California Institute of Integral Studies

International Journal of Transpersonal Studies

Volume 36
Issue 1 *VOL. 36, Iss. 1 (2017)*

Article 10

9-1-2017

# Factor Validity and Internal Consistency of the Expressions of Spirituality Inventory – Revised (ESI-R): The Czech Context

Vit Gabrhel
*Masaryk University, Brno, Czech Republic*

Stanislav Ježek
*Masaryk University, Brno, Czech Republic*

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*Vit Gabrhel*[1] *& Stanislav Ježek*[2]
Masaryk University
Brno, Czech Republic

This study is the first attempt to examine the validity of the Expressions of Spirituality Inventory (ESI-R) for use in the Czech context. Data were obtained via online survey from 222 emerging adults (18-25 years; 82% women), with a background in helping professions. Structural equation modelling revealed reasonably good support for structural validity of the ESI-R factor model. In addition, all of the dimension scores showed acceptable inter-item consistency. However, our findings presumptively point to problems with measurement non-invariance as some items were observed to correlate with different dimensions than expected. Overall, these findings are consistent with cross-cultural research on ESI-R showing that the ESI-R has structural but not measurement invariance at the item and dimension level and provide support for further use of the ESI-R with Czech respondents.

**Keywords:** *Psychometric, measurement, spirituality, cross-cultural*

In the present study, we aim to examine the factor validity and internal consistency of the Czech version of the Expressions of Spirituality Inventory-Revised (ESI-R-CZ), a psychological measure of spirituality. A rising body of research demonstrates the relevance of studying spiritual life. However, the study of spirituality requires a valid measurement tool that the ESI-R aspires to be.

Spirituality refers to specific beliefs, practices, or experiences that influence an individual's everyday life. It happens through influencing motivation, cognitive schemes and scenarios, and/or emotions (Pargament, 1999; Zinnbauer & Pargament, 2005). Spiritual aspects of life play a role in very tangible decisions, such as in vocational choices or in the way an individual performs her professional roles. Specific to helping professions (e.g., psychology, social work), studies have shown that there is a significant proportion of those working in these fields who see spirituality as an important aspect of their lives (Bhagwan, 2010; Tomasso, Beltrame, & Lucchetti, 2011; Walker, Gorsuch, & Tan, 2004). Moreover, spirituality represents a resource that can come to bear on the delivery of such services as psychotherapy and be employed to aid in the reduction of anxiety and to accelerate the healing process (Shafranske, 2005). In the present study, we focus on young people in the helping professions (i.e., students and practicing professionals) as our primary population of interest.

Spirituality plays an important role in individual development as well. During emerging adulthood, a period characterized by search for one's self and sense of identity (Arnett & Jensen, 2002), spirituality serves as one of the ways of coping with the challenges characteristic of this period of life. Regardless of specific religious affiliation, spirituality offers young people a specific interpretative framework which, in turn, contributes to a sense of reality (Berger & Luckmann, 1999; Holm, 1998). In addition, this framework can serve as a basis for rituals (e.g., coming of age or rite of passage), ritual practices (meditation, prayer, etc.) and/or the interpretation of experiences. Yonker, Schnabelrauch, and DeHaan (2012) conducted a meta-analysis of 75 studies (carried out between 1990 and 2010) on a combined sample of over 66,000 adolescents and emerging adults. It was found that individuals showing higher spirituality also showed higher levels of well-being and self-esteem and lower rates of depression. Strengths of those relationships ranged from weak to moderate.

The importance of spirituality in many people's lives has led to the construction of several measures of spirituality to enable systematic empirical research. However, not all of those measures attempt to capture spirituality in its multidimensional nature. Some concentrate on a single dimension of spirituality, such

as the experiential aspect of spirituality, mysticism, or spiritual well-being. Some focus on measuring concepts derived from specific cultural and religious traditions (e.g., Judeo-Christian). In addition, at least some of the measures show disputable psychometric properties, that is, low values of reliability (in terms of test-retest reliability and internal consistency) or insufficient factorial validity (Hill, 2005; Hood, 1975; Meezenbroek et al., 2012; Moberg, 2010; Stríženec, 2003).

Spiritual life has significantly changed over the last century, especially in the European context. The political power and influence of churches and religious movements has decreased and there has been a concurrent decline in their membership (McGuire, 2002). However, studies show that this situation should not be understood as a reflection of a lack of interest in spiritual life as a whole (Czech Statistical Bureau, 2013; Halman, Sieben, & Zundert, 2011; Inglehart, 2004). Instead, social changes that occurred during the 20th century may be seen as contributing to the individualization of spiritual life. Spirituality has become more an expression of individual choice that is relatively independent of specific religious institution (Hunt, 2007; Roof, 1993; Zinnbauer et al., 1997).

Changes in spiritual life are compelling researchers to change the way in which they conceptualize, measure, and study spiritual life. Self-declared identification with a particular church or religious movement frequently used in the past has come to be viewed as an inadequate as a way of assessing spirituality in modern times. In fact, it is now commonplace to make a distinction between spirituality and religiosity with the differentiation of these concepts offering different avenues for investigating spiritual life. Religiosity can be understood as relating to institutional faith and practice, while spirituality represents more of non-institutional aspects of individual "spiritual seeking." Those concepts, however, are not a dichotomy (Holm, 1998; Pargament, 1999; Stríženec, 2003). Defined in a different way, spirituality may be viewed as concerning the search for the sacred in the broadest sense, while religiosity may be treated as the search for sacredness within the context a given faith or social system (Zinnbauer & Pargament, 2005). It is recognized that the search for sacred is a complex phenomenon including cognitive, experiential, and other aspects (MacDonald, 2000a; McGuire, 2002).

In order to offer a scientifically grounded and validated instrument to facilitate research on spirituality, MacDonald (2000a, 2000b) developed the Expressions of Spirituality Inventory (ESI), a 100-item self-report questionnaire, and the shorter 32-item Expressions of Spirituality Inventory-Revised (ESI-R). Both are designed to operationalize and measure an empirically derived multidimensional model of spirituality. The dimensions comprising the model tapped by the ESI and ESI-R are called *Cognitive Orientation toward Spirituality* (COS; i.e., the perceptual and cognitive aspects of spirituality, namely faith or beliefs, attitudes towards spirituality and importance of spirituality in one's life); *Experiential/ Phenomenological Dimension* (EPD; i.e., experiences described as spiritual, religious, mystical, peak, transcendental, and transpersonal); *Existential Well-Being* (EWB; i.e., sense of meaning in one's life, perception of self as individual that is capable of coping with difficulties of life and limitation of human existence); *Paranormal Beliefs* (PAR; i.e., belief in phenomena such as telepathy, ghosts, witchcraft or protective powers of amulets); *Religiousness* (REL; i.e., beliefs, attitudes, and lifestyle practices associated with devout religious commitment, particularly as understood and manifested within a Judeo-Christian context; MacDonald, 2000a; Stríženec, 2003; Říčan, 2007). The ESI and especially the ESI-R have been utilized fairly extensively in research and have been shown to demonstrate good psychometric properties, even across cultures and languages (MacDonald 2000a, 2000b; MacDonald et al., 2015; Muhamad, Roodenburg, & Moore, 2014; Proyer & Laub, 2015).

## The Measurement of Spirituality in a Czech Context

As noted above, spiritual life has changed dramatically over the past decades in the Western world, Czech Republic included. However, this change has not been appropriately reflected in spirituality measures. More specifically, there is no psychometrically sound method for assessing spirituality present in the Czech context at this moment. Some researchers tried to develop a measurement tool for spirituality in its broad sense – for example the Prague Spirituality Questionnaire (Říčan & Janošová, 2004) – yet the final product does not seem to meet the required criteria of reliability (in terms of internal consistency) and factorial validity (Jandásková & Skočovský, 2007). Given this state of affairs, the ESI-R seems to be a promising measure because of its capacity to assess spirituality of spiritual seekers who do

not identify themselves with a certain church or religious movement. At the same time, it is relevant for the context of more traditional churches (e.g., Roman-Catholic) or religious movements. However, before the use of the ESI-R can be justified, there needs to be support for its validity and reliability when adapted for use with Czech samples.

## Study

In this study, we examine the factorial validity and internal consistency of the Czech version of the ESI-R.

### Participants

A convenience sample of 222 respondents (82% women) from the Czech Republic participated in an anonymous online survey. Since the study was aimed a young people interested in and/or working in a helping profession, it was advertised through communication channels commonly used by them (e.g., social networks such as Facebook). Participation in the study was limited to those who a) ranged between 18 and 25 years of age and b) had background in a helping profession. Data collection complied with standard ethical practices for questionnaire based psychometric research. Approval for the study was obtained from the head of the Psychology department, Faculty of Social Studies, Masaryk University, Czech Republic. The data were collected during March 2013.

Participants' age ranged from 18 to 25 years (M = 22.8, SD = 1.5). Approximately one third (**N** = 69) of participants identified themselves as Roman Catholics, twenty percent (**N** = 46) claimed that they are atheists and 79 participants (36% of the sample) described themselves as those who are not religious, yet they consider themselves interested in spiritual life. Two hundred and twenty-one respondents successfully finished secondary level of education (i.e., high school). All of the participants had background in helping professions (e.g., psychology, nursing, social work or medicine).

### Measures

Along with demographic information, the study relied on a Czech translation of a validated measure of spirituality.

**Czech version of Expressions of Spirituality Inventory-Revised (ESI-R-CZ).** The ESI-R is a self-report instrument consisting of 32 items that was created from the longer 100-item ESI originally described by MacDonald (2000a). It is designed to capture spirituality as a multidimensional construct. Those dimensions are Cognitive Orientation toward Spirituality (COS – sample item: "*I believe that attention to one's spiritual growth is important*"), Experiential/ Phenomenological Dimension (EPD – sample item: "*I have had an experience in which I seemed to transcend space and time*"), Existential Well-Being (EWB – sample item: "*My life is often troublesome*"), Paranormal Beliefs (PAR – sample item: "*I think psychokinesis, or moving objects with one's mind, is possible*") and Religiousness (REL – sample item: "*I believe that going to religious services is important"*). Each dimension is represented by six items. The last two items serve as indicators of face validity ("This test appears to be measuring spirituality") and honesty of response ("I have responded to all items honestly"), respectively. Respondents answer on a five point scale ranging from 0 (Strongly disagree) to 4 (Strongly agree). The ESI-R has been found to have acceptable reliability (inter-item consistency), factorial validity, convergent and discriminant validity, and criterion validity (MacDonald 2000b; MacDonald et al., 2015; Muhamad et al., 2014; Proyer & Laub, 2015).

Using the original English version of the ESI-R, the Czech adaptation of the test was developed. Though we view it as fully comparable with the ESI-R, some minor changes were needed so as to make it most suitable for use in the Czech language and culture (see procedure for more detail).

**Demographic variables.** Along with the ESI-R-CZ, we also collected relevant socio-demographic variables such as gender, religious or spiritual affiliation, religious socialization, and age. Religious socialization was measured by one item "*Some people were brought to faith or to spirituality by their parents or by other people. Others were not. What about you?*" This item also included the following short example: "*This, for example, includes teaching how to pray or to meditate, to participate in the mass, conversations about spiritual matters such as God or transcendental power, sin, karma, reincarnation, hell, heaven, afterlife, communication with dead people etc.*" Spiritual affiliation was assessed via two items. The first one asked whether or not participants perceived themselves as believers, regardless of their membership in a church or religious movement. The second item elaborated: "*Spiritual life has many different forms. Some people relate it to certain religion. Others could perceive themselves as believers, yet they are not members of certain church or religious movement. Another people consider themselves to be atheists – they don't believe in God or gods. Which of*

*the following options describes you the best?*" Participants of the research could choose, among other alternatives, from answers such as "*Roman-Catholic church*," "*I consider myself to be spiritual, yet not religious,*" or "*Atheist*."

**Procedure**

First, ESI-R was translated to Czech using a translation back-translation procedure (Hambleton, 1994). After the translation process, we followed with a two-step pre-testing process. Our respondents in both phases of pre-testing were volunteers selected according to criteria for the study population (i.e., age between 18-25 years and background in helping professions).

In the first phase of pre-testing, we focused primarily on respondents' understanding of the items, that is, on cultural and language context. We used a cognitive interviewing technique (Willis, 2005) with five participants. Minor changes (e.g., re-formulation of some items) were suggested in order to reduce ambiguity or cognitive burden. For example, in the case of the PAR item "I believe that witchcraft is real," we added a short vignette in order to provide a concept of witchcraft relevant in the Czech context. In addition, we removed the two last items of the ESI-R concerning face validity ("*This test appears to be measuring spirituality*") and honesty of responding ("*I have responded to all items honestly*"). Results of pre-testing showed that those items did not meet their intended purpose. The face validity item was redundant since in the informed consent it was openly stated that purpose of this study is to examine spirituality. The response validity was dropped because participants perceived it as an expression of mistrust from researchers.

In the second phase, we focused on the questionnaire as a whole – completion time, general intelligibility of the questionnaire, and the like. Twelve individuals (who differed from the participants of the first phase of the pre-testing) participated in this phase of pre-testing. Second phase revealed no problematic item or aspect of the questionnaire.

Statistical analyses were completed using SPSS version 20 (IBM Corp., 2011) and R software (R Core Team, 2013).

**Results**

After data cleaning, Confirmatory Factor Analysis was performed and descriptive and reliability statistics were calculated for each subscale of the primary measure employed.

**Data cleaning.** Prior to running any of the main analyses, data were examined to identify any missing responses. As some missing responses were noted for some participants, we ran Little's MCAR test to determine whether or not the data were missing completely at random (MCAR). This statistic emerged non-significant ($\chi^2$ [618] = 563.2; $p$ = .94) indicating that the pattern of missing data did not reflect anything systematic and was the product of chance (Heitjan & Basu, 1996; Newman, 2009). The missing data were imputed using the Expectation-Maximization algorithm as implemented in SPSS-20. Using this strategy, data imputation should not decrease the statistical power (Newman, 2009).

**Confirmatory Factor Analysis.** In order to verify the factor structure of the ESI-R-CZ, we used Confirmatory Factor Analysis (CFA). Before completing the analysis, multivariate normality was assessed via Mardia's test and found to be significantly non-normal (Mardia's estimation of multivariate skewness = 176.82, $p$ < .001; Mardia's estimation of multivariate kurtosis = 1027.12, $p$ < .001). As a result of multivariate non-normality, maximum likelihood estimation method could produce biased fit indices (Byrne, 2010). Therefore, we used Bollen-Stine Bootstrap $p$-value to compensate for lack of multivariate normality (Enders, 2002). It is noteworthy, however, that univariate distribution of scale variables (e.g., COS) were approximately normal with heavier tails.

A correlated five factor CFA model with no residual covariances was estimated in R using the lavaan package (Rosseel, 2012). Following Kline's (2005) recommendations, six fit indices were used to evaluate the model fit: $\chi^2$/df, Bollen-Stine $p$-value, CFI, TLI, SRMR, and RMSEA. Value of $\chi^2$/df is below 2 and therefore acceptable; Bollen-Stine p-value is less than .001; value of CFI and TLI is greater than .9; and, finally, values of SRMR and RMSEA is less than .08. Table 1 presents the standardized item level factor loadings, estimated factor inter-correlations and overall model fit indices.

As can be observed in the table, most of factor loadings of individual items ranged from .7 to .9. This could be considered as an indicator of a reasonably correct model (Kline, 2005). On the other hand, two items (EWB item 23 and PAR item 24) had standardized factor loadings lower than .7 and therefore warrant further examination.

When inspecting the estimated correlations between the five latent factors, we observed a very strong association between COS and REL (r = .86). The

**Table 1.** Standardized factor loadings, factor correlations and model fit indices for the correlated five factor model

| ESI-R-CZ Items | COS | EPD | EWB | PAR | REL |
|---|---|---|---|---|---|
| COS 1 | .86 | --- | --- | --- | --- |
| COS 6 | .70 | --- | --- | --- | --- |
| COS 11 | .83 | --- | --- | --- | --- |
| COS 16 | .67 | --- | --- | --- | --- |
| COS 21 | .92 | --- | --- | --- | --- |
| COS 26 | .82 | --- | --- | --- | --- |
| EPD 2 | --- | .78 | --- | --- | --- |
| EPD 7 | --- | .76 | --- | --- | --- |
| EPD 12 | --- | .71 | --- | --- | --- |
| EPD 17 | --- | .72 | --- | --- | --- |
| EPD 22 | --- | .61 | --- | --- | --- |
| EPD 27 | --- | .75 | --- | --- | --- |
| EWB 3 | --- | --- | .70 | --- | --- |
| EWB 8 | --- | --- | .71 | --- | --- |
| EWB 13 | --- | --- | .76 | --- | --- |
| EWB 18 | --- | --- | .69 | --- | --- |
| EWB 23 | --- | --- | .59 | --- | --- |
| EWB 28 | --- | --- | .73 | --- | --- |
| PAR 4 | --- | --- | --- | .81 | --- |
| PAR 9 | --- | --- | --- | .73 | --- |
| PAR 14 | --- | --- | --- | .71 | --- |
| PAR 19 | --- | --- | --- | .79 | --- |
| PAR 24 | --- | --- | --- | .57 | --- |
| PAR 29 | --- | --- | --- | .67 | --- |
| REL 5 | --- | --- | --- | --- | .77 |
| REL 10 | --- | --- | --- | --- | .76 |
| REL 15 | --- | --- | --- | --- | .87 |
| REL 20 | --- | --- | --- | --- | .86 |
| REL 25 | --- | --- | --- | --- | .85 |
| REL 30 | --- | --- | --- | --- | .88 |
| Factor Correlations | | | | | |
| | COS | EPD | EWB | PAR | REL |
| EPD | .48 | | | | |
| EWB | -.04 | -.04 | | | |
| PAR | .36 | .23 | -.02 | | |
| REL | .86 | .24 | -.02 | .32 | |
| Model Fit Indices | $\chi^2$ = 729.5, df = 395, $\chi^2$/df = 1.85, $p$ <.001, CFI = .92, TLI = .91, SRMR = .07, RMSEA = .06 | | | | |

*Note.* $\chi^2$/df= Normed $\chi$2; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; SRMR = Standardized Root Mean-Square Residual; RMSEA = Root Mean Square Error of Approximation. For ESI-R items, acronym refers to dimension and number refers to the item number on the test. Across all items, standard errors ranged from .01 for COS 21 to .05 for EPD 22, EWB 23, and PAR 24.

remaining correlations were much lower in magnitude. Correlations with EWB came out consistently low, suggesting that this dimension is unrelated to all other factors.

The fit of the initial model was reasonable but not perfect. Although the assessment of factorial structure of the ESI-R-CZ is based on theory (and not data driven), we examined the model modification indices to see if we could identify areas where the model could be re-specified to improve fit. There were some indications that re-specification of the model to permit cross-loadings or reassignment of some items to different dimensions could improve the model (e.g., REL item 10; EPD item 12). For example, modification indices suggested that item 10 belonging to the REL dimension (i.e., "I feel a sense of closeness to a higher power") might be better assigned to more than one dimension (COS, EPD, and PAR, in our case). If we examine content of the item further, permitting such cross-loading makes some sense (e.g., "feeling" closeness could be viewed in experiential terms. Mention of "higher power" may be treated as reflecting religiousness and belief in non-natural entitles as is expressed in paranormal beliefs). As a final consideration, examination of standardized residual covariances showed a fairly large number of high values (e.g., 2.56 or higher) suggesting that the model tested did not adequately explain the data.

Though not reported in this paper, we did attempt to test a re-specified model where items identified in the modification indices were allowed to load on more than one factor. However, the analysis did not result in a considerable improvement over the original model.

**Inter-item Consistency and Descriptive Statistics.** Following the completion of the CFA, descriptive and reliability statistics for each of the five ESI-R-CZ dimensions were calculated. The results are reported in Table 2.

The distributions of COS and EWB were found to be slightly skewed while they were unimodal and approximately normal in the case of EPD and PAR. REL showed a roughly platykurtic distribution. Inter-item consistency of all scales was found to be satisfactory with alpha coefficients ranging from .84 to .93 across the five ESI-R-CZ dimensions. Moreover, corrected item-total correlations (not reported in the table) were observed to be sufficiently high (r = .54 to .86 for all items correlated to their corrected dimension scores).

## Discussion

Overall, the results of the present study indicate that the ESI-R-CZ demonstrates reasonably good factorial validity and satisfactory reliability and does so in a manner which seems to be consistent with other research examining the ESI-R in different cultures (MacDonald et al., 2015; Muhamad et al., 2014; Proyer & Laub, 2015). Given this, it appears that further research on the ESI-R-CZ with Czech samples is warranted. However, there are two important aspects of our study and our findings that require some discussion and elaboration so that their implications for future investigations and for the scientific literature are made clear.

**Translation and adaptation.** Our approach to the translation and adaptation of the ESI-R for use in with Czech respondents was thorough, systematic, and aimed at ensuring that our participants were able to understand item content in a way that we believe permitted for greater standardization of responses. However, it also represents a fairly significant departure from the original content and format of the ESI-R such that there is a need to exercise care in generalizing our findings beyond our sample and beyond a Czech cultural context. For instance, though there were some adjustments made to the wording of the original ESI-R items that helped to preserve their original meaning but made them more understandable in the Czech language, we also included short vignettes and explanatory notes for some items to help make their meaning more apparent and comprehensible to our participants. This is something that has not been done with other translated and adapted versions of the test used in the published literature (e.g., MacDonald et al., 2015). The extent to which this deviation from the original ESI-R format contributes positively to our findings cannot be ascertained with our data as we did not have participants complete a version of the ESI-R that did not include the explanatory notes which could serve as a point of comparison.

**Evidence of model misfit.** In support of the ESI-R-CZ, our confirmatory factor analysis revealed that all items significantly loaded on their intended factors and that most of the overall model fit indices produced satisfactory values. For instance, despite chi-square coming out significant, the chi-square/df ratio was less than 2, the CFI and TLI were above .90, the RMSEA was below .08, and the SRMR was below .10. Inspection of the modification indices, however, revealed that there was evidence of model misfit that appeared to be potentially resolvable by permitting some items to load on more one factor (e.g., REL item 10, EPD item 12). As well, several high standardized residual co-variances were observed. Notwithstanding these findings, revision of the model did not produce evidence of significantly better fit.

The COS, EPD, and REL dimensions have been found to be significantly inter-correlated in several different samples from different countries (MacDonald et al., 2015). In our sample, COS and REL in particular were observed to be highly correlated. We suspect that the significant standardized residual co-variances may reflect the overlap of these three latent constructs that may account for the notable inter-correlations between dimensions.

## Conclusions, Limitations, Future Directions

In the end, our results provide reasonably good support for the structural (aka configural) validity of the ESI factor model and for the reliability of the ESI-R-CZ dimension scores. Though we did not complete

**Table 2.** Descriptive and reliability statistics for the ESI-R-CZ

| | Mean | SD | Median | Kurtosis | Minimum | Maximum | Cronbach's Alpha |
|---|---|---|---|---|---|---|---|
| COS | 15.97 | 5.54 | 23 | -.38 | 1 | 24 | .91 |
| EPD | 11.74 | 5.68 | 17 | -.70 | 0 | 24 | .87 |
| EWB | 15.94 | 4.11 | 22 | .28 | 0 | 24 | .84 |
| PAR | 10.56 | 5.12 | 17 | -.43 | 0 | 24 | .86 |
| REL | 12.24 | 6.88 | 18 | -1.01 | 0 | 24 | .93 |
| Note. $N$ = 222 | | | | | | | |

a more formal test of measurement invariance at the item and dimension levels to make strong claims about conceptual equivalence of the ESI-R-CZ as compared to its original English version, it appears reasonable to infer from our findings that measurement invariance is unlikely. That is, it seems probable that the manner in which the ESI-R operationalizes and measures its underlying constructs differs with our sample and probably with Czech respondents in general. Such an inference would be consistent with MacDonald et al. (2015) who found support for structural validity but no evidence supporting measurement invariance across eight different cultural samples. Extending from this, the recommendations of MacDonald et al. (2015) seem applicable to our study, namely, empirical research on spirituality using the ESI-R should be augmented with additional measures that are designed to capture the uniqueness of spirituality as it is lived and understood by members within a given culture. Nevertheless, it is important to consider that this study utilized a convenience sample of young adults and, as such, caution should be exercised when attempting to generalize the findings to other segments of the Czech population. Clearly, future research using a broader array of Czech citizens should be undertaken to evaluate the replicability of our results and the quality of our translation and adaptation of the ESI-R.

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## Notes

1. The data used in this study and the script used to complete the confirmatory factor analysis can be accessed at: https://github.com/VGabrhel/The-ESI-R_Czech-version
2. Stanislav Ježek's work on this paper has been supported by the Czech Science Foundation (GACR, project "Paths to Adulthood", GAP407/12/0854)

## About the Authors

***Vit Gabrhel, MA,*** earned his Masters' degree in psychology at the Masaryk University, Brno, Czech Republic. Throughout his studies he focused on quantitative methodology, survey design, statistical data analysis, R software, psychometrics, scientific communication, and other related areas. During the studies, he participated in several national and international research projects, such as the European Longitudinal Study of Pregnancy and Childhood (ELSPAC). In 2015, he served as intern at University of Cambridge, Corpus Christi College, UK. There, he collaborated on Global Health Access Policy Project (GHAP). Since June 2015 he has worked as a researcher in the field of travel behavior analyses and travel demand modelling in the Transport Research Centre, Brno, Czech Republic. He is pursuing a PhD in cognitive psychology at the Masaryk University. His doctoral work focuses on cognitive aspects of survey methodology.

***Stanislav Ježek, PhD,*** is a researcher at the Institute for Research on Children, Youth and Family. He focuses of research methodology and statistics and the cognitive aspects of the question response process. He earned his PhD in social psychology with a dissertation focused on measurement of educational environments. Currently he is involved in a study of autonomy development in early adulthood, a project on the measurement of the need for cognitive closure, and a project on the psychological characteristics of novice teachers.

## About the Journal

The *International Journal of Transpersonal Studies* is a peer-reviewed academic journal in print since 1981. It is sponsored by the California Institute of Integral Studies, published by Floraglades Foundation, and serves as the official publication of the International Transpersonal Association. The journal is available online at www.transpersonalstudies.org, and in print through www.lulu.com (search for IJTS).