

Validation of the Hungarian version of the short form of Spiritual Connection Questionnaire (SCQ-14)

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Background: Spirituality is a human specific phenomenon associated with positive mental and physical health outcomes. From a scientific point of view, it is a complex construct which can be investigated in various ways. The Spiritual Connection Questionnaire (SCQ) measures spirituality independently from religiousness thus it appears to be an appropriate measure to assess religious and non-religious aspects of spirituality. *Aim:* The present study aimed to develop and validate the Hungarian version of the short form of the Spiritual Connection Questionnaire (SCQ-14). Furthermore, it aimed to investigate spirituality's association with affect and thinking style. *Methods:* Participants of two non-representative community samples ($n = 387$ and $n = 145$) completed the following questionnaires online: short form of the Spiritual Connection Questionnaire, Spiritual Transcendence Scale, Rational-Experiential Inventory, and Positive and Negative Affect Schedule. *Results:* The Hungarian SCQ-14 showed an excellent internal consistency (Cronbach's $\alpha = 0.94$ and 0.97 on *Sample 1* and *2*, respectively). Confirmatory factor analyses indicated inappropriate fit with the theoretically assumed one-factor model ($\chi^2 = 435.848$, $df = 77$, $p < 0.001$; CFI = 0.904 ; NFI = 0.886 ; RMSEA = 0.110 [90% CI = 0.100 – 0.120] on *Sample 1*, and $\chi^2 = 247.132$, $df = 77$, $p < 0.001$; CFI = 0.917 ; NFI = 0.885 ; RMSEA = 0.123 [90% CI = 0.106 – 0.141] on *Sample 2*). In contrast, results of exploratory factor analyses indicated a one-factor structure on both samples. The SCQ-14 was positively associated with spiritual transcendence, experiential thinking style, and partly with positive affect. No significant correlations with rational thinking style and negative affect were found. Results of the multiple hierarchical linear regression analysis on both samples revealed a significant contribution of experiential thinking style and spiritual transcendence to spiritual connection after controlling for gender, age, educational qualification, and positive affect. *Conclusions:* The Hungarian version of the Spiritual Connection Questionnaire (SCQ-14) is a valid, psychometrically sound measure. Spiritual transcendence and experiential thinking style independently contribute to spiritual connection.

Keywords: spirituality, SCQ-14, experiential thinking style, affect

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„If we omit spiritual realities from our account of human behavior, it won't matter much what we keep in, because we will have omitted the most fundamental aspect of human behavior” (Bergin, 1997, p. xi)

1. Introduction

Spirituality is a complex construct which can be approached from various viewpoints, e.g., from psychological, philosophical, transcendental-religious, and phenomenological directions. The term originates in the Latin word “spiritus” which means breath, a vital principle of a human being (Simpson & Weiner, 1989). Spirituality has been defined as a universal, solely human phenomenon (Emmons, 2006; Piedmont & Leach, 2002; Tomcsányi et al., 2011), as a search for and a belief in something sacred beyond the material world (Emmons, 2006; Hill & Pargament, 2003). Thus, spirituality can be described as a motivational process to discover the transcendent, the divine, the ultimate truth and connect to this larger sacredness (Emmons, 2006; Hill & Pargament, 2003; Piedmont, 1999). Spirituality is furthermore a subjective experience based on deep understanding of the world, the perceived sense of truth (Heelas & Woodhead, 2005), a feeling of connectedness, wholeness and openness to the infinite (Kelly, 1995). It refers to a conscious detection of the transcendent dimension and involves defined values respecting all aspects of life (Elkins et al., 1988). Spirituality can also be captured as an ability to sense the sacredness of everyday experiences, responsibilities, roles and goals (Piedmont, 1999). Finally, according to Wheeler and Hyland (2008), it reflects the feeling of connection with the universe, with others, with nature and places, and also the sense of happiness which comes from this connectedness.

Although spirituality was originally not discriminated from religiousness, the two concepts are not identical (Emmons, 2006; Tomcsányi et al., 2011). Religion (particularly in the Western culture) is a fellowship based on commonly accepted, unquestionable faith which provides the knowledge of a transcendent reference point, namely God, and shows the path to reach it (Hill & Pargament, 2003; Pikó et al., 2011). It represents a system of beliefs, religious practices and symbols which is given as the solely path to the ultimate world (Emmons, 2006; Hill & Pargament, 2003). In contrast, the term spirituality refers to a free, individual search for the sacred which obviously does not exclude religious attempts. It is a spontaneous, informal, subjective experience and expression (Koenig et al., 2001). Despite of these differences, religiousness and spirituality show a considerable overlap. Their shared aspects are the search for the sacred, and the connection to others and the transcendent which gives an integrative strength for the

person. Thus, both can function as a coping resource (Hill & Pargament, 2003; Tomcsányi et al., 2011). Nevertheless, spirituality can appear in both religious and not religious form (namely, traditional or nontraditional form) and is considered a broader concept than religiousness (Oman, 2013; Pikó et al., 2011; Zinnbauer et al., 1997). It is often regarded as the highest human potential (Emmons, 2006), an innate, universal, human specific phenomenon (Piedmont, 2005).

Within the concept of spirituality, dualist and non-dualist views exist (Wheeler & Hyland, 2008). According to the dualist approach, the material and the spiritual world represent two different realms, i.e., an independent spiritual reality beyond material life is assumed. This belief concurs most of religious traditions, thus in this interpretation spirituality and religiousness are highly overlapping (Pargament, 1999; Wheeler & Hyland, 2008). In contrast, the non-dualist view holds that there is only one reality with seemingly different aspects. According to this approach, everything is interconnected and governed by the same laws or principles.

1.1. Scientific approaches and assessment of spirituality

The complexity of the construct and the heterogeneity of approaches make the scientific inquiry on spirituality particularly difficult (Oman, 2013). According to Emmons (2006), scientific studies on spirituality encompass three levels of analysis: (1) spirituality as a trait (e.g., spiritual transcendence; (Piedmont, 1999)); (2) spirituality as personal goals; and (3) spirituality in emotions, like gratitude, awe, wonder, or forgiveness (Emmons, 2006). From the viewpoint of positive psychology, spirituality (as a form of transcendence) is a character strength (Pikó et al., 2011; Shryack et al., 2010). Maslow (1969) and Frankl (1966) denote that self-transcendence and spirituality are integral parts of a human being providing meaning of life and perceived freedom, thus they can serve as coping tools in extreme life situations, crises, and chronic diseases (Garcia-Romeu, 2010; Kopp et al., 2004; Pikó et al., 2011).

In the last decades, a number of self-report tools were developed to assess various aspects of the construct, such as Spiritual Support Scale (Maton, 1989), Index of Core Spiritual Experiences (Kass et al., 1991), Spiritual Transcendence Scale (STS) (Piedmont, 2004), Spiritual Assessment Inventory (Hall & Edwards, 1996), or Spiritual History Scale (Hays et al., 2001). As the majority of these questionnaires apply a religious and/or dualistic approach to spirituality, Wheeler and Hyland (2008) intended to develop a measurement tool that assesses spirituality independently from religiousness, and that is able to assess both dualistic and non-dualistic perspectives of spirituality. They focused on one key component of spiritual

experience, namely spiritual connection, that captures spirituality well among both religious and non-religious individuals (Wheeler & Hyland, 2008). The 48-item questionnaire (Spiritual Connection Questionnaire; SCQ-48) measures five facets of the construct: (1) connection with universe, (2) others, (3) nature and (4) places, and (5) the sense of associated joy and happiness. A shorter version with 14 items (SCQ-14) was also developed, based on three facets (1, 2, and 5). Empirical findings indicated that the 14-item Spiritual Connection Questionnaire is a valid unidimensional measure of spirituality (Wheeler & Hyland, 2008).

1.2. Associations with other constructs

In the past decades, evidence concerning positive mental and physical health outcomes of spirituality has accumulated (Fetzer/NIA Working Group, 1999). Positive associations with subjective well-being, satisfaction with life, quality of life, personal growth, vitality, self-esteem, and resilience were reported (Emmons, 2006; Fetzer/NIA Working Group, 1999; Klein et al., 2016; Piedmont, 2007; Wheeler & Hyland, 2008). Moreover, it was found to be associated with lower levels of psychological distress, depressive symptoms, and suicide attempts (Fetzer/NIA Working Group, 1999; Piedmont, 2007). Spirituality also contributes to positive affect (Geary, 2003; Komninou, 2009; Powers et al., 2007), a widely used indicator of subjective well-being. Thus, spirituality can be noted as an effective strategy to increase well-being (Henry, 2006).

Spirituality, although it is considered an exclusively human phenomenon, presumably has an evolutionary background (Emmons, 2006; Piedmont, 2005). A number of authors proposed that there are two basic and different ways of human information processing: one is an intuitive, automatic process which is age and intelligence independent and has a long evolutionary history (i.e., also present in the animal kingdom), while the other is a logical, analytic, effortful mechanism with a comparatively short evolutionary history (Chaiken, 1980; Epstein et al., 1996; Pacini & Epstein, 1999; Tversky & Kahneman, 1983). A comprehensive theory, called cognitive-experiential self-theory (CEST) or later cognitive-experiential theory (CET), was developed by Seymour Epstein (Epstein, 1994, 2014; Epstein et al., 1996). It describes two independent thinking styles: rational and experiential. Rational thinking is a human specific process primarily based on language. It requires considerable mental effort to conduct a conscious reasoning based on all available information. It is relatively slow, but mostly results in answers and solutions which fit to reality the most. In

contrast, experiential thinking style is a more ancient, non-verbal process, an unconscious, automatic, and effortless mechanism. It is based on subjective experiences and feelings, it works very fast, though the outcome can be mistaken (Epstein, 1994, 2014). CET declares that the two processes are independent and function by different rules. Moreover, individuals show considerable differences in the extent they rely on the two thinking styles (Epstein et al., 1996).

Rational and experiential thinking styles have different concomitants. The former is associated with constructive, action-oriented coping, while the latter is associated with emotionally positive, naive, unrealistic thinking and favourable beliefs (Epstein et al., 1996; Pacini & Epstein, 1999). In empirical studies, experiential thinking was related to preference of complementary and alternative medicine (Saher & Lindeman, 2005), modern health worries (Köteles et al., 2016) as well as paranormal and magical beliefs (Lindeman & Aarnio, 2007). Experiential thinking is assumed to be holistic and revealed to have a moderate connection with spirituality (Köteles et al., 2016). This supports the idea that spirituality might show a considerable overlap with experiential thinking style.

1.3. Aim of the present study

The present study aims to develop and validate the Hungarian version of the short version of Spiritual Connection Questionnaire (SCQ-14). We supposed that spiritual connection shows (1) a positive association with experiential thinking style and (2) spiritual transcendence (STS) (convergent validity). Furthermore, we hypothesized that spiritual connection shows a positive correlation with (3) positive affect, and (4) negative correlation with negative affect. Finally (5), no correlation with the rational thinking style was expected.

2. Materials and methods

2.1. Participants and procedure

Adult participants were recruited and questionnaires were completed online in Hungarian. The research was conducted by the approval of the Research Ethics Committee of the Faculty of Education and Psychology, Eötvös Loránd University, Hungary (Ethical approval number: 2014/09 and 2018/269). All participants signed an online informed consent form before the completion of the questionnaires.

Sample 1: A non-representative community sample (*Sample 1: n* = 387; age: *M* = 28.75 years, *SD* = 12.22 years; 29.2% male; educational qualification: 2.3% was characterized by elementary school, 61.3% by high school, and 36.4% by university degree) was collected via 31 thematic Facebook groups belonging to cities, villages and local sport associations which were not associated with any aspect of spirituality, religiousness, rational thinking, or scientific content. Data collection took place in spring 2015.

Sample 2: To replicate results, a second community sample (*Sample 2: n* = 145; age: *M* = 37.43 years, *SD* = 13.79 years; 23.4% male; educational qualification: 0.7% was characterized by elementary school, 22.1% by high school, and 77.2% by university degree) was recruited similarly through Facebook groups in autumn 2018. Facebook groups were mostly belonging to cities (but not to villages) and communities of pensioners, however, no local sport associations groups were involved. (This sampling difference might be the explanation of the uneven mean age data of the two samples.)

2.2. Questionnaires

The short version of the *Spiritual Connection Questionnaire (SCQ-14)* (Wheeler & Hyland, 2008) aims to assess spiritual connection as a subjective experience which is independent from religious contents, thus applicable on both religious and non-religious samples. The 14 items measure on a seven-point Likert scale from 1 ("definitely not agree") to 7 ("definitely agree"), higher scores represent higher level of spiritual connection. The scale is freely accessible and usable. Development of the Hungarian version followed the usual translation-backtranslation procedure. The scale was translated into Hungarian by two independent experts, then a third expert translated back the consensus version. The back-translated version was compared to the original by Michael Hyland, the author of the original scale (see the Appendix for the final version). Cronbach's α coefficients were 0.94 and 0.97 on *Sample 1* and *Sample 2*, respectively.

The *Spiritual Transcendence Scale (STS)* (Piedmont, 2004; Tomcsányi et al., 2011) measures the ability of a person to stand outside of the present, actual time and place and to have a larger view of life, a more objective perspective. The short form comprises 9 items rated on a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Higher scores predict higher level of spiritual transcendence, i.e., the individual views life more as a part of a larger plan and is more prone to believe that there is something beyond mortal existence. The use of the scale was approved by the author (R. L. Piedmont). Cronbach's α values were 0.79 (*Sample 1*) and 0.81 (*Sample 2*).

For the assessment of thinking styles, the revised version of the *Rational-Experiential Inventory (REI)* (Bognár et al., 2014; Pacini & Epstein, 1999) was used. The questionnaire consists of two 20-item scales measuring the two independent thinking styles: rational and intuitive-experiential. Items are rated on a five-point Likert scale from 1 ("definitely not true of myself") to 5 ("definitely true of myself"), higher scores refer to higher levels of rational and intuitive-experiential thinking, respectively. Cronbach's α coefficients were 0.87 and 0.89 (rational and intuitive-experiential thinking style, respectively) on *Sample 1* and 0.88 and 0.91 on *Sample 2*.

Positive and Negative Affect Schedule (PANAS) (Gyollai et al., 2011; Watson et al., 1988) comprises two independent scales with 10-10 items. The positive affect scale describes the extent to which the individual feels active, alert and enthusiastic. The negative affect scale measures subjective distress and unpleasant mood states like guilt or fear. Evaluation of the items are on a 5-point Likert scale from 1 ("very slightly or not at all") to 5 ("extremely"), higher scores show higher positive or negative affect. Cronbach's α coefficients of both positive and negative affect were uniformly 0.86 on *Sample 1* and 0.83 on *Sample 2*.

2.3. Statistical analysis

Data analysis was conducted using the SPSS v25 software (IBM Corp, 2017). Confirmatory factor analysis (CFA) was conducted using the JASP v0.14.2 software (JASP Team, 2020). Data of both samples were appropriate for factor analysis (*Sample 1*: KMO = 0.952; Bartlett-test = 3751.1, $p < 0.001$; *Sample 2*: KMO = 0.955; Bartlett-test = 2048.333, $p < 0.001$). Model fit was evaluated with the *Comparative Fit Index (CFI)*, the *Normed Fit Index (NFI)*, and the *Root Mean Square Error of Approximation (RMSEA)* based on common standards: acceptable/good fit: CFI, NFI $\geq 0.90/0.95$; RMSEA $\leq 0.08/0.06$ (Browne & Cudeck, 1993; Hu & Bentler, 1999). Following the original study from Wheeler and Hyland (2008), factor structure of the scale was also checked with exploratory factor analysis (EFA), using the maximum likelihood method.

For both samples, associations with the validating questionnaires were estimated using Spearman correlation due to violation of normality for the majority of variables. Finally, hierarchical linear regression analyses were conducted with spiritual connection as criterion variable. Variables were entered in the equation in three steps: (1) socio-demographic control variables (age; gender [male = 0, female = 1]; educational qualification 1 [elementary school (0) or higher (1)], educational qualification 2 [high school (0) or higher (1)]), (2) positive affect and (3) experiential thinking style and STS (spiritual transcendence) score.

3. Results

3.1. Sample 1

3.1.1. Psychometric properties

Descriptive statistics of the items are presented in *Table 1*. The Hungarian version of the SCQ-14 is characterized by excellent internal consistency (Cronbach's $\alpha = 0.94$), which does not show substantial changes after the removal of any of the items (*Table 1*). CFA indicated inappropriate fit with the theoretically assumed one-factor model ($\chi^2 = 435.848$, $df = 77$, $p < 0.001$; CFI = 0.904; NFI = 0.886; RMSEA = 0.110 [90% CI = 0.100 – 0.120]), which could not be further improved by assuming associations between variables based on high modification indices. In contrast, EFA indicates a one-factor structure: the only factor with an eigenvalue higher than 1 (8.188) explains 58.45% of the total variance. Moreover, loadings of all items on factor 1 are higher than 0.6 (*Table 1*).

Table 1. Descriptive statistics of the items, their contributions to the internal consistency of the scale, and loadings on Factor 1 yielded by factor analysis in *Sample 1*

Items	M±SD	Corrected item-total correlation	Cronbach's α if item deleted	Loading on Factor 1
1. My spirituality makes life good for me.	4.10±1.917	0.777	0.938	0.823
2.* I feel no spiritual connection to the world around me.	4.33±2.016	0.694	0.940	0.712
3. I sometimes experience other people 'shining with an inner light'.	3.35±1.967	0.631	0.942	0.658
4.* I have never had a spiritual experience that has changed my life.	3.98±2.327	0.601	0.943	0.612
5. There is a larger plan to life.	4.12±2.063	0.572	0.943	0.579
6.* I do not feel that there is a form of energy that binds people together.	4.47±2.075	0.700	0.940	0.702

Table 1. (Continued)

Items	M±SD	Corrected item-total correlation	Cronbach's α if item deleted	Loading on Factor 1
7. I feel I have an inner spiritual strength.	3.80±2.030	0.763	0.938	0.795
8.* I do not have a personal relationship with some power greater than myself.	3.80±2.326	0.703	0.940	0.709
9. I feel an inner strength from a spiritual connection with others.	3.28±1.955	0.752	0.939	0.773
10.* Spirituality is not important to me.	4.15±2.241	0.795	0.937	0.824
11. I feel that I am always protected by an ultimate principle, force or being.	3.94±2.194	0.712	0.940	0.729
12.* I will never have a spiritual bond with another person.	4.70±1.973	0.786	0.938	0.811
13. My connection to something spiritual makes me happy.	3.84±1.956	0.802	0.937	0.846
14.* I do not feel connected to the universe in any spiritual way.	4.13±2.186	0.767	0.938	0.783

Note. $n = 387$, *: reversed item.

3.1.2. Convergent validity and associations

Descriptive statistics of the assessed psychological variables and results of the correlation analysis are presented in Table 2. The SCQ-14 score shows a strong correlation with STS ($r_s = 0.69$, $p < 0.001$), a medium level connection with the experiential thinking style ($r_s = 0.45$, $p < 0.001$), and a weak to moderate association with positive affect ($r_s = 0.28$, $p < 0.001$). Associations with the rational thinking style and negative affect were non-significant and close to zero.

Table 2. Descriptive statistics (M \pm SD) of the assessed variables, and results of correlation analysis (Spearman's ρ coefficients) in Sample 1

Variables	SCQ-14	STS	Rational thinking style (REI)	Experiential thinking style (REI)	Positive affect (PANAS)	Negative affect (PANAS)
SCQ-14	55.97 \pm 22.240	0.694***	0.060	0.445***	0.281***	-0.021
STS		29.25 \pm 6.920	-0.013	0.371***	0.275***	0.017
Rational thinking style (REI)			74.55 \pm 11.721	0.195***	0.380***	-0.123*
Experiential thinking style (REI)				65.80 \pm 11.733	0.318***	-0.057
Positive affect (PANAS)					34.00 \pm 6.476	-0.300***
Negative affect (PANAS)						20.53 \pm 6.882

Note. $n = 387$. SCQ-14 = Spiritual Connection Questionnaire, STS = Spiritual Transcendence Scale, REI = Rational-Experiential Inventory, PANAS = Positive and Negative Affect Schedule, *: $p < 0.05$, ***: $p < 0.001$

According to the results of the hierarchical linear regression analysis, as it is presented in Table 3, positive affect significantly contributed to SCQ-14 score ($\beta = 0.271$, $p < 0.001$) after controlling for gender, age, and educational qualification in Step 2. However, after entering experiential thinking style and spiritual transcendence in the regression (Step 3), positive affect lost its significance and both experiential thinking style ($\beta = 0.208$, $p < 0.001$) and spiritual transcendence ($\beta = 0.663$, $p < 0.001$) emerged as significant contributors to spiritual connection. The final equation explained 56.1% of the total variance of spiritual connection ($p < 0.001$).

Table 3. Steps of the hierarchical linear regression analysis with spiritual connection score as criterion variable in *Sample 1*

Variables	Step 1 F = 3.014, $p = 0.03$ R ² = 0.024		Step 2 F = 9.689, $p < 0.001$ R ² = 0.094, $\Delta R^2 = 0.071$, $p_{\text{change}} < 0.001$		Step 3 F = 79.119, $p < 0.001$ R ² = 0.561, $\Delta R^2 = 0.467$, $p_{\text{change}} < 0.001$	
	standard- ized β	p	standard- ized β	p	standard- ized β	p
Gender	0.119	0.022	0.088	0.079	-0.040	0.267
Age	0.092	0.102	0.074	0.171	-0.030	0.440
Educational qualification 2	0.024	0.671	-0.012	0.826	-0.003	0.933
Positive affect (PANAS)			0.271	<0.001	0.066	0.076
Experiential thinking style (REI)					0.208	<0.001
Spiritual transcendence (STS)					0.663	<0.001

Note. $n = 387$. The following variable was excluded from the analysis as it is constant or has missing correlations: educational qualification 1. REI = Rational-Experiential Inventory; STS = Spiritual Transcendence Scale, PANAS = Positive and Negative Affect Schedule.

3.2. Sample 2

Similar to *Sample 1*, the Hungarian version of the SCQ-14 is characterized by excellent internal consistency (Cronbach's $\alpha = 0.97$) in *Sample 2*. Again, CFA indicated inappropriate fit with the theoretically assumed one-factor model ($\chi^2 = 247.132$, $df = 77$, $p < 0.001$; CFI = 0.917; NFI = 0.885; RMSEA = 0.123 [90% CI = 0.106–0.141]), which could not be further improved by assuming associations between variables based on high modification indices. Also, EFA indicates a clear one-factor structure: the only factor with an eigenvalue higher than 1 (9.836) explains 70.25% of the total variance. Moreover, loadings of all items on factor 1 are higher than 0.65.

Descriptive statistics of the measured variables and results of the correlation analysis are presented in *Table 4*. The SCQ-14 score shows a strong

correlation with STS ($r_s = 0.65, p < 0.001$), and with the experiential thinking style ($r_s = 0.66, p < 0.001$), and no association with positive affect, negative affect, and rational thinking style.

Table 4. Descriptive statistics ($M \pm SD$) of the assessed variables, and results of correlation analysis (Spearman's rho coefficients) in *Sample 2*

Variables	SCQ-14	STS	Rational thinking style (REI)	Experiential thinking style (REI)	Positive affect (PANAS)	Negative affect (PANAS)
SCQ-14	63.69 \pm 24.516	0.654***	-0.020	0.664***	0.133	-0.100
STS		28.97 \pm 7.845	-0.046	0.513***	0.062	0.077
Rational thinking style (REI)			77.67 \pm 10.945	-0.019	0.395***	-0.206*
Experiential thinking style (REI)				66.32 \pm 12.624	0.155	0.014
Positive affect (PANAS)					37.03 \pm 5.625	-0.250**
Negative affect (PANAS)						18.86 \pm 5.715

Note. $n = 145$. SCQ-14 = Spiritual Connection Questionnaire; STS = Spiritual Transcendence Scale; REI = Rational-Experiential Inventory; PANAS = Positive and Negative Affect Schedule. *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$

In line with the findings obtained from *Sample 1*, results of the hierarchical linear regression analysis show that, after controlling for gender, age, educational qualification, and positive affect, experiential thinking style and spiritual transcendence significantly contribute to spiritual connection ($\beta = 0.414, p < 0.001$; and $\beta = 0.495, p < 0.001$, respectively). Results of the regression analysis in *Sample 2* are presented in Table 5. The final equation explained 59.1% of the total variance of spiritual connection ($p < 0.001$).

Table 5. Steps of the hierarchical linear regression analysis with spiritual connection score as criterion variable in Sample 2

Variables	Step 1 F = 1.281, $p = 0.283$ $R^2 = 0.027$		Step 2 F = 1.406, $p = .235$ $R^2 = 0.039$, $\Delta R^2 = 0.012$, $p_{\text{change}} = 0.187$		Step 3 F = 33.060; $p < 0.001$ $R^2 = 0.591$, $\Delta R^2 = 0.553$, $p_{\text{change}} < 0.001$	
	standard- ized β	p	standard- ized β	p	standard- ized β	p
Gender	0.144	0.089	0.149	0.077	-0.114	0.054
Age	-0.022	0.803	-0.031	0.724	-0.000	0.995
Educational qualification 2	-0.085	0.336	-0.104	0.243	-0.032	0.590
Positive affect			0.113	0.187	-0.008	0.885
REI experiential thinking style					0.414	<0.001
STS (spiritual transcendence)					-0.495	<0.001

Note. The following variable was excluded from the analysis as it is constant or has missing correlations: educational qualification 1. REI = Rational-Experiential Inventory; STS = Spiritual Transcendence Scale

4. Discussion

The Hungarian version of the Spiritual Connection Questionnaire (SCQ-14) shows a one-factor structure. The one-factor structure was supported by exploratory but not by confirmatory factor analysis; thus, further studies in other samples would be desirable. Spiritual connection is consistently associated with spiritual transcendence (as assessed with the STS) and experiential thinking style (as assessed with the REI), but not with positive and negative affect. No associations with the rational thinking style were found.

The strong association between spiritual connection and spiritual transcendence can be explained by the fact that both questionnaires capture spirituality at the level of experience in a religion-independent way (Piedmont, 1999; Wheeler & Hyland, 2008). The SCQ-14 encompasses items assessing connection with others, the universe and happiness deriving from

this spiritual perception. In the same vein, the STS subsumes three facets: connectedness (person as part of a larger reality), universality (belief in the unity of the world), and prayer fulfilment (joy deriving from the connection with god or what one's believe in). Accordingly, the two scales assess highly overlapping aspects of spirituality, namely the experience of interconnectedness and unity, and the feeling of happiness through this sense. Wheeler and Hyland (2008) also denotes that the sub-scale "universalism" of STS signifies spiritual connection. Overall, the strong association between the two scales strongly supports the construct validity of the Hungarian version of the SCQ-14. However, the question may arise, once the two questionnaires show such a considerable overlap, why an alternative (or at least very similar) measure is needed. A closer look at the items of STS shows that prayer or meditation are often mentioned; this can be confusing and difficult to rate for people without such practices. In contrast, the SCQ-14 does not mention these terms, but phrases the items in a very ordinary language and captures common feelings and opinions. However, it often uses the term of "spirituality" or "spiritual", giving a free but possibly very similar interpretation of the 14 items for the responders. This fact might contribute to the high internal consistency values of the SCQ-14.

Spiritual connection shows a moderate to strong connection with experiential thinking style, but no association with rational thinking style. The experience of spiritual connection presumably manifests first at the level of emotions and feelings ("sense of harmonious interconnectedness", (Hungelmann et al., 1985)) which is in line with the rapid, effortless, non-verbal experiential system (Epstein, 1994; Wheeler & Hyland, 2008). MacDonald (2000) also denotes that spirituality is inherently an experiential phenomenon. Although Epstein (1994) proposes that the experiential processing style has a long evolutionary history and operates in animals as well, it may work in a much more complex way in humans. Beyond the lower automatic and fast level, there might be a higher orbit where it interacts with the rational system and results in intuitive wisdom and creativity (Epstein, 1994). This is in line with Maslow's idea (1966, 1968), namely that the reciprocal, collaborative relationship between the experiential (primary, intuitive) and the conceptual (verbal, analytic) understanding has a great value in transcendent experiences, such as wise innocence or unitive consciousness (Cleary & Shapiro, 1995).

As spirituality is linked to lower levels of depressive symptoms and suicide (Piedmont, 2007), we hypothesized a negative correlation between negative affect and spiritual connection. This is not supported by our findings. Pikó and colleagues (2011) suggest that if we make a distinction between spirituality as a connection to the transcendent or god ("religious

aspect" of spiritual well-being) and as a search for meaning of life, goals and values ("existential aspect"), the aforementioned connection does not seem obvious. The religious aspect has low or no correlation to depression or anxiety, while people with high level on the existential aspect of spirituality are less prone to depression, anxiety, and substance abuse, and seem to possess better coping in case of chronic diseases (Pikó et al., 2011). SCQ-14 captures more the former one, the feeling of connectedness with no regard to meaning of life, which might explain the lack of association. A previous study (Komninos, 2009) reported no associations between spiritual experience/transcendence and negative affect, while another investigation (Powers et al., 2007) found a negative correlation between spiritual involvement in social justice (existential aspect) and negative affect. Notably, different measures of spirituality presumably result in different outcomes concerning negative affect, which is suggested to investigate in future studies. Furthermore, although spirituality and religiousness are associated with better mental health (Fetzer/NIA Working Group, 1999; Kopp et al., 2004), in special cases, when religiousness or spirituality is particularly important to the person, depressive symptoms are higher (Kopp et al., 2004). This relation can indicate the presence of one or more underlying variable(s), such as mental vulnerability, chronic stress, or chronic diseases. The lack of negative correlation between spirituality and negative affect in the present study could also be explained due to possible respondents of this particular group.

Concerning positive affect, we expected positive correlation between spiritual connection and positive affect. This assumption was supported by data in *Sample 1*, but not in *Sample 2*. Our mixed results can be explained as follows. Experiencing spiritual connection more often in daily life may contribute to higher level of positive affect. However, as mentioned before with respect to negative affect, existential aspects of spirituality may play a greater role in subjective well-being than its religious, i.e., experiential aspect. For example, Pikó and colleagues' (2011) results showed that religious aspect of spiritual well-being does not correlate with measures of well-being (depressive symptoms and satisfaction with life), however, it is associated with optimism and control, which are again in correlation with these well-being measures. Koenig (2008) signifies that the definition of spirituality is often contaminated with positive character traits or mental health variables. Thus, it shows correlation with mental health and well-being measures, but these associations are meaningless and tautological. Spiritual connection captures the experience of being connected without involving other health related aspects, which can explain its independence from positive affect. Results of the regression analysis in *Sample 1* also

strengthens this idea. Positive affect seems to be a significant contributor of spiritual connection in the second step, but after entering experiential thinking style and spiritual transcendence in the model (Step 3), positive affect lost its significance. We can conclude that the association of spiritual connection and positive affect derived from their shared variance with experiential thinking style. However, it can't be excluded that perceiving/sensing deep connection with others and the universe in itself might lead to positive emotions and well-being as it was found in Klein and colleagues' (2016) work. They reported that mystical, i.e., spiritual experiences are associated with higher level of psychological well-being, generativity, and emotional stability. Thus, as previously some authors did (de Jager Meezenbroek et al., 2012; Koenig, 2008; Moberg, 2002), we suggest further and more specific exploration of this field, i.e., the relation of different spirituality measures and subjective well-being.

The regression analyses revealed that experiential thinking style and spiritual transcendence are two independent contributors to spiritual connection. As mentioned above, according to MacDonald (2000) spirituality is inherently an experiential construct, nevertheless, "a multi-dimensional construct that includes complex experiential, cognitive, affective, physiological, behavioral, and social components" (MacDonald, 2000, p. 158). Even if spiritual connection captures one single experiential aspect of spirituality, it appears to be more than experiential thinking. The variance shared by spiritual connection and spiritual transcendence which is independent of experiential thinking means that spirituality possesses something unique beyond intuitive-experiential information processing. It reflects humankind's highest nature, an important psychological component which is not an extension of other functions, dispositions or needs (Piedmont, 1999). Spiritual experiences, such as unitive consciousness or intuitive wisdom and creativity might be the outcome of collaborative interaction of the experiential and rational thinking processes (Cleary & Shapiro, 1995; Epstein, 1994; Maslow, 1966, 1968, 1970).

In summary, the findings of the present study indicate appropriate psychometric characteristics of the SCQ-14, both in terms of internal consistency and validity. However, for psychometric soundness of the factor structure of the SCQ-14, further analyses are suggested in various samples. Besides, associations between spiritual connection and experiential thinking style have been revealed, and results of the regression analyses have shown that spirituality – more precisely spiritual experience – is a more comprehensive, unique phenomenon beyond experiential thinking style. Concerning well-being, we can assume that spiritual connection is not in direct relation with positive and negative affect.

As limitations, however, we have to mention that the study included two Hungarian non-representative community samples with comparatively small sample sizes. Though validation results are promising, conclusions need to be drawn cautiously. First of all, neither spiritual and/or religious orientation of participants was assessed, nor diverse spiritual and/or religious populations were investigated. Thus, we cannot draw conclusions whether the SCQ-14 is religious-free measure even among Hungarian participants. The investigation of this specific aspect of SCQ-14 was not the aim of the present study; nevertheless, this would be an important task for future studies. Furthermore, it is important to note that the online sampling implies limitations and potential biases. For example, we have no data on incomplete participations or possible misunderstandings while filling out the form. In case of SCQ-14, as mentioned above, items might be sometimes overlapping and redundant. Thus, the further shortening of the questionnaire could be considered. Lastly, the current study includes cross-sectional data thus no conclusions on causality can be drawn. For further investigation on the relationship between spirituality and its correlates longitudinal studies are needed. Furthermore, present research captures only a single aspect of spirituality, thus measuring more facets of spirituality at the same time might lead to better understanding of its nature, function, and holistic contribution of human life.

In conclusion, the Hungarian version of the Spiritual Connection Questionnaire (SCQ-14) appears to be a valid, psychometrically good measure of spirituality. Nevertheless, further psychometric analyses of the scale are proposed. Spiritual transcendence and intuitive-experiential information processing independently contribute to spiritual connection.

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Author contributions

FK contributed to data collection and data processing in *Sample 1*, while BC was responsible for the same concerning *Sample 2*. FK conducted the factor analyses, and both of the authors performed the further statistical analyses. BC wrote the first draft of the manuscript. FK wrote sections of the manuscript and commented on the last version of the manuscript. Both authors contributed to the conception and design of the study.

Conflict of interest

The authors declare that they have no conflict of interest.

Appendix: The Hungarian version of the short form of SCQ-14

Spirituális Kapcsolat Kérdőív

Az alábbiakban a spiritualitással kapcsolatos állításokat talál. Kérjük, minden egyes esetben döntse el azt, hogy mennyire ért vagy nem ért egyet az adott állítással és karikázza be a véleményével leginkább megegyező a számot. Nincsenek jó vagy rossz válaszok. Kérjük, ne hagyjon ki egyetlen állítást sem!

<i>Spirituális kapcsolat kérdőív (SCQ-14-H)</i>
1: határozottan nem értek egyet 2: nem értek egyet 3: inkább nem értek egyet 4: nem tudom eldönteni 5: inkább egyetértek 6: egyetértek 7: határozottan egyetértek
1. A spiritualitás jobbra teszi az életemet.
2. Nem érzem, hogy spirituális kapcsolatban lennék a körülöttem levő világgal.
3. Időnként az az érzésem, mintha az emberekből egyfajta „belső fény” sugározna.
4. Soha nem volt olyan spirituális élményem, ami megváltoztatta az életemet.
5. Az élet egy nagyobb terv része.
6. Nem érzem, hogy létezne valamilyen, az embereket összekötő energia.
7. Érzem azt, hogy belső spirituális erőm van.
8. Nincs személyes kapcsolatom valamiféle nálam nagyobb erővel.
9. Érzem a másokkal való spirituális kapcsolatból származó belső erőt.
10. A spiritualitás nem fontos számomra.
11. Érzem, hogy mindig véd egy végső hatalom, erő vagy lény.
12. Soha nem leszek senkivel spirituális kapcsolatban.
13. Boldoggá tesz, hogy kapcsolódom valami spirituálishoz.
14. Nem érzem azt, hogy bármiféle spirituális kapcsolatban lennék az univerzummal.

Skálaképzési útmutató:

A tételeket 7 fokozatú Likert-típusú skálán értékeljük.

Az 1., 3., 5., 7., 9., 11. és 13. tételek esetén az adott értéket rögzítjük, és ezeket összeadjuk.

A fordított tételeket – a 2., 4., 6., 8., 10., 12. és 14. itemeket – átfordítjuk (az ellentételes oldali Likert-skála értékére, értelemszerűen 1 = 7, 2 = 6, 3 = 5, míg a 4-es érték megmarad), majd az átfordított értékeket hozzáadjuk az addigi pontszámhoz.

A Spirituális Kapcsolat Kérdőív rövid változatának (SCQ-14) magyar validálása

CSALA BARBARA – KÖTELES FERENC

Elméleti háttér: A spiritualitás humánspecifikus jelenség, amelynek pozitív hatása a testi és mentális egészségre nézve bizonyított. Tudományos szempontból a spiritualitás meglehetősen összetett fogalom, számos különböző mérőeszközzel vizsgálható. A Spirituális Kapcsolat Kérdőív (Spiritual Connection Questionnaire, SCQ) vallástól függetlenül értékeli a spiritualitás szintjét, így vallásos és nem vallásos személyek körében egyaránt alkalmazható. *Cél:* Jelen kutatás célja Spirituális Kapcsolat Kérdőív rövid változatának (SCQ-14) magyar nyelvű validálása volt. További cél volt a spiritualitás gondolkozási stílussal és affektivitással való összefüggésének vizsgálata. *Módszerek:* A kutatás két nem reprezentatív mintából áll ($n = 387$ és $n = 145$), amelynek résztvevői a Spirituális Kapcsolat Kérdőív rövid változatát, a Spirituális Transzcendencia Kérdőívet, az Észszerűség–Megérzés Kérdőívet, valamint a Pozitív és Negatív Affektivitás Skálát töltötték ki online formában. *Eredmények:* Az SCQ-14 magyar változata kiváló belső konzisztenciát (Cronbach- $\alpha = 0,94$ az első, és $0,97$ a második mintán) jelzett. A konfirmatív faktoranalízis nem mutatott megfelelő illeszkedést az eredeti egyfaktoros modellhez képest ($\chi^2 = 435,848$, $df = 77$, $p < 0,001$; CFI = $0,904$; NFI = $0,886$; RMSEA = $0,110$ [90% CI = $0,100$ – $0,120$] az első mintán, és $\chi^2 = 247,132$, $df = 77$, $p < 0,001$; CFI = $0,917$; NFI = $0,885$; RMSEA = $0,123$ [90% CI = $0,106$ – $0,141$] a második mintán). Ezzel szemben a feltáró faktoranalízis eredménye egyfaktoros modellt mutatott mindkét minta esetén. Az SCQ-14 továbbá pozitív irányú összefüggést mutatott a spirituális transzcendenciával, a tapasztalati gondolkodási stílussal, valamint részben a pozitív affektivitással is. A spirituális kapcsolat és negatív affektivitás, valamint a racionális gondolkodási stílus között nem jelentkezett szignifikáns korreláció. A mindkét mintán lefuttatott többszörös hierarchikus lineáris regresszió eredményei szerint a tapasztalati gondolkodás és a spirituális transzcendencia a nem, a kor, az iskolai végzettség és a pozitív affektivitás kontrollálása után is szignifikáns kapcsolatban maradt a spirituális kapcsolat pontszámmal. *Következtetések:* A Spirituális Kapcsolat Kérdőív rövid változatának magyar verziója valid, jó pszichometriaival mutatókkal bíró mérőeszköz. A spirituális transzcendencia és a tapasztalati gondolkodás egymástól függetlenül is hozzájárulnak a spirituális kapcsolathoz.

Kulcsszavak: spiritualitás, SCQ-14, tapasztalati gondolkodási stílus, affektivitás