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The Measurement of Spirituality in Children: An Evaluation of the Expressions of Spirituality Inventory–Revised (ESI–R) with a Sample of Peruvian School Children

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Using a sample of 263 male Peruvian school children of ages ranging from 11 to 16 years, a Spanish translation of the Expressions of Spirituality Inventory- Revised (ESI-R; MacDonald, 2000a, 2000b) was evaluated in terms of its reliability and factorial validity. Examination of the internal consistency of the five ESI-R dimensions revealed somewhat mediocre reliability with Cronbach's alphas ranging from .56 to .73 across all dimensions. Confirmatory factor analyses (CFA) also provided somewhat mixed support for the ESI-R; while all but one of the items produced significant loadings on their intended factors, fit indices indicated problems with model fit for both four and five factor models. In post-hoc exploratory principal axis factor analyses, a discernable three factor structure was found which emulated higher order factors found by MacDonald (2000b). Additional statistical analyses were completed to determine if a short-form of the ESI-R could be developed that would be suitable for research with youth. This resulted in the creation of a 12 item scale designed to tap two factors. This scale demonstrated adequate reliability and good factorial validity. The paper ends with a discussion of the implications of the findings and suggestions for future research.

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

Though it has always been of key import to transpersonal psychological theory and research, spirituality has come to be a topic of study in a variety of disciplines over the past few decades. In fact, its growth in popularity has been so great, that we have witnessed the birth of new journals (e.g., *Journal of Management, Spirituality, and Religion*; *Journal of Spirituality in Mental Health*; *Spirituality and Health International*), new areas of inquiry (e.g., workplace spirituality, Giacalone & Jurkiewicz, 2003), and even changes in the scope of established areas of study (e.g., psychology of religion *and* spirituality, Pargament, 1999). Indeed, we think that transpersonalists should be pleased with these developments as they reflect not only a legitimatization and validation of an important component of a transpersonal worldview, but also provide strong indications of a greater openness and opportunity for participatory dialogue among scholars and practitioners in which transpersonalists can play a leadership role.

Notwithstanding the more positive and receptive climate regarding spirituality research, examination of the extant literature reveals a somewhat chaotic picture. In particular, there appears to be much confusion and disagreement regarding how to best define and measure spirituality (e.g., Helminiak, 2008; Hill et al., 2000; Hill & Pargament, 2003; Koenig, 2008; MacDonald, 2000a; de Jager Meezenbroek et al., 2012) and a general lack of clarity concerning what the empirical findings actually indicate regarding the relation and relevance of spirituality to health and well-being. For instance, while a preponderance of published studies suggest that spirituality has a positive association to health and a negative association to psychopathology (e.g., Koenig, 2012; Moreira-Almeida, Neto, & Koenig, 2006; Mueller, Plevak, & Rummans, 2001), there are compelling arguments and empirical findings indicating that the relation may actually be more complex and multidirectional in nature, depending on how spirituality is operationalized and assessed (e.g., MacDonald & Friedman, 2002; Thoresen & Harris, 2002).

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Adding to the morass are two other important issues that have been garnering increased attention. The first concerns the extent to which culture needs to be considered (a) in the development of theories of spirituality, (b) when constructing and/or validating measurement tools, and (c) when generalizing research findings beyond the confines of the culture from which samples were obtained (MacDonald et al., 2015; Thoresen, 1999). The second issue relates to human development. Specifically, the majority of theories, measures, and research have been devised with primary attention given to adulthood and adult development. Even though the study of spirituality in childhood and adolescence has a fairly long history, and both transpersonalists and non-transpersonalists seem to converge in their advocacy for its study (e.g., Hart, 2006; Hart & Ailoae, 2006-2007; Hunt, Gervais, Shearing-Johns, & Travis, 1992; Roehlkepartain, King, Wagener, & Benson, 2006; Shek, 2012; Stoyles, Stanford, Caputi, Keating, & Hyde, 2012), there is a paucity of adequate instruments that have a sound scientific support which are also appropriate for use with youth (Cotton, McGrady, & Rosenthal, 2010).[1]

Clearly, unless and until efforts are made to address these problems and controversies, it seems that there are good reasons to view the science of spirituality with some degree of skepticism and critical-mindedness. Fortunately, there are some indications that research is moving in the right direction. For example, the Expressions of Spirituality Inventory-Revised (ESI-R; MacDonald 2000b), a multidimensional measure of spirituality that was devised with transpersonal psychological theory in mind, has become the focus of cross-cultural investigations and the findings reported in the literature suggest that the test demonstrates satisfactory reliability and validity in different cultures and languages (MacDonald et al., 2015; Muhamad, Roodenburg, & Moore, 2014; Proyer & Laub, 2015).

The ESI-R is in many respects an ideal measure for use in research. It was designed to operationalize a five factor dimensional model that was found through rigorous analyses of existing measures of spirituality and related concepts and, as such, appears to be one of the most comprehensive instruments available (MacDonald, 2000a). Also, as argued by MacDonald et al. (2015), it has also been effectively utilized in a wide range of studies and has shown itself to be fruitful for use in health research and test validation studies. Finally, as a fairly short (30-items not including two validity items), measure of general spirituality (as opposed to a more specialized construct such as spiritual sensitivity or spiritual well-being), it is relatively easy to translate into other languages and is suited to investigate potential differences in the structure of spirituality as a function of age and developmental level. It is noteworthy that all published research using the ESI-R of which we are aware has involved adult-aged samples. To date, nothing has appeared in the literature reporting on its psychometric properties with child and adolescent samples.

The Present Study

With these considerations in mind, the purpose of our study was to evaluate the reliability and factorial validity of the ESI-R with a sample of Spanish-fluent Peruvian youth. Though there has been some research done on conceptualizations of spirituality among Hispanic populations (e.g., Campesino & Schwartz, 2006), virtually no information is available specific to Peruvian culture. To the best of our knowledge, the ESI-R has not yet been examined within the context of a South American culture.

In terms of research expectations, while there are many well known points of difference between adults and youth in terms of cognitive, emotional, and social development (e.g., Cotton et al., 2010), the absence of previous research made it difficult to establish firm a priori hypotheses regarding how spirituality and the ESI-R would behave differently relative to adult samples. However, we also did not have any clear reason to expect the ESI-R to perform poorly with a youth sample. Consequently, we hypothesized that the ESI-R would (a) demonstrate satisfactory interitem reliability and (b) produce satisfactory fit to a five factor model in a confirmatory factor analysis.

Method

Our approach to completing this study, especially the data analyses, was adopted from MacDonald et al. (2015), who used a complex analytic method that involved the testing of competing factor models using confirmatory factor analysis.

Participants

The data used in this investigation were originally obtained for a study aimed at examining the relation of spirituality to trauma and depression (Mendez, 2011). The original sample consisted of 370 child and adolescent males between the ages of 10 and 17, who lived in the Ica area of Peru. Although the original plan of Mendez (2011)

was to gather a sample with both males and females, it was impossible because of the school arrangements at time of data gathering. In particular, due to a large earthquake that occurred in 2007, many school buildings were destroyed. As a result, students were reassigned to one of the remaining schools but the schedule of attendance was modified such that male and female students attended school on different days.

Measure

Expressions of Spirituality Inventory–Revised (ESI-R; MacDonald, 2000b). The ESI-R is a 32-item paper and pencil self-report questionnaire that is designed to measure a five dimensional model of spirituality originally developed by MacDonald (2000a). The ESI-R uses a five point Likert response scale (0 = Strongly Disagree, 1 = Disagree, 2 = Neutral, 3 = Agree, 4 = Strongly Agree) for respondents to rate the extent to which they agree with the items as being applicable to themselves. Thirty of the items are equally divided across the five dimensions while the last two items are used as measures of face validity and response honesty, respectively. The five dimensions are Cognitive Orientation toward Spirituality (COS), Experiential/Phenomenological Dimension (EPD), Existential Well-Being (EWB), Paranormal Beliefs (PAR), and Religiousness (REL). Descriptions of these dimensions can be found in Table 1. Analysis of the readability and reading difficulty using Microsoft Word 2003, revealed that the ESI-R items produced a Flesch-Kincaid grade level of 6.2. The ESI-R has been shown to have adequate reliability and validity in a variety of different studies using different cultural samples (MacDonald et al., 2015; Muhamad et al., 2014; Proyer & Laub, 2015).

For this study, the translation of the ESI-R into Spanish, which is the official language of Peru, was done using a translation–back translation procedure (Guillemin, Bombardier, & Beaton, 1994; Skaff, Chesla, Mycue, & Fisher, 2002; Yu, Lee, & Woo, 2004). From the possible selection of translation processes (e.g., concept mapping, pile sorting), the authors chose the translators consensus method (Knudsen et al., 2000; Sireci & Berbero-Glu, 2000). Two experienced fully bilingual graduate students independently translated the ESI-R from English to Spanish. The two versions were compared and discrepancies addressed by consensus. The translated version of the ESI-R was then back-translated into English and compared with the original version. Differences were again discussed leading to another revision of the translation. The ESI-R items in both English and Spanish can be found in the Appendix.

Procedure

After obtaining approval from the University of Detroit Mercy Institutional Review Board, the first author traveled to Peru. She obtained the permission of school administrators to distribute the ESI-R and other questionnaires to students.

Results and Discussion

Prior to completing any of the main analyses, data were inspected for evidence of missing and out-of-range responses and problematic response patterns (e.g., response perseveration, random responding). As well, responses to ESI-R item 32 were examined as this item pertained to honesty of responding. Finally, age and ESI-R item responses were examined for outliers. Cases were deleted from the dataset if they had demonstrated problems with missing data, dishonest or problematic responding, or were an outlier on age. This resulted in the exclusion of 107 cases, leaving a final sample size of

Table 1. ESI Dimension names, abbreviations, and descriptions

Dimension Name	Abbreviation	Description
Cognitive Orientation toward Spirituality	COS	Beliefs, attitudes, and perceptions about the significance of spirituality and its relevance to daily life
Experiential/Phenomenological Dimension	EPD	Experiential expressions of spirituality (e.g., spiritual, religious, mystical experiences)
Existential Well-Being	EWB	Sense of meaning and purpose of existence; perception of self as capable of handling adversity
Paranormal Beliefs	PAR	Belief in paranormal phenomena (e.g., ESP, ghosts)
Religiousness	REL	Expression of spirituality through religious means (e.g., religious beliefs, attitudes, behavior)

Note. Descriptions based on MacDonald (2000a, 2000b)

263 male children. This sample had a mean age of 13.57 years (SD = 1.48) with ages ranging from 11 to 16.

Descriptive and reliability statistics. Descriptive statistics (means, standard deviations) and reliability statistics (mean corrected item-to-scale total correlations and inter-item consistency coefficients) are reported in Table 2. Contrary to the findings of previous research using adult samples (e.g., MacDonald et al., 2015), examination of the inter-item consistency coefficients for our sample reveals generally mediocre findings. While COS produced an acceptable level of reliability (Cronbach's alpha = .73), the remaining dimensions generated weak alpha coefficients, ranging from .56 for PAR to 69 for EPD.

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

ESI-R Dimension	Mean	SD	Mean CIST	Alpha
COS	15.62	3.99	.47	.73
EPD	9.29	4.45	.42	.69
EWB	16.03	3.78	.32	.57
PAR	9.34	4.31	.31	.56
REL	14.05	4.18	.35	.61
Note. N = 263. CIST = Corrected Item-to-Scale Total correlation. Alpha = Cronbach's alpha.				

Inter-correlations of ESI-R dimensions and associations with age. Table 3 provides the product-moment inter-correlations between the ESI-R dimension scores. It also shows the correlations between the ESI-R dimensions with age. With respect to the intercorrelations, all but two of the correlations emerged significant. In order of strength of relation, significant positive correlations include COS and REL (r = .58, p<.001), EPD and PAR (r = .38, p<.001), EPD and REL (r = .38, p<.001). COS and EPD (r = .35, p<.001), REL and PAR (r = .19, p<.01), and COS and PAR (r = .14, p<. 05). Significant negative correlations were found between EWB and EPD (r = -.33, p<.001), and EWB and PAR (r = -.29, p<.001). In comparison to findings reported in MacDonald et al. (2015) involving eight different cultural samples, the general pattern of associations seen with our youth sample is largely consistent; COS and REL shows the strongest degree of association, and EPD-PAR, COS-EPD and EPD-REL demonstrate a fairly high degree of relatedness. However, in contrast to other samples where the correlation of EWB to the other dimensions has tended to be weak and mostly non-significant, in the present study we have observed moderately sized negative correlations of EWB with both EPD and PAR.

Looking at the correlations with age, none came out significant with our sample. This is not entirely surprising since the age range of our sample was quite restricted. Nevertheless, these findings are not out of line with what MacDonald et al. (2015) reported for other samples where the strength of association between age and the ESI-R dimensions tended to be small for most cultures they studied.

Confirmatory Factor Analyses. In order to evaluate the factorial validity of the ESI-R, we completed a maximum likelihood confirmatory factor analysis (CFA)

Table 3. Inter-correlations of ESI-R Dimensions and correlations with age

	COS	EPD	EWB	PAR	Age
COS	---				.06
EPD	.35***	---			.00
EWB	-.04	-.33***	---		-.01
PAR	.14*	.38***	-.29***	---	.12
REL	.58***	.38***	-.06	.19**	-.06
Note. *p<.05, **p<.01, ***p<.001					

using Analysis of Moment Structures software (AMOS version 21) to assess the goodness of fit of MacDonald's (2000a, 2000b) five factor model. In specifying the parameters of the model, we assigned items for each ESI-R dimension to latent constructs representing each of the dimensions. We also set up the model so that all dimensions were correlated. Since MacDonald et al. (2015) provide a strong rationale for simultaneously testing alternative competing models, we decided to follow their data analytic strategy and run a CFA testing a correlated four factor model. In particular, given the high degree of correlatedness between COS and REL, we combined these two dimensions so that their items were assigned to a shared latent trait. The remaining ESI-R dimensions were kept the same as in the correlated five factor model. Standardized regression weights (i.e., factor loadings), factor correlations, and overall model fit statistics for the four and five factor models can be found in Table 4.

For both models, all items save PAR item 19 produced statistically significant loadings on their assigned factors. Inspection of estimated factor

Table 4. Confirmatory Factor Analysis: Standardized regression weights and fit statistics for both models tested

	Correlated Four Factor Model				Correlated Five Factor Model				
ESI-R Items	**COS/REL**	**EPD**	**EWB**	**PAR**	**COS**	**EPD**	**EWB**	**PAR**	**REL**
COS1	.45	---	---	---	.49	---	---	---	---
COS6	.62	---	---	---	.65	---	---	---	---
COS11	.49	---	---	---	.49	---	---	---	---
COS16	.45	---	---	---	.45	---	---	---	---
COS21	.62	---	---	---	.66	---	---	---	---
COS26	.66	---	---	---	.65	---	---	---	---
EPD2	---	.39	---	---	---	.39	---	---	---
EPD7	---	.47	---	---	---	.48	---	---	---
EPD12	---	.57	---	---	---	.57	---	---	---
EPD17	---	.61	---	---	---	.62	---	---	---
EPD22	---	.44	---	---	---	.44	---	---	---
EPD27	---	.62	---	---	---	.62	---	---	---
EWB3	---	---	.36	---	---	---	.36	---	---
EWB8	---	---	.33	---	---	---	.33	---	---
EWB13	---	---	.40	---	---	---	.40	---	---
EWB18	---	---	.69	---	---	---	.69	---	---
EWB23	---	---	.47	---	---	---	.47	---	---
EWB28	---	---	.37	---	---	---	.37	---	---
PAR4	---	---	---	.41	---	---	---	.41	---
PAR9	---	---	---	.44	---	---	---	.44	---
PAR14	---	---	---	.51	---	---	---	.51	---
PAR19	---	---	---	-.01	---	---	---	-.01	---
PAR24	---	---	---	.64	---	---	---	.64	---
PAR29	---	---	---	.57	---	---	---	.57	---
REL5	.47	---	---	---	---	---	---	---	.51
REL10	.23	---	---	---	---	---	---	---	.21
REL15	.46	---	---	---	---	---	---	---	.50
REL20	.46	---	---	---	---	---	---	---	.53
REL25	.46	---	---	---	---	---	---	---	.48
REL30	.58	---	---	---	---	---	---	---	.62
Factor Correlations									
EPD	.43**				.40**				
EWB	-.05	-.53**			-.04	-.53**			
PAR	.22*	.66**	-.56**		.23*	.66**	-.56***		
REL	---	---	---	---	.81**	.40**	-.04	.17	
Fit Indices	$\chi2$ = 738.10, df = 399, p<.001; $\chi2$ / df = 1.85 GFI = .84, TLI = .74, CFI = .76 RMSEA = .057, SRMR = .078				$\chi2$ = 721.27, df = 395, p<.001; $\chi2$ / df = 1.83 GFI = .85, TLI = .75, CFI = .77 RMSEA = .056, SRMR = .079				

Note. For ESI-R Items, acronym refers to dimension and number refers to item number on test. For both models, all regression weights (factor loadings) significant at p<.05 or lower except PAR item 19 (p>.05). Though not reported in the table, all item error variances significant at p = .05 or lower. For factor correlations, *p<.05, **p<.01.

correlations for the four factor model reveals significant associations between all dimensions save EWB and the combined COS/REL factor. Akin to what we observed when correlating the ESI-R dimension scores, estimated correlations between EWB and both EPD and PAR were negative and significant but of higher magnitude (r = -.53 and -.56, p<.001, respectively). For the five factor model, significant estimated correlations were obtained between all dimensions save COS-EWB, REL-EWB, and REL-PAR. Magnitudes of estimated correlations were generally higher than what was observed when using the ESI-R dimension scores (e.g., estimated correlation between COS-REL = .81, p<.001). If we only considered the loadings and factor correlations, the evidence suggests that both the four and five factor models appear to be reasonably good.

Examination of overall fit indices, however, indicates that both models obtained mixed support at best. For example, for both models, chi-square emerged significant (for evidence of good fit, chi-square should be non-significant), and a variety of indices including the Goodness-of-Fit Index (GFI), the Tucker-Lewis Index (TLI), and the Comparative Fit Index (CFI) all produced values well below accepted levels (i.e., below .95). Alternatively, for the four and five factor model, the normed chi-square (i.e., chi-square/df) is below 2.0, and the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Residual values are both below .08. These findings are reflective of adequate model fit.

Given the findings described thus far, it appears as though both models appear equally tenable (or equally problematic depending on how one chooses to view the model fix indices). Closer inspection of the results, however, does provide some indication of which model shows better fit. For instance, informal comparison of the CFA results across the two models suggests that item loadings are somewhat higher for most COS and REL items and some EPD items in the five factor model. Loadings for the EWB and PAR items are identical. Also, fit indices seem to be slightly better for the five factor model. Most importantly, because the two models are nested (i.e., hierarchically related), it is possible to examine the difference in chi-square and to evaluate the statistical significance of that difference using the difference in degrees of freedom (df). If the difference chi-square is significant, then the model with the lower chi-square value may be seen as demonstrating significantly better fit. For our four factor model, the chi-square is 738.10 and the df is 399. For the five factor model, the chi-square is 721.27 and the df is 395. When we do the math, it appears that the five factor model comes out superior ($\Delta\chi^2$ = 16.83, Δdf= 4, p<.01). Our results are generally consistent with what MacDonald et al. (2015) found in their confirmatory analyses of the ESI-R structure. In particular, with the exception of the non-significant loading for PAR item 19 and some differences in the factor correlations, our findings are in line with the CFA results they obtained with cultural samples that completed translated versions of the test (e.g., Polish, Slovakian, Japanese, and Korean).

Despite the relatively stronger support for the five factor model and evidence indicating that the ESI-R exhibits fairly good structural invariance with our sample, our findings still indicate that this model does not exhibit excellent fit. As a result, we examined modification indices (MI)[2] to identify areas of mis-fit. Based upon these statistics, there were indications that the model would improve if some items were either re-assigned to different dimensions or were permitted to load on more than one dimension. Specifically, MIs suggested that model chi-square would improve if (a) REL item 10 (which in English is "I feel a sense of closeness to a higher power") was permitted to crossload on EPD, PAR, and EWB, and (b) EPD item 22 (i.e., "I have had an experience in which all things seemed divine") was permitted to cross load on REL and COS. When considering the content for the REL and EPD item, such a change in the loading assignments makes some rational sense (e.g., the REL item can be seen as reflecting a type of spiritual experience and the content of the experience could be argued as having a non-ordinary or paranormal quality to it; the EPD item includes the term "divine" that has fairly obvious religious connotations).

In addition to evidence of mis-specified item assignments, significant MIs were obtained indicating that model fit would be enhanced if three pairs of error variances were permitted to correlate, specifically the errors for EPD item 27 and EWB item 13, EPD item 17 and REL item 10, and COS item 1 and COS item 6. Typically, correlated errors suggest that there is some feature common to the items which is responsible for them exhibiting higher score covariance than would be expected given the theory-driven content of the item alone. Often, this reflects the measurement of an unintended secondary construct associated with use of similar terms or phraseology. Examination of the content of the implicated items suggests that EPD 17 (i.e., "I have had

an experience in which I seemed to merge with a power or force greater than myself") and REL 10 both concern experiences that involve a higher force or power, while, COS 1 ("Spirituality is an important part of who I am as a person") and COS 6 ("Spirituality is an essential part of human existence") both make reference to spirituality having a high degree of significance for life. We could not identify any such content commonalities for EPD item 27 ("I have had an experience in which I seemed to go beyond my normal everyday sense of self") and EWB item 13 ("Much of what I do in life seems strained").

In light of these results, we decided to run a CFA with a modified five factor model where (a) PAR item 19 was removed, (b) REL item 10 and EPD item 22 were allowed to crossload, and (c) the error variances for COS item 1 and COS item 6, and EPD 17 and REL 10 were correlated. Though the resulting indices showed an improvement (χ^2 = 564.04, df = 361, p<.001; χ^2/df = 1.56; GFI = .88; TLI = .84; CFI = .86; RMSEA = .046; SRMR = .061), the modified model did not produce strong evidence of satisfactory fit.

Exploratory Analyses

When taking the findings of our reliability analyses and CFAs into account, it seems reasonable to argue that support for the ESI-R on both conceptual and measurement grounds is less than stellar. The weak reliability of the ESI-R dimensions is particularly troublesome since reliability places a constraint on the validity of a test; as a general rule, a test cannot be more valid than it is reliable. In our case, the low reliabilities may indicate problems with item comprehension which could have resulted in our youth participants responding in a less consistent manner. As well, considering that our sample differs both culturally and linguistically from the samples on which the ESI-R and its associated factor model was developed, it may be that the lower reliabilities reflect fundamental differences in the conceptual structure of spirituality itself (i.e., for Peruvian youths, spirituality may be organized in a manner that differs from the factor models we tested). Consequently, we thought it worthwhile to run some exploratory principal axis factor analyses so as to get a more direct sense of how spirituality may be factorially structured within our data.

Our approach to completing the exploratory factor analyses (EFA) involved first using principal axis factor to extract factors using statistical extraction rule (i.e., eigenvalue ≥ 1) and then examining initial eigenvalues both numerically and graphically via a scree plot to ascertain the number of statistically substantive factors that would be worth further investigation. Doing this led us to conclude that there were three factors worthy of extraction and rotation. Thereafter, we ran a second principal axis EFA. However, this time we set the analysis to extract three factors. Following extraction, the factors were rotated using both orthogonal (varimax) and oblique (promax) rotational procedures.[3] This was done to facilitate interpretation of the factors and to get information on the degree of factor correlatedness. The orthogonal and obliquely rotated factor loading matrices can be seen in Table 5.

Unlike CFA where there is a significance test for factor loadings, no such test exists in EFA. Instead, the convention is to look at the magnitude of the loading coefficients and to use a cut-off value as the basis for deciding the factor to which an item is assigned. In our case, we decided to use a loading value of .30 as our minimum value to assign items to factors. With this in mind, all loadings .30 or higher in Table 5 are given in bolded text so as to make them more visually salient.

Looking first at the varimax rotated factor loading matrix, examination of the item loadings reveals that 26 of the 30 ESI-R items produced at least one high loading. EPD item 2, EWB item 8, EWB item 28, and PAR item 19 did not generate loadings of .30 or higher on any of the three factors. The first factor houses elevated loadings from all six COS items, five of the six REL items (all but REL item 10) and one EPD item (item 22). The second factor contains strong loadings from four of the six EPD items, five of the six PAR items (all but PAR item 19), and one REL item (item 10). The third factor has high loadings from four of the six EWB items.

Turning to the pattern matrix from the promax rotation, the same configuration of high item loadings are found across the three factors, albeit with slight changes in the values of some loadings. The structure matrix, which provides information on the shared variance between items and factors, reveals a similar but not identical array of high loadings. For the first factor, loadings of .30 or greater were obtained for all COS items, three EPD items, and five of the six REL items. Factor two holds high positive loadings from all six EPD items, five of six PAR items, one COS item (COS item 11), and one REL item. It also has two high negative loadings from EWB items 18 and 23. Finally, the third factor houses elevated loadings from five of the six EWB items and one negative loading from EPD item 27. As

Table 5. Exploratory Principal Axis Factor Analysis: Loading matrices from orthogonal and oblique rotated solutions for three-factor solutions for ESI-R

				Promax Rotated Solution					
	Varimax Rotated Solution			Pattern Matrix			Structure Matrix		
	1	2	3	1	2	3	1	2	3
COS1	**.43**	.02	.07	**.44**	-.03	.07	**.43**	.07	.06
COS6	**.61**	.07	.08	**.61**	.01	.10	**.61**	.15	.07
COS11	**.44**	.27	.09	**.41**	.26	.15	**.47**	**.32**	.04
COS16	**.45**	.09	-.13	**.46**	.01	-.12	**.47**	.19	-.14
COS21	**.60**	.15	.13	**.59**	.11	.17	**.61**	.22	.10
COS26	**.69**	.02	-.14	**.71**	-.10	-.14	**.69**	.16	-.13
EPD2	.28	.29	.00	.24	.28	.06	**.31**	**.32**	-.05
EPD7	.09	**.44**	-.05	.01	**.46**	.04	.14	**.45**	-.13
EPD12	.06	**.53**	-.18	-.03	**.53**	-.09	.13	**.56**	-.28
EPD17	.10	**.61**	-.14	.00	**.62**	-.03	.18	**.63**	-.25
EPD22	**.41**	.21	-.15	**.39**	.14	-.12	**.44**	**.30**	-.19
EPD27	.25	**.43**	-.23	.20	**.38**	-.16	**.31**	**.50**	**-.31**
EWB3	-.03	-.10	**.31**	-.03	-.03	**.31**	-.05	-.15	**.33**
EWB8	.04	-.14	.28	.06	-.10	.27	.02	-.18	**.30**
EWB13	.02	-.15	**.35**	.04	-.09	**.34**	-.01	-.20	**.37**
EWB18	.01	-.16	**.82**	.00	.00	**.84**	-.03	**-.30**	**.84**
EWB23	-.06	-.25	**.33**	-.03	-.20	**.30**	-.10	**-.31**	**.37**
EWB28	.06	-.20	.26	.08	-.17	.24	.03	-.23	.29
PAR4	-.01	**.39**	-.03	-.08	**.42**	.04	.04	**.38**	-.11
PAR9	.07	**.33**	-.19	.02	**.31**	-.13	.12	**.36**	-.25
PAR14	.02	**.42**	-.21	-.04	**.41**	-.14	.08	**.45**	-.28
PAR19	-.10	.12	.19	-.13	.19	.23	-.09	.07	.16
PAR24	-.02	**.54**	-.18	-.11	**.56**	-.09	.06	**.56**	-.28
PAR29	.09	**.50**	-.12	.01	**.51**	-.03	.15	**.52**	-.21
REL5	**.50**	-.11	-.06	**.54**	-.20	-.08	**.48**	-.02	-.03
REL10	.11	**.66**	-.03	-.00	**.69**	.09	.19	**.66**	-.16
REL15	**.48**	-.03	-.03	**.50**	-.10	-.04	**.47**	.06	-.02
REL20	**.43**	.15	-.10	**.42**	.09	-.08	**.44**	.23	-.12
REL25	**.49**	-.07	-.02	**.52**	-.14	-.03	**.48**	.02	.00
REL30	**.56**	.11	.07	**.55**	.06	.10	**.57**	.19	.05
Eigenvalues/ % Variance	3.38 / 11.25	2.93 / 9.77	1.53 / 5.10						

Note. Loadings .30 or greater are in bold. For Promax rotation, factor correlations were as follows: factor 1-factor 2 r= .29; factor 1-factor 3 r= -.04; factor 2-factor 3 r= -.36

per the promax rotation, factor correlations were found to be as follows: factor 1 and factor 2, r = .29; factor 1 and factor 3, r = -.04; factor 2 and factor 3, r = -.36.

Considering the configuration of loadings across the three factors for both rotated solutions, it seems reasonable to label the first factor "Spiritual and Religious Beliefs and Behaviors" as this factor is primarily comprised of loadings from items from the COS and REL dimensions. Since factor two is made up almost exclusively of high loadings from EPD and PAR items, it appears to be best labeled "Non-ordinary Beliefs and Experiences." Factor three, with its main constituent loadings coming from EWB items, seems to reflect a factor that we elected to call "Existential Well-Being."

The results of the EFAs suggest that with our Peruvian youth sample, spirituality appears to be conform to a three dimensional structure rather than a five dimensional one. Though on the surface this may appear to present a challenge to MacDonald's (2000a, 2000b) factor model, in actuality, these findings are not at odds with his model and empirical work. In particular, as a part of his initial development of the model and the original 98-item ESI, MacDonald (2000b) used the five ESI dimension scores in a second order factor analysis and obtained a two factor solution wherein COS and REL loaded highly on one factor, and EPD and PAR loaded highly on a second factor. EWB was not found to load strongly on either factor. However, since EWB was observed by MacDonald to be uncorrelated with the other four dimensions and since there were no other variables in the analysis that could be used to statistically define a third factor (a factor cannot be comprised of a high loading from only one variable), the absence of a third "Existential Well-Being" factor in his analysis made sense. He labeled these two higher-order factors "Cognitive and Behavioral Orientation towards Spirituality and Religion" and "Non-ordinary Experiences and Beliefs," respectively.

As such, though we cannot completely rule out the possibility that the factor structure of spirituality is different with Spanish-speaking Peruvian youth, two tenable alternate interpretations of our EFA results can also be offered. First, spirituality may simply be a less differentiated and complex domain of functioning and experience for children as compared to adults. This interpretation has some merit given what is known about cognitive development; 11 to 16 year old children and adolescents are just beginning to show signs of higher-order reasoning capabilities and may not be able to effectively

apply these newly emergent talents to making abstract distinctions between components of spirituality (Cotton et al., 2010). Second, it may be that semantic distinctions between aspects of spirituality as found in the English language may not be the same as those made in Spanish within a Peruvian cultural context. Ostensibly, more research is needed to test each of these interpretations.

Development of a Shortened and Simplified Measure. Based upon the EFA findings, we thought that it may be worthwhile to construct a shortened version of the ESI-R that could be used in future research with youth samples. For the initial step, we examined the rotated factor matrices and aimed to select three items from each of the dimensions based their loadings. We wanted to include three items from each dimension as that would constitute sufficient content sampling to permit for adequate definitions of factors in statistical analyses. In factor analysis, factors really need to be comprised of at least three variables in order to represent something more than the mere correlation between two variables.

In order to be selected, an item needed to produce its highest loading on the expected factor while not generating a strong loading on any other factor. This needed to be seen in both rotated (i.e., both varimax and promax) solutions. This resulted in the selection of COS items 6, 21 and 26, REL items 5, 25, and 30, EPD items 7, 12, and 17, and PAR items 14, 24, and 29. Only two EWB items met our selection criteria (i.e., items 3 and 13). Based on this, we decided to exclude EWB from further development. There are other reasons, however, why EWB was a candidate for exclusion. These reasons include (a) MacDonald (2000b) did not find a higher order EWB factor in his original study, (b) there have been questions raised regarding the appropriateness of incorporating any well-being concepts within measures of spirituality (including the ESI-R) as it results in a confounding of the two constructs which undermines the usability of spirituality measures in health research (Koenig, 2008; Migdal & MacDonald, 2013), and (c) other than one PAR item, the EWB items are the only ones on the ESI-R which are reverse scored and use more negative phrasing. Not only is it more challenging to effectively translate negatively worded items from one language to another, research has suggested that the inclusion of such items on a test which otherwise uses positively phrased items runs the risk compromising the quality of measurement (e.g., Roszkowski & Soven, 2010). Moreover, it is been found that younger test-takers tend to have difficulties with negatively worded items (e.g., Benson & Hocevar, 1985).

To ensure that the two factor structure remained stable with this smaller pool of items, we used them in an exploratory principal axis factor analysis. The orthogonal and obliquely rotated factor matrices are presented in Table 6.

Table 6. Exploratory Principal Axis Factor Analysis: Loading matrices from orthogonal and oblique rotated solutions for two-factor solutions for 12 ESI-R items selected for use in a short form of the test

			Promax Rotation			
	Varimax Rotation		Pattern		Structure	
	1	2	1	2	1	2
COS6	**.65**	.04	**.65**	-.01	**.65**	.09
COS21	**.59**	.11	**.59**	.06	**.60**	.15
COS26	**.67**	.08	**.68**	.02	**.68**	.13
EPD7	.06	**.38**	.03	**.38**	.09	**.39**
EPD12	.01	**.58**	-.03	**.59**	.06	**.58**
EPD17	.06	**.64**	.02	**.64**	.12	**.64**
PAR14	.01	**.48**	-.02	**.48**	.05	**.48**
PAR24	-.03	**.57**	-.07	**.58**	.02	**.57**
PAR29	.09	**.54**	.05	**.54**	.13	**.55**
REL5	**.47**	-.07	**.48**	-.11	**.46**	-.04
REL25	**.47**	-.01	**.47**	-.05	**.46**	.03
REL30	**.55**	.12	**.54**	.07	**.56**	.16
Eigenvalues/ % Variance	1.98/ 16.51	1.78/ 14.86				

Note. Loadings .30 or greater are in bold. For Promax rotation, correlation between factor 1 and factor 2= .16

As can be seen in the table, all items produced elevated loadings on their intended factors and there are no high cross-loadings. Based upon the oblique rotation, the factor correlation was found to be r = .16.

To provide a more rigorous evaluation of this two factor model, we completed a maximum likelihood CFA. In this model, the factors were permitted to inter-correlate. The standardized regression weights and model fit indices can be seen in Table 7.

The results provide very good support for the model. All items load highly and significantly on their assigned factors. As importantly, with the exception of chi-square which came out significant, all other model fit indices reflect values indicative of satisfactory model fit. The estimated factor correlation (r = .16) was not significant.

Table 7. CFA results with revised ESI-R dimensions testing two factor model: Standardized regression weights and model fit statistics

ESI-R Item (English Version)	COS/ REL	EPD/ PAR
COS6–Spirituality is an essential part of who I am as a person	.65	---
COS21–My life has benefited from my spirituality	.62	---
COS26–I believe that attention to one's spiritual growth is important	.67	---
REL5–I believe that going to religious services is important	.45	---
REL 25–I practice some form of prayer	.46	---
REL30–I believe that God or a higher power is responsible for my existence	.55	---
EPD7–I have had an experience in which I seemed to transcend space and time	---	.39
EPD12–I have had a mystical experience	---	.59
EPD17–I have had an experience in which I seemed to go beyond my normal everyday sense of self	---	.64
PAR14–It is possible to predict the future	---	.48
PAR24–I think psychokinesis, or moving objects with one's mind, is possible	---	.55
PAR29–It is possible to leave your body	---	.55
Fit Indices		
$\chi 2$ = 71.64, df= 53, p= .045; $\chi 2$ / df= 1.35 GFI = .96, TLI = .95, CFI = .96 RMSEA = .037, SRMR = .048		
Note. All factor loadings and error variances significant at p =.01 or lower. Estimated factor correlation= .16, p>.05		

Table 8. Descriptive and reliability statistics for newly created short form ESI-R Dimensions

ESI-R Dimension	Mean	SD	Mean CIST	Alpha
Spiritual and Religious Beliefs and Behaviors	15.48	4.32	.48	.73
Non-ordinary Beliefs and Experiences	8.25	4.62	.44	.70
Note. N = 263. CIST = Corrected Item-to-Scale Total correlation. Alpha = Cronbach's alpha.				

In consideration of these findings, we decided to treat the two factors as two six-item subscales. Subscale scores were computed by simply summing the relevant item responses. Descriptive and reliability statistics for the newly constructed subscales can be found in Table 8. Though still not ideal, the internal consistency coefficients for both subscales are .70 or higher. These are adequate for the use of the subscales in research.

Conclusion

This study represents one of the most demanding evaluations of the ESI-R done to date; not only did we examine its factorial validity and reliability in a Peruvian cultural context for the first time, but we did so with a youth sample. To the best of our knowledge, this investigation is the first to examine the ESI-R with non-adults.

Taken in their totality, our results provide some support for MacDonald's (2000a, 2000b) factor model. The five factor model was found to demonstrate superior fit relative to a competing four factor model and it did so in a manner that is generally consistent to what has been found in other cross-cultural and cross-linguistic research (MacDonald et al., 2015; Muhamad et al., 2014; Proyer & Laub, 2015). On the basis of these findings alone, there is sufficient justification for further research on the ESI-R in Peru.

Nevertheless, the confirmatory factor results did not provide strong evidence of good model fit, and four of the five ESI-R dimensions were found to lack adequate reliability. Accordingly, we undertook the process of examining the internal structure of the ESI-R items and uncovered a plausible three factor model that mostly corroborated MacDonald's (2000b) second order factor analytic findings when using ESI dimension scores. In response, we devised and tested a simplified correlated two factor model that appears to fit the data well, and we created a shortened 12-item version of the ESI-R that has acceptable reliability and good initial factorial validity.

While we consider our results to be reasonably robust, this study suffers from a few shortcomings and limitations which need to be kept in mind. First, our sample only consisted of male youth. This was an unfortunate outcome that arose due to the timing of our data collection efforts (i.e., as noted in our method section, school attendance was gender stratified and the first author

was only able to distribute the ESI-R on days that only males were at school). Though available research suggests that the ESI-R factor structure holds up across genders (e.g., MacDonald et al., 2015), there is ample evidence of gender differences in spirituality and religiousness (e.g., Francis, 1997; Maselko & Kubzansky, 2006) that, in turn, provide reason to be skeptical of claims (e.g., Brown, Chen, Gehlert, & Piedmont, 2013) that spirituality holds precisely the same meaning for males and females. Future research with Peruvian samples should be done to determine if our findings are replicable with females.

Second, though we followed accepted practices with respect to the basic translation of the ESI-R into Spanish, it may be argued that we fell short in the piloting of the translated measure prior to data collection to ensure that the instrument was adequately adapted for use in a Peruvian cultural context (e.g., Borsa, Damasio, & Bandeira, 2012; Hambleton, 2005). While Spanish is a widely used language throughout the world, idiosyncrasies in language conventions specific to a given culture (and even a geographic region within a culture) may result in important differences between the language as used in different cultures and nation states.

Third, even though readability analyses we completed suggested that the ESI-R items should be comprehendible at the sixth grade reading level, the fact of the matter is that the content of many of the ESI-R items include some fairly complex language and terms. By extension, arguments can be raised regarding the extent to which our youth participants were able to accurately comprehend test items in the manner intended. Though the age range of the children in our sample would place them by North American educational standards in grades 6 through 11, we have no information regarding the level of educational attainment and academic achievement of our participants to establish with confidence that they had reading comprehension skills equivalent to a sixth grader in the United States or Canada. In hindsight, it would have been a good idea for us to include a standardized measure of reading skill development in our study.

Fourth, our study limited itself to two aspects of test evaluation, reliability and factorial validity. The lack of inclusion of additional measures to assess convergent and/or criterion validity limits the informativeness of this study. It is highly recommended that future research include multiple measures of spiritual constructs along with theoretically important criterion variables (e.g., well-being, resiliency, depression, self-esteem).

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Notes

1. We were able to identify some measures that were created expressly for the assessment of spirituality with children and adolescents. These include the Spiritual Sensitivity Scale for Children (Stoyles et al., 2012), the Youth Spirituality Scale (Sifers, Warren, & Jackson, 2012), the Religiosity and Spirituality Scale for Youth (Hernandez, 2011). However, none of these instruments have been the focus of rigorous psychometric evaluation, particularly with attention given to their internal structure, construct validity, and appropriateness for use across cultures.
2. In case the reader is not familiar, a modification index (MI) is "a univariate Lagrange multiplier which … is expressed as a chi-square statistic with a single degree of freedom" (Kline, 2011, pp. 216–217), that provides information on how a change in a parameter in a model may reduce the model chi-square (i.e., result in improved model fit). MIs should not be used to make modifications to a model with regard given only to statistical improvement. Rather, their use for model re-specification should be fundamentally informed by theory.
3. In traditional exploratory factor analysis, factor rotation is done when two or more factors are extracted. The "rotation" of the factors is done to facilitate cleaner loadings of variables onto the respective factors in a way so as to get what is called "simple structure." Typically, the rotation will maximize the loading of a variable on one factor and minimize its loadings on other factors. Orthogonal factor rotation is the most commonly used form of rotation because it involves rotating the factors so as to keep the factors uncorrelated. Varimax rotation is a form of orthogonal rotation where the amount of variance accounted for by a factor is maximized for each factor in the order in which the factors were extracted ("varimax" is short for "variance maximized"). In general, factors are extracted in order of statistical importance; the first factor accounts for the most variance, the second factor for the second most amount of variance, and so forth. When using varimax rotation, the procedure maximizes the amount of variance that the first factor accounts for. Thereafter, that variance is removed and the procedure then tries to maximize the amount of variance accounted for by the second factor of all of the variance that remains after the first factor. This continues until all factors are rotated. The factor loading coefficients in an orthogonally rotated factor solution can be interpreted as reflecting the amount of variance of the item that is shared with the factor (i.e., it may be seen as the correlation of the item to the factor).

   Oblique rotation is less commonly used, in part

because it is more complex. Without going into too much detail, suffice it to say that with oblique rotation, factors are permitted to correlate. In so doing this, oblique rotation provides information on how each factor uniquely accounts for the variance of an item (this is what is reported in the "pattern" matrix; these loadings are akin to regression weights) and, at the same time, the extent to which items correlate with the factors (this is what is provided in the structure matrix; these loadings reflect the shared variance of factors and variables). The interested reader is encouraged to consult a good multivariate statistics text to learn more (e.g., Tabachnick & Fidell, 2013).

Appendix
ESI–R Items in English (E) and Spanish (S)

1E. Spirituality is an important part of who I am as a person. (COS)
1S. La espiritualidad es una parte importante de quien yo soy como persona.
2E. I have had an experience in which I seemed to be deeply connected to everything. (EPD)
2S. Yo he tenido una experiencia en la cual yo parecia estar profudamente conectado(a) con todo.
3E. It always seems that I am doing things wrong. (EWB; Reverse score)
3S. Siempre parece que estoy haciendo las cosas mal.
4E. It is possible to communicate with the dead. (PAR)
4S. Es posible comunicare con los muertos.
5E. I believe that going to religious services is important. (REL)
5S. Yo creo que ir a servicios religiosos es importante.
6E. Spirituality is an essential part of human existence. (COS)
6S. La espiritualidad es una parte esencial de la existencia humana.
7E. I have had an experience in which I seemed to transcend space and time. (EPD)
7S. Yo he tenido una experiencia en la cual yo parecía trascender el espacio y el tiempo.
8E. I am not comfortable with myself. (EWB; Reverse score)
8S. Yo no me siento comodo conmigo mismo.
9E. I believe witchcraft is real. (PAR)
9S. Yo creo que la brujería es real.
10E. I feel a sense of closeness to a higher power. (REL)
10S. Yo siento una sensación de cercania con un poder mas alto.
11E. I am more aware of my lifestyle choices because of my spirituality. (COS)
11S. Yo soy mas consciente de mis decisiones acerca de mi estilo de vida gracias a mi espiritualidad.
12E. I have had a mystical experience. (EPD)
12S. Yo he tenido experiencia místicas.
13E. Much of what I do in life seems strained. (EWB; Reverse score)
13S. Mucho de lo que hago es la vida parece estresante.
14E. It is possible to predict the future. (PAR)
14S. Es posible predecir el futuro.
15E. I see myself as a religiously oriented person. (REL)
15S. Yo me veo a mi mismo(a) con una persona orientada a la religion.
16E. I try to consider all elements of a problem, including its spiritual aspects, before I make a decision. (COS)
16S. Yo trato de considerar todos los elementos de un problema, incluyendo aspectos espirituales, antes de tomar una decision.
17E. I have had an experience in which I seemed to merge with a power or force greater than myself. (EPD)
17S. Yo he tenido una experiencia en la que yo parecía unirme con un poder o fuerza mas poderosa que yo mismo(a).
18E. My life is often troublesome. (EWB; Reverse score)
18S. Mi vida es frecuentemente problematica.
19E. I do not believe in spirits or ghosts. (PAR; Reverse score)
19S. Yo no creo en espiritus o fantasmas.
20E. I see God or a Higher Power present in all the things I do. (REL)
20S. Yo veo a Dios o a un Poder Mas Alto presente en todas las cosas que hago.
21E. My life has benefited from my spirituality. (COS)
21S. Mi vida se ha beneficiado de mi espiritualidad.
22E. I have had an experience in which all things seemed divine. (EPD)
22S. Yo he tenido una experiencia en la que todo parecía divino.
23E. I often feel tense. (EWB; Reverse score)
23S. Yo me siento tenso(a) frecuentemente.
24E. I think psychokinesis, or moving objects with one's mind, is possible. (PAR)
24S. Yo creo que la psicoquinesia, o mover objetos con la

mente de uno, es posible.
25E. I practice some form of prayer. (REL)
25S. Yo practico alguna tipo de oración.
26E. I believe that attention to one's spiritual growth is important. (COS)
26S. Yo creo que prestar atención al crecimiento espiritual de uno, es importante.
27E. I have had an experience in which I seemed to go beyond my normal everyday sense of self. (COS)
27S. Yo he tenido una experiencia en la que yo parecía ir mas allá de mi sentido normal cotidiano de mi mismo.
28E. I am an unhappy person. (EWB; Reverse score)
28S. Yo soy una persona infeliz.
29E. It is possible to leave your body. (PAR)
29S. Es possible salir de tu cuerpo.
30E. I believe that God or a Higher Power is responsible for my existence. (REL)
30S. Yo creo que Dios o un Poder Mas Alto es responsable de mi existencia.
31E. This questionnaire appears to be measuring spirituality. (Face Validity)
31S. Este cuestionario parece estar midiendo la espiritualidad.
32E. I responded to all statements honestly. (Response Validity)
32S. Yo he respondido a todas las oraciones honestamente.

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