.18 | 4.85 | 4.42 | 4.73 |
| <i>Additional information</i> | - | cross-cultural comparison | - | - | - |

| <i>Authors</i> | <i>DAMASIO et al. (2013)</i> | <i>SPIGNOLI et al. (2012)</i> | <i>ORTIZ et al. (2013)</i> | <i>DOĞAN and TOTAN (2013)</i> | <i>SHIMAI et al. (2004)</i> | <i>LYRAKOS et al. (2013)</i> |
|---|--|--|---|--|--|---|
| <i>Language version</i> | Portuguese (Brazilian) | Portuguese | Spanish | Turkish | Japanese | Greek |
| <i>N</i> | 600 | 1017 | 403 + 324 | 696 | 364 | 856 |
| <i>Sample characteristics</i> | Brazilian adults | working adult population – 5 age groups | students and adults from Argentina | community sample and undergraduate students | undergraduate students | adults |
| <i>Cronbach's Alpha</i> | 0.84 | 0.77 | 0.72 / 0.68 | 0.65 / 0.70 | 0.80 – 0.84 | 0.756 |
| <i>Item-Total Correlation</i> | - | - | 0.39 – 0.60 / 0.24 – 0.59 | - | - | 0.22–0.74 |
| <i>Test-retest</i> | - | - | - | - | .86 (5 weeks) | - |
| <i>EFA</i> | explaining 64.21% of the variance; loadings: 0.82, 0.74, 0.65, (-)0.69 | explaining 63% of the variance | explaining 57.38% of the variance; loadings: 0.81, 0.71, 0.64, 0.47 | explaining 53.94–57.20% of the variance; loadings: from 0.30 to 0.91 | was calculated | explaining 59.4% of the total variance |
| <i>CFI</i> | excellent fit (CFI, TLI, RMSEA, SRMR, chi square/df) | excellent fit (CFI, GFI, RMSEA) | excellent fit (AGFI, CFI, TLI, RMSEA) | sufficient goodness of fit (NFI, CFI, IFI, GFI, RMSEA, RMR) | - | - |
| <i>Group differences</i> | - | no significant gender and age differences | no gender differences | no gender, age, marital status, education level differences | - | - |
| <i>Convergent & discriminant validity</i> | correlations : (+) life satisfaction (SWLS), self-esteem, hope | correlations : (+) life satisfaction (SWLS) | correlations : (+) positive affection; (-) negative affection | correlations : (+) happiness (OHQ), optimism, positive affect, life satisfaction (SWLS); (-) negative affect | correlations : (+) positive health, self-esteem, (-) depression | correlations : (+) life satisfaction (SWLS), optimism; (-) stress, anxiety, depression |
| <i>Mean Score</i> | the authors point 20.1; the equivalent of 5.3 | 4.77 | 5.19 (calculated from averages items) | 4.73 / 4.63 | - | - |
| <i>Additional information</i> | - | - | - | - | * information drawn from the abstract of the study (Article in Japanese) | * information drawn from the abstract of the study (Abstract of the 21th European Congress of Psychiatry) |

EFPA, the adequate correlation value is ≥ 0.55); the value was only lower in one sample (Tagalog). With the single-item question on happiness, SHS correlated on the level from 0.49 to 0.63. SHS correlation coefficients and positive/negative affectivity were lower, ranging from 0.33 to 0.56, or from -0.33 to -0.56 (5 studies). Self-esteem correlated with SHS in two samples at the 0.53 or 0.57 levels, in one study the correlation coefficient was lower (0.20; Tagalog).

Incremental predictive validity was verified on two samples (Serbian, Chinese). The predicted variables were emotional distress and presence of meaning in life in one study; among the predictors were included personality traits and two components of subjective well-being. In the other sample, the mental component score of HRQoL was predicted and the predictors were family functions. The standardised beta for SHS was > 0.20 in all cases.

Average values: the values varied between 4.02 and 5.62, with the lowest values in the Russian and the highest in the US sample.

In summary, it can be stated that individual language versions of SHS exhibit comparable and favorable psychometric properties. The objective of our study was to verify the reliability and validity of the Slovak version of SHS. A similar methodology has not yet been validated in Slovakia, nor in other Central European countries. At the same time, it also offers a possibility to compare descriptive data of the Slovak version of SHS with the data from the Russian version of the tool, or validation data from other countries. The realised overview of validation studies offers a reference framework for assessing the psychometric properties of the Slovak version of SHS.

2. Methods

2.1. Participants

To verify the psychometric properties of the Slovak SHS version, the data were obtained from seven different samples. In each sample, the testing battery was comprised of SHS and other methods (varying in each data collection). The data were collected from 977 respondents, under different circumstances in terms of time (date) and environment. Four samples consisted of college students, one sample consisted of young adults up to 30 years of age, and three were community samples in Prešov (a medium-sized city in the eastern part of Slovakia). 226 respondents from the fourth sample ($N = 270$) participated in the retest measurements within an interval of one month. The descriptive data about the samples are given in *Table 2*.

2.2. Materials

2.2.1. Study 1

When choosing methods for the first research study, we were inspired by the initial validation study of the authors of the methodology (LYUBOMIRSKY & LEPPER 1999).

Table 2
Description of samples; total N = 977

| <i>Sample No.</i> | <i>N</i> | <i>Description</i> | <i>Age (mean/range)</i> | <i>Men/Women</i> |
|-------------------|----------|---------------------|-------------------------|------------------|
| 1 | 100 | university students | 21.58 / 18–24 | 50/50 |
| 2 | 60 | university students | 21.78 / 20–26 | 28/32 |
| 3 | 75 | university students | 20.96 / 18–25 | 21/54 |
| 4 | 270 | community sample | 28.54 / 13–72 | 102/168 |
| <i>4 retest</i> | 226 | community sample | 28.99 / 13–72 | 84/142 |
| 5 | 103 | young adults | 23.77 / 20–30 | 48/55 |
| 6 | 194 | university students | 22.80 / 18–26 | 96/98 |
| 7 | 175 | community sample | 37.86 / 19–75 | 81/94 |

In this study, the authors found that ‘individuals who perceive themselves as being happy also think well of themselves, are optimistic about their futures, experience a predominance of positive emotions, and are extraverted. In addition, happy individuals did not appear to be inclined towards depression or neuroticism’ (p.145). In accordance with LYUBOMIRSKY and LEPPER, we selected two tools to detect subjective well-being, and four disposition scales for the assessment of self-esteem, optimism, neuroticism, extraversion and depression:

Satisfaction With Life Scale (SWLS; DIENER et al. 1985) ranks among the most widely used tools to identify satisfaction with life (WoS database contains more than 7,400 citations of the source). SWLS consists of five items with a 7-point response scale (strongly disagree – strongly agree), the authors of the methodology give excellent indicators of reliability and validity (in our study $\alpha = 0.779$).

Emotional habitual subjective well-being scale (SEHP; DŽUKA & DALBERT 2002) focuses on the affective component of subjective well-being. Its 10 items represent positive and negative emotions and bodily sensations; respondents assess the frequency of how often they experience the given emotions. (The 6-point response scale: almost always – almost never; the scale of the negative affect; 6 items, $\alpha = 0.768$; the scale of positive affect; 4 items, $\alpha = 0.841$).

Rosenberg self-esteem scale (RSES; ROSENBERG 1965; translation by HALAMA & BIEŠČAD 2006) is currently the gold standard for determining global self-esteem (ROSENBERG 1965; MRUK 2006). The 10-item methodology with a 4-point response scale (strongly agree – strongly disagree) allows one-, two- and three-factor evaluation; we applied the most frequently used one-factor rating ($\alpha = 0.805$).

Revised Life Orientation Test – Revised (LOT-R; SCHEIER et al. 1994) is an 8-item scale of dispositional optimism and represents the tendency of an individual to see the world and the future in a positive way (4-point scale: strongly disagree – strongly agree; $\alpha = 0.635$).

Scales of neuroticism and extraversion in Eysenck's personality questionnaires for adults EPQ-R (SENKA et al. 1992) contain 12 items (answers yes / no; neuroticism $\alpha = 0.784$, extraversion $\alpha = 0.833$).

Beck Depression Inventory (BDI; BECK et al. 1961) detects a person's degree of depression and includes 21 items (4-point response scale; $\alpha = 0.840$).

2.2.2. Study 2

The second study was aimed at verifying the relationship between subjective happiness and two aspects of moral reasoning. The expected relationship is based on the findings regarding the relationship between happiness and ethical preferences and proclivities (JAMES & CHYMIS 2004) and DIENER's assumption of normative foundations of a good life (DIENER & SUH 1997).

The scale of moral norms (HOSPODÁROVÁ & BABINČÁK 2012). The questionnaire contains two sets of 34 items, the first of which detects compliance with, and the second internalisation of moral standards in, the areas of lying, stealing, prosocial behavior, respect for elders, aggressive behavior, respect for nature, alcohol and drugs. (7-point response scale focusing on item acceptance and the occurrence of behaviour; Compliance: $\alpha = 0.76$, E.g.: How often do you cheat at exams?; Internalisation: $\alpha = 0.85$; E.g.: Do you have at least in some cases the right to cheat on tests?)

2.2.3. Study 3

In the third study, we compared SHS with another measure assessing happiness, which is grounded in a different conceptual basis (the measure was selected in accordance with DOĞAN and TOTAN, 2013, which confirmed the strong relationship with the SHS). We also verified the correlation of happiness and personality characteristics.

The Oxford Happiness Questionnaire (OHQ; HILLS & ARGYLE 2001) is a 29-item methodology to measure happiness as a multidimensional construct, and includes frequent experiencing of positive emotions or joy, a high average level of satisfaction and absence of negative feelings such as depression and anxiety (6-point Likert scale; $\alpha = 0.876$, e.g.: I laugh a lot; I think I do not look appealing).

Rosenberg self-esteem scale (see above)

Big Five Aspect Scales (BFAS; DEYOUNG et al. 2007) is a 100-item scale to measure the five personality factors ($\alpha = 0.722 - 0.855$) with each factor representing two mutually correlating aspects (10 aspects: $\alpha = 0.590 - 0.834$; 5-point response scale: strongly disagree – strongly agree).

2.2.4. Study 4

In another study, we verified the retest reliability of SHS and its relationship with the quality of life as defined under the QOL discrepancy model (CALMAN 1984;

MICHALOS 1985) and the model of life satisfaction. These models represent two conceptually different approaches to quality of life assessment.

GAP-QoL measure. The methodology contains 13 questions formulated according to WU (2008) for detecting the quality of life as the difference between what a person wants, has, and what s/he wants to have (Gap concept; CALMAN 1984). The 12 items correspond to the dimensions of quality of life using the concept of WHOQOL (standard of living, health, family, work, friends, housing, partner, relaxation, spirituality, transportation, education, appearance), one item assesses the global quality of life. Participants rated their have-want discrepancy on a 7-point Likert scale ranging from 1 (the same as the want status) to 7 (large discrepancy from the want status).

2.2.4.1. Study 4 - retest measurement

GAP-QoL measure (see above)

Satisfaction-QoL measure. The methodology is analogous to the scale detecting satisfaction with 12 areas of life formulated by WU (2008).

2.2.5. Study 5

The fifth study verified the context of happiness and family environment.

Family Environment Scale (FES; MOOS & MOOS 1974; translation HARGAŠOVÁ & KOLLÁRIK 1986) is a 90-item (responses true / false) instrument detecting the perception of family, and consists of 10 subscales and three dimensions: interpersonal relationship dimension (cohesion, expressiveness, conflict), the Personal Growth (independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, moral-religious emphasis), and the System Maintenance (organisation, control). Reliability of the scales ranged from $\alpha = 0.608$ to 0.798 , with the exception of independence ($\alpha = 0.296$), achievement orientation ($\alpha = 0.340$), moral-religious emphasis ($\alpha = 0.312$), and organisation ($\alpha = 0.534$), which have not been evaluated.

2.2.6. Study 6

The sixth study was aimed at the verification of the relationship between happiness and selected dimensions of spirituality and religiosity. Our assumptions were based on researches that confirm the relationship between happiness and religiousness (COHEN 2002) and overall spirituality (FRANCIS et al. 2000).

The Oxford Happiness Questionnaire (see above).

The Expressions of Spirituality Inventory-Revised (ESI; MACDONALD 2000) – the methodology for determining experiences, attitudes, convictions, and lifestyle concerning spirituality. Religiosity and spirituality are perceived as a multi-dimensional construct consisting of five areas: a) Cognitive Orientation Towards Spirituality (COS), b) Experiential / Phenomenological Dimension (EPD), c) Existential

Well-Being (EWB), d) Paranormal Beliefs (PAR) and e) Religiousness (REL). The ESI-R's α coefficients range from 0.788 for PAR to 0.933 for COS. The ESI-R questionnaire has 32 items with a 5-point Likert response scale.

The Salience in Religious Commitment Scale (SRC; ROOF & PERKINS 1975) - three-item scale measures 'the importance an individual attaches to being religious' (p.111). It is used to determine the extent to which adults consider their religious beliefs to be important. The construct measured is very similar to Allport's concept of internalised religiosity (HALAMA et al. 2006). The SRC's α coefficient is 0.913, a 7-point Likert response scale was used.

2.2.7. Study 7

This study verified the relationship between SHS and the methodology measuring the quality of life not as satisfaction or difference, but as quality.

Scale of subjective assessment of quality of life (SAQL; DŽUKA 2013) is a 29-item methodology for measuring the quality of life as 'a subjective evaluation of important domains of life of internal/external and personal/impersonal nature on the 'good - bad' 5-point scale' (DŽUKA 2013, p.477). It includes these subscales: psychosocial domain SAQL ($\alpha = 0.818$), environmental SAQL domain ($\alpha = 0.725$), cognitive SAQL domain ($\alpha = 0.773$), and physical SAQL domain ($\alpha = 0.858$).

2.3. Procedure and Data Analyses

The translation of the SHS methodology into the Slovak language was implemented in a parallel fashion by the author of the study and a linguist. The differences in translations were discussed by the two translators jointly. The final version was administered to university students during lessons and to the members of the community sample by trained interviewers. When analysing the data, we proceeded by analogy with the above-mentioned validation studies of individual SHS language versions. The unidimensional structure was verified with the help of exploratory factor analysis (EFA), and confirmatory factor analysis (CFA). EFA was used to identify the factor structure of SHS. Data requirements for factor analysis were verified with the help of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's test of sphericity. The calculation was carried out both on the whole group of respondents and on individual samples with a frequency > 100 . For factor identification, the eigenvalue > 1 criterion was used. Afterwards, CFA was done; the suitability model was tested with the help of these indicators: the normed fit index (NFI), the comparative fit index (CFI), and goodness of fit index (GFI). Other indicators, the chi-squared test and the root mean square error of approximation (RMSEA), were calculated. In the interpretation of the results, it was taken into consideration that they are unsuitable for large files and a small number of degrees of freedom. SHS internal consistency was estimated using Cronbach's alpha coefficient. On one of the samples we verified retest test-reliability of the SHS after one month. To verify convergent

validity, we used correlation coefficients and the linear regression model. Between-groups comparisons were used to obtain the evidence of discriminatory validity. For statistical analysis, software SPSS v.21 and LISREL 8.80 were used.

2.4. Compliance with Ethical Standards

This research fully corresponds with the ethical standards of the institutional and national research committee, and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

3. Results

3.1. Descriptive Statistics

Means, standard deviations, and skewnesses SHS for all samples are shown in *Table 4*. Means of the SHS varied between 4.629 and 5.242. There were no significant differences between samples with the exception of sample No. 2, which was significantly different from sample No. 7 (Scheffe post-hoc test: sig. = 0.017).

3.2. Exploratory Factor Analysis

To verify whether SHS shows unidimensional structure, we performed an exploratory factor analysis (Principal components method; Varimax rotation) for samples with $N > 100$. Conditions for the calculation were met: $KMO > 0.60$, significant Bartlett's test of sphericity (TABACHNICK & FIDELL 2001), skewness of the data ranged between -0.156 to -0.894 . One-dimensional factor solution, on the basis of eigenvalue > 1.0 , was possible for all samples. Eigenvalues ranged between 2.28 and 2.54 and explained 56.91%–63.60% of variance. All items were included in a single factor (factor loadings – item 1: 0.800–0.895; item 2: 0.838–0.876, item 3: 0.742–0.787, item 4: 0.514–0.768). The summary of the data is given in *Table 3*.

3.3. Confirmatory Factor Analysis

CFA was calculated using covariance matrix, and parameter estimates were obtained using the maximum likelihood method. The model output is shown in Figure 1. For a single-factor model, the following variables were calculated: $\chi^2 (2) = 44.495$, $p < 0.000$; $\chi^2 / df = 22.25$; $NFI = 0.965$; $GFI = 0.978$; $CFI = 0.967$; $RMSEA = 0.148$. Chi-square value indicates insufficient degree of fit, but for large samples (we used $N = 977$) it is too strict and, as a rule, always significant (KENNY et al. 2015). The Root Mean Square Error of Approximation (RMSEA) indicates a poor fitting model; KENNY and colleagues (2015), however, do not recommend using this indicator for low df models. Other calculated indicators point to a good fit of the data (NFI , CFI , $GFI > 0.95$).

Table 3
Results of exploratory factor analysis

| <i>Sample No.</i> | <i>1</i> | <i>4</i> | <i>4 retest</i> | <i>5</i> | <i>6</i> | <i>7</i> | <i>Total</i> |
|-------------------------------|----------|----------|-----------------|----------|----------|----------|--------------|
| <i>Sample size</i> | 100 | 270 | 226 | 103 | 194 | 175 | 977 |
| <i>KMO</i> | 0.721 | 0.690 | 0.725 | 0.691 | 0.715 | 0.718 | 0.726 |
| <i>Bartlett's Test - Sig.</i> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <i>Eigenvalue</i> | 2.510 | 2.280 | 2.304 | 2.544 | 2.503 | 2.506 | 2.450 |
| <i>% of Variance</i> | 62.81 | 56.91 | 57.60 | 63.60 | 62.57 | 62.66 | 61.25 |
| <i>Factor loadings</i> | | | | | | | |
| <i>Item 1</i> | 0.895 | 0.834 | 0.862 | 0.847 | 0.800 | 0.895 | 0.848 |
| <i>Item 2</i> | 0.875 | 0.843 | 0.855 | 0.838 | 0.850 | 0.876 | 0.850 |
| <i>Item 3</i> | 0.787 | 0.755 | 0.753 | 0.776 | 0.742 | 0.782 | 0.765 |
| <i>Item 4</i> | 0.572 | 0.548 | 0.514 | 0.722 | 0.768 | 0.571 | 0.651 |

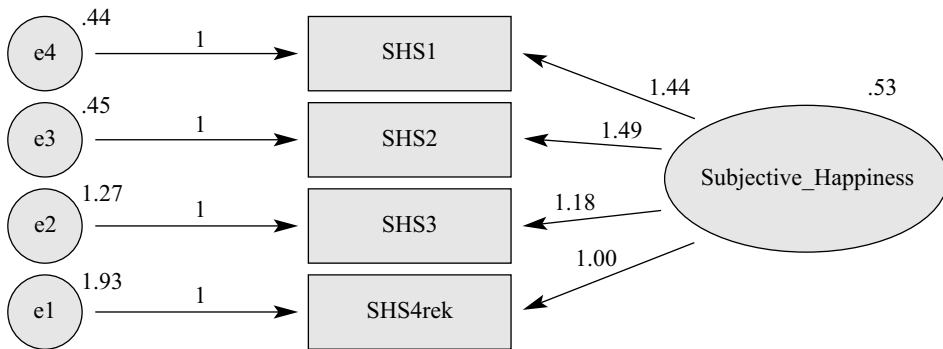


Figure 1
Confirmatory factor analysis' model output

3.4. Scale Reliability

Internal Consistency of SHS was $\alpha = 0.773$ for the whole dataset, which represents an adequate value (EFPA 2013); in individual subgroups, Cronbach's α values ranged from 0.727 to 0.806 (see *Table 4*). The table below presents the values Alpha if item is deleted; a slight increase in the Alpha coefficient would occur in case of item 4 removal, although the increase would be not a significant one (the largest increase in Sample 4-retest of .062). Corrected Item-Total Correlation for all items and all data collections were > 0.30 , which is a satisfactory level.

Table 4
SHS internal consistency, averages, standard deviations and skewness

| <i>Sample No.</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>4 retest</i> | <i>5</i> | <i>6</i> | <i>7</i> | <i>Total</i> |
|---|----------|----------|----------|----------|-----------------|----------|----------|----------|--------------|
| <i>Sample size</i> | N=100 | N=60 | N=75 | N=270 | N=226 | N=103 | N=194 | N=175 | N=977 |
| <i>Cronbach's Alpha</i> | 0.772 | 0.806 | 0.784 | 0.727 | 0.731 | 0.800 | 0.791 | 0.784 | 0.773 |
| <i>Alpha if Item Deleted</i> | | | | | | | | | |
| <i>Item 1</i> | 0.661 | 0.736 | 0.694 | 0.620 | 0.592 | 0.730 | 0.741 | 0.662 | 0.683 |
| <i>Item 2</i> | 0.705 | 0.747 | 0.695 | 0.616 | 0.601 | 0.736 | 0.706 | 0.681 | 0.682 |
| <i>Item 3</i> | 0.734 | 0.739 | 0.704 | 0.651 | 0.676 | 0.750 | 0.755 | 0.731 | 0.719 |
| <i>Item 4 (recoded)</i> | 0.778 | 0.814 | 0.839 | 0.770 | 0.793 | 0.787 | 0.757 | 0.837 | 0.793 |
| <i>retest reliability</i> | | | | | 0.615 | | | | |
| <i>Corrected Item-Total Correlation</i> | | | | | | | | | |
| <i>Item 1</i> | 0.723 | 0.707 | 0.695 | 0.603 | 0.658 | 0.675 | 0.604 | 0.730 | 0.658 |
| <i>Item 2</i> | 0.614 | 0.649 | 0.671 | 0.611 | 0.647 | 0.606 | 0.674 | 0.694 | 0.654 |
| <i>Item 3</i> | 0.546 | 0.659 | 0.643 | 0.541 | 0.512 | 0.615 | 0.567 | 0.592 | 0.575 |
| <i>Item 4 (recoded)</i> | 0.499 | 0.547 | 0.446 | 0.352 | 0.318 | 0.547 | 0.591 | 0.388 | 0.457 |
| <i>Mean</i> | 4.888 | 5.242 | 4.900 | 4.779 | 4.687 | 4.976 | 4.946 | 4.629 | 4.855 |
| <i>Std.dev.</i> | 1.056 | 0.941 | 1.014 | 1.067 | 1.067 | 1.036 | 1.045 | 1.102 | 1.061 |
| <i>Skewness</i> | -0.451 | -0.894 | -0.754 | -0.382 | -0.156 | -0.269 | -0.216 | -0.259 | -0.380 |

3.5. Test–Retest Reliability

Data on test-retest reliability were obtained from 226 respondents after a month's time interval. Cronbach's α was 0.720 for the first measurement, and 0.731 for the second measurement. The correlation between the two measurements was 0.615 ($p < 0.001$) which represents an adequate value (EFPA 2013).

3.6. Convergent Validity

Table 5 shows the correlation with 45 variables. They are a) other measure of subjective happiness; b) indicators of subjective well-being or QoL; c) personality variables and self-esteem; d) other variables with which positive/negative relationship to SHS can be assumed.

a) Correlation of SHS and another tool measuring subjective happiness (OHQ) was 0.642 and 0.746, which represents a strong relationship.

b) Correlation coefficients of SHS and indicators of global life satisfaction were high (for SWLS $r = 0.579^{***}$) and medium (GAP QoL – general question $r = -0.310^{**}/-0.346^{***}$). Correlations of SHS and satisfaction with specific domains of life were lower (from 0.140^* to 0.298^{***}). SHS highly correlated with positive affect ($r = 0.732^{***}$), correlation with negative affect was medium ($r = -0.390^{***}$). Relationships between SHS and values of quality of life were evaluated in four domains, SHS had the strongest correlation with psychosocial domain of QOL ($r = 0.645^{***}$), other correlations were medium or low (physical domain QOL, $r = 0.479^{***}$; cognitive domain QOL, $r = 0.466^{***}$; environmental domain QOL, $r = 0.243^{**}$). Correlations of SHS and specific domains of quality of life detected through a differential model of QOL were medium to low (the highest value was $r = -0.325^{***}$).

c) From the personality variables, the tightest relationship was detected between SHS and extraversion ($r = 0.443^{***}$), and between SHS and neuroticism ($r = -0.306^{**}$), these correlations were medium. The extraversion and happiness relationship were backed primarily by the feature of enthusiasm ($r = 0.462^{**}$); in the case of neuroticism, happiness was connected especially with the aspect of withdrawal ($r = -0.405^{***}$). Self-esteem correlated high with SHS in sample 1 ($r = 0.527^{***}$), and medium in sample 2 ($r = 0.469^{***}$).

d) We detected a medium positive correlation of subjective happiness and dispositional optimism ($r = 0.414^{***}$), and a strong negative relationship with depression ($r = -0.552^{***}$). From among the family functions, it was cohesion ($r = 0.517^{**}$), active-recreational orientation ($r = 0.458^{**}$), intellectual-cultural orientation ($r = 0.390^{***}$), and expressiveness ($r = 0.328^{**}$), that had the largest positive correlations with SHS. Negative correlation with SHS was detected with conflicting attitude ($r = -0.352^{**}$) and control ($r = -0.227^*$); of the variables of spirituality and religiosity, it was only existential well-being ($r = 0.694^{***}$) that was strongly associated with happiness. Happiness was related to compliance and internalisation of norms only slightly.

Next, we compared SWLS and SHS on the basis of how they correlate with positive (PA) and negative of affect (NA). Closer relations of SHS were with the PA and NA ($r(\text{PA}) = 0.732^{***}$; $r(\text{NA}) = -0.390^{***}$), in contrast with SWLS (there are correlations only $r(\text{NA}) = -0.168$ or $r(\text{PA}) = 0.502^{***}$). When SHS and SWLS were entered into the regression equation as predictors, together with self-esteem, age, and gender, while the criterion was positive and negative affect, in the linear regression model only SHS with 54% of the explained variance of positive affect, and 15% of explained variance for negative affect were documented.

3.7. Between-Group Comparisons

We verified gender differences in SHS in all samples as well as in the whole group of respondents. a significant difference was not detected in any sample, nor in the whole group ($F = 0.682$, sig. = 0.409). We also examined group differences in the degree of happiness on the basis of religiosity, education, and marital and employment status.

Table 5
Correlation of SHS with other variables

| Study No. | 1 | 2 | 3 | 4 | 4* | 5 | 6 | 7 |
|--|-----------|--------|-----------|----------------------------|----|-------------------------|----------|----------|
| SWLS | 0.579*** | | | | | | | |
| SEHP-PA | 0.732*** | | | | | | | |
| SEHP-NA | -0.390*** | | | | | | | |
| RSES | 0.527*** | | 0.469*** | | | | | |
| Lot-R | 0.414*** | | | | | | | |
| EPQ-R Ext. | 0.373*** | | | | | | | |
| EPQ-R Neur. | -0.462*** | | | | | | | |
| BDI | -0.552*** | | | | | | | |
| Adherence to norms | | -0.228 | | | | | | |
| Internalisation of norms | | -0.247 | | | | | | |
| OHQ | | | 0.642*** | | | | 0.746*** | |
| Neuroticism | | | -0.306** | | | | | |
| N-Volatility | | | -0.167 | | | | | |
| N-Withdrawal | | | -0.405*** | | | | | |
| Agreeableness | | | 0.142 | | | | | |
| A-Compassion | | | 0.303** | | | | | |
| A-Politeness | | | -0.064 | | | | | |
| Conscientiousness | | | 0.243* | | | | | |
| C-Industriousness | | | 0.296* | | | | | |
| C-Orderliness | | | 0.049 | | | | | |
| Extraversion | | | 0.443*** | | | | | |
| E-Enthusiasm | | | 0.462*** | | | | | |
| E-Assertiveness | | | 0.324** | | | | | |
| Openness/Intellect | | | 0.240* | | | | | |
| O-Intellect | | | 0.220 | | | | | |
| O-Openness | | | 0.144 | | | | | |
| GAP-QoL-general question | | | | -0.346*** | | -0.310*** | | |
| GAP-QoL-domains | | | | from -0.166** to -0.325*** | | from 0.005 to -0.271*** | | |
| Satisfaction-domains | | | | | | from 0.140* to 0.298** | | |
| Cohesion | | | | | | 0.517*** | | |
| Expressiveness | | | | | | 0.328** | | |
| Conflict | | | | | | -0.352*** | | |
| Intellectual-cultural orientation | | | | | | 0.390*** | | |
| Active-recreational orientation | | | | | | 0.458** | | |
| Control | | | | | | -0.227* | | |
| ESI Cognitive Orientation towards Spirituality | | | | | | | -0.043 | |
| Experiential/ Phenomenological Dimension | | | | | | | 0.062 | |
| Existential Well-Being | | | | | | | 0.694** | |
| Paranormal Beliefs | | | | | | | -0.055 | |
| Religiousness | | | | | | | 0.096 | |
| The Saliency in Religious Commitment Scale | | | | | | | 0.053 | |
| SAQL - Psychosocial domain | | | | | | | | 0.645*** |
| SAQL - Environmental domain | | | | | | | | 0.243** |
| SAQL - Cognitive domain | | | | | | | | 0.466*** |
| SAQL - Physical domain | | | | | | | | 0.479*** |

Note: *: $p < 0.05$; **: $p < 0.01$; ***: $p < 0.001$

We verified differences on the basis of religiosity in six samples; in five cases, we detected no significant difference, with the exception of sample 5 where a difference was detected (strong believer = 5.402, believer = 4.879, non-believer = 4.519). No differences were identified regarding education or marital status (sample 4, 4-retest, 7). *Table 6* presents the summarised results of the verification of intergroup differences.

Table 6
Group differences in subjective happiness on the basis of gender and other variables

| | <i>Mean</i> | | | | <i>Religion/religiosity differences</i> | | | |
|------------------------|-------------|-------------|------------|--------------|---|-------------|--|--|
| | <i>F</i> | <i>Sig.</i> | <i>Men</i> | <i>Women</i> | <i>F</i> | <i>Sig.</i> | <i>Means/differences in other variables</i> | |
| <i>Sample 1</i> | 1.136 | 0.289 | 5.000 | 4.775 | 0.374 | 0.542 | believers = 4.921; non-believers = 4.762 | |
| <i>Sample 2</i> | 2.789 | 0.100 | 5.455 | 5.055 | 1.466 | 0.231 | church-going believers = 5.069; non-church going believers = 5.375 | |
| <i>Sample 3</i> | 2.277 | 0.136 | 4.619 | 5.009 | 0.726 | 0.487 | church-going believers = 4.831; non-church going believers = 5.208; non-believers = 5.036 | |
| <i>Sample 4</i> | 0.001 | 0.970 | 4.782 | 4.778 | - | - | education (F=.971;Sig=.380), marital/partner status (F=2.526;Sig=.058) | |
| <i>Sample 4 retest</i> | 0.466 | 0.496 | 4.750 | 4.649 | - | - | education (F=1.311;Sig=.272), marital/partner status (F=1.986;Sig=.098) | |
| <i>Sample 5</i> | 1.711 | 0.194 | 4.833 | 5.100 | 4.142 | 0.019 | strong believer = 5.402; believer = 4.879; non-believer = 4.519 | |
| <i>Sample 6</i> | 3.381 | 0.068 | 4.807 | 5.082 | 0.604 | 0.438 | believer = 4.982; non-believer = 4.852 | |
| <i>Sample 7</i> | 0.038 | 0.846 | 4.611 | 4.645 | - | - | education (F=2.02, Sig. =.094), marital status (F=1.832, Sig.=.163), type of religiosity (F=2.796; Sig. =.064) | |

Note: * $p < 0.05$.

4. Discussion

The objective of the study was to verify the psychometric properties of the Slovak version of the Subjective Happiness Scale. It is an instrument which offers a wealth of possibilities for research applications, and is currently available in several language versions (so far, no extensive validation study of the Slovak or Czech version of SHS has been published). In the systematic overview, we provided the basic psychometric properties of SHS in 16 language versions. It can be stated that positive and mutually comparable psychometric parameters of the instrument adapted to different language environments can be confirmed; since we recorded similar results, our findings do not depart from this overall pattern.

a) The 4-item SHS methodology is unidimensional; a similar structure was confirmed by the exploratory and confirmatory factor analysis. Due to a small number

of items and a large group of respondents, only some of the CFA coefficients were applicable. About half of the authors of other validation studies used CFA with sufficient to excellent results.

b) Reliability was verified as an internal consistency using Cronbach's alpha and test-retest reliability coefficient. We obtained positive values for the entire set of respondents and for its subgroups (alpha of 0.727 to 0.806), and also an adequate value for test-retest reliability (0.615).

c) As it is difficult to find a reliable criterion of happiness, in order to verify the characteristics of the methodology, we chose evidence for construct validity. The theory has demonstrated the relationship between happiness and subjective well-being indicators (e.g. VÁZQUEZ et al. 2013); for the purposes of the present study, we tested the relationship between SHS and another methodology for measuring happiness, relationships with life satisfaction, and positive and negative affect. In addition to measuring subjective well-being, we also focused our attention on the indicators of subjective quality of life measured in several ways.

In accordance with our expectations, we observed the strongest correlation between SHS and The Oxford Happiness Questionnaire, which is a multi-item measure of happiness, covering several aspects of happiness and subjective well-being. 56% / 41% of the explained common variance suggests that both methodologies provide values for similar – yet not identical – constructs. High values of correlation coefficients were detected for the relationship of happiness with life satisfaction, positive affect, and psychosocial quality of life. Lower correlation for negative affect and other areas of quality of life were expected – other authors detected them as well (JOVANOVIC 2014).

Of the personality variables, the ones most closely correlating with SHS were extraversion, neuroticism, and self-esteem on the level of moderately strong correlation coefficients. This triad of personality traits represents the traditional predictors/correlates of various indicators of subjective well-being. In accordance with our expectations, we noticed a close relationship among several other correlated variables between happiness and depression (negative relationship), cohesion in the family, and existential well-being (positive relationship) (correlation of ± 0.50). Perhaps the most frequently tested correlate of happiness in validation studies was satisfaction with life measured by the SWLS methodology. We compared the predictive power of SHS and SWLS in the case when either a positive or negative affect was used as a criterion in the regression model. Happiness proved to be a better predictor/correlate.

This finding is consistent with GUNDELACH and KREINER's (2004) claim: they found satisfaction with life as more cognitively oriented than happiness is. Satisfaction is more specific; happiness is a more diffuse feeling. CAMPBELL and colleagues (1976) argue that happiness points to an experience or to experiencing an affect. When someone says s/he is happy, it is an expression of the overall feeling; satisfaction is more specific and cognitively regulated. a person may say that s/he is happy, but that s/he is not satisfied with some aspects of her/his life. The link with the positive affect is also

confirmed by SELIGMAN (2002) who states that happy people remember a higher number of positive experiences and are generally able to perceive a number of experiences positively. The results of our study confirm the characteristics of the measured construct of happiness in comparison with the related variables falling within the concept of subjective well-being, as well as within the indicators of quality of life, personality and other variables.

d) In verifying the discriminatory validity, similarly to the majority of authors of other SHS language versions, we did not record gender differences, differences on the basis of religiosity, education or marital status.

A specific feature of the present research is the fact that we have an opportunity to compare features of a validated methodology with other language versions of the instrument, and that the reported results have a potential to go beyond the local linguistic context. Through the fact that the results are similar for the different versions and language versions of the instrument, our results support the features of the instrument as such as well as a relative sociocultural independence of subjective happiness measured with SHS.

Among the limitations of research belongs the fact that 977 participants in the research were collected from seven samples, some of which were small in size; also, selection was not representative. This restriction is compensated for partly by the fact that in several samples/subgroups, similar properties of the measured construct were detected. To prove the validity, more information about the content and the criterion validity of SHS should be obtained.

To summarise: it can be stated that the Slovak version¹ of the measure reveals satisfactory values of reliability and validity, and as such it is usable for the assessment of subjective happiness in research. It is brief, time-saving, understandable to respondents and well-interpretable. It offers a wide range of practical applications in the field of subjective quality of life assessment. For its further use, it is advisable to verify the Slovak version of SHS on specific populations (children, seniors, minorities) and to examine the equivalence of different forms of administration (paper-and-pencil vs. tablet, smartphone, web applications).

¹ With a permission from prof. Lyubomirsky, the Slovak adaptation of the SHS is available at: <https://osf.io/9nrek>.

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