

Spiritual Intelligence of Grade Three Senior High School Students in Iran: A Factorial and Theoretical Approach

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Abstract This study explored the reliability and validity of the Spiritual Intelligence Self-Report Inventory (SISRI) designed by King (2008) when administered to students enrolled secondary education in Mashhad, Iran. To this end, the Persian version of the SISRI was administered to 344 female grade three senior high school (G3SHS) students majoring in humanities, sciences, and mathematics. The subjection of the collected data to Principal Axis Factoring and rotating the extracted factors via Varimax with Kaiser Normalization. We found seven latent variables whose initial eigenvalues were one and higher, i.e., Purposeful, Transcending, Contemplative, Meta-conscious, Theo-meditative, Theorizing, and Visionary. The inventory itself along with its Purposeful, Transcending and Meta-conscious factors was found to be reliable. Since Contemplative, Theo-meditative, Theorizing and Visionary factors consisted of just one statement, their reliability could not be estimated. These four factors did, however, correlate significantly not only with each other but also with Purposeful, Transcending and Meta-conscious dimension of spiritual intelligence. The results are discussed in terms of schema theory and suggestions are made for future research.

Keywords Spirituality, Religiosity, Domains, Spiritual Intelligence Self-Report Inventory (SISRI)

1. Introduction

Zohar and Marshall (2000) defined spiritual intelligence (SQ) as the ability to access and use one's experience of higher meaning and value. The application of terms such as "spirit", "psych" and "higher meaning" was formerly rejected by many empiricists as "nothing more than irrational nonsense founded on a fear of the unknown" (King 2008, p. 121). However, the acceptance of abstract abilities such as moral and existential intelligences and treating them as distinct capacities by Gardner (1983) paved the way for some scholars to bring up the SQ as an intelligence which relates to peoples' life and thus is worthy of scientific exploration.

Believing that SQ suffered from a lack of scientific exploration, King (2008) developed a scale called the *Spiritual Intelligence Self-Report Inventory* (SISRI). The inventory has been chosen to be explored within an Islamic context in this study because it is a robust measure of spiritual intelligence widely employed in the literature. King composed 84 items and administered them to 631 undergraduate students enrolled in psychology courses at Trent University in Peterborough, Canada. Similar to

Amram and Dryer (2008), he subjected his data to the principal component analysis (PCA) and Varimax with Kaiser Normalization (VKN) and extracted six factors. Based on the descriptive statistics of the items and their loading and cross loadings on the factors, King reduced the number of items to 42.

In the second phase of his study, King (2008) administered the SISRI-42 to another groups of 321 undergraduate psychology students at Trent University. He utilized the structural equation modelling (SEM) module of Statistica 7.0 (Statsoft, 2006) for the initial confirmatory factor analysis (CFA) and adopted the Maximum likelihood as his method of parameter estimation. His results showed that the theoretically-supported four-factor model displayed a good fit to the data, i.e., Critical Existential Thinking (CET), Personal Meaning Production (PMP), Transcendental Awareness (TA) and Conscious State Expansion (CSE). Based on high residual correlations (above .14), high item correlations, and redundancy in item wording, he reduced the 42 items to 24.

In order to ensure adequate factor structure and item loadings for the SISRI-24, King (2008) applied the PCA and VKN analyses to the final 24-item pool and found the SISRI-24 a highly reliable measure of SQ ($\alpha = .92$) as was its CSE factor ($\alpha = .91$). While the CET and PMP had the lowest alpha coefficient, i.e., .78 among the four factors, it reached .87 for the TA.

As the first factor, the Critical Existential Thinking (CET)

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involves “the capacity to critically contemplate the nature of existence, reality, the universe, space, time, death, and other existential or metaphysical issues” (King, 2008, p. 57). Scholars such as Kiesling et al (2006) and Vaughan (2002) refer to the CET as “the ultimate questions” of life reflecting Gardner’s (1993) description of existential intelligence as “the intelligence of big questions” (p. 20). King (2008) resorted to Maslow’s (1964) acceptance of the existence of some individuals who are more advanced in their ability to contemplate existential matters to suggest that “theologians and philosophers occupy the higher end states” (p. 59).

King (2008) defined the second factor, Personal Meaning Production (PMP) as “the ability to construct personal meaning and purpose in all physical and mental experiences, including the capacity to create and master a life purpose” (P. 61). It has been recognized as a component of spirituality by many scholars such as Kiesling et al. (2006), King et al. (2001), Koenig et al. (2000), Sinnott (2002), Wink and Dillon (200) and Worthington and Sandage (2001), required its consideration in a model of spiritual intelligence. King (2008) believed that Emmons’ (2000) “sanctification” is basically a form of personal meaning production. The PMP is also referred to as “spiritual meaning” (Meddin, 1998) and “religious meaning” (Krause, 2003) in the literature.

As the third factor underlying the SISRI, Transcendental Awareness entails the ability to “identify transcendent dimensions of the self (e.g., a transpersonal or transcendent self), of others, and of the physical world (e.g., non-materialism, holism) during the normal, waking state of consciousness” (King, 2008, p. 64). It also calls for the ability to identify others’ to one’s self and to the physical. The term “transcendental” has been either used synonymously with spirituality or considered as one of its components by many scholars such as Elkins et al. (1988), Koenig et al. (2000), Martsof and Mickley (1998), and Sinnott (2002).

And finally, King (2008) defined the fourth factor, Conscious State Expansion, as “the ability to enter and exit higher / spiritual states of consciousness (e.g. pure consciousness, cosmic consciousness, unity, oneness) at one’s own discretion (as in deep contemplation, meditation, prayer, etc.) [p. 72]. The term “conscious” should be understood as “the awareness of environmental and cognitive events such as the sights and sounds of the world as well as one’s memories, thoughts, feelings, and bodily sensations” (Solso et al., 2005, p. 141). Experiencing higher consciousness has been considered as spiritual (Menon, 2005; Tart, 1975) and/or psychospiritual (Gackenbach, 1992). It is also viewed as a critical component of an individual’s spirituality and/or religiosity (Gackenbach, 1992; James, 1902/2002; Maslow, 1964; Menon, 2005; Tart, 1975).

This study was designed to explore the single/ phrasal words comprising the statements constituting the SISRI in terms of their linguistic and cognitive relationships. The investigation was based on the micro-structural approach of schema theory (Khodadady, 2013). It also aimed to explore the factorial validity of the scale translated into Persian by

the first author and one of his graduate students. It was hypothesized that the 24 statements comprising the Persian SISRI will load on the four factors established by King (2008). It was also assumed that the factors will relate to each other significantly.

2. Methodology

2.1. Participants

Similar to Khodadady, Fakhrebadi, and Azar’s (2012) study, the participants of the present were 344 *female* grade three senior high school (G3SHS) students. (Male participants could not be recruited because of the restrictions imposed by the Bureau of Education stipulating collecting data from male participants by male researchers only. They were registered as full time students in AllamehAmini, Asma, Esmat, Farhikhtegan, ForoughHedayat, HazratKhadijeh, Hazrat Maryam, Imam Reza, Najibeh, Prf. Reza, Razaviyeh and Zeynabiyeh senior high schools. These schools were located in educational districts of one, two, three, four, five, seven and Tabadkan in Mashhad, Iran,. The participants were majoring in humanities (n = 143, 41.6%), sciences (n = 142, 41.3%), and mathematics (n = 59, 17.2%). Their age ranged between 15 and 20 (mean = 17.19, SD = .58). They spoke Persian (n = 331, 96.2%), Kurdish (n = 4, 1.2%), Arabic (n = 4, 1.2%), English (n = 3, .9%), and Turkish (n = 2, .6%) as their mother language.

2.2. Instrumentation

Two instruments were employed in this study: a Demographic Scale and the Spiritual Intelligence Self-Report Inventory (SISRI) translated into Persian.

2.2.1. Demographic Scale

Based on Khodadady, Taheryan, and Tavakoli’s (2012) study a Demographic Scale (DS) was developed to collect the data related to the participants’ age, school name, type of school, field of study, educational district, gender and mother language.

2.2.2. The Spiritual Intelligence Self-Report Inventory

The 24-item Spiritual Intelligence Self-Report Inventory (SISRI) translated into Persian by the first author and Mr. Hamid KhosravaniFard was used. The translation is based on schema theory which entails providing the best equivalents for the words comprising the source texts on the basis of their cognitive, linguistic and discursual relationships with each other (see Khodadady, 2008; Khodadady & Eslami, 2013; Khodadady & Lagzian, 2013; Seif & Khodadady, 2003). The Persian statements which are given in Appendix were presented as multiple choice items to elicit the female G3SHS students’ responses objectively. The first item, for example, reads, “I have often questioned or pondered the nature of reality”. It requires each respondent to specify whether it is not at all true of her, i.e., never, not very true of her, i.e., seldom, somewhat true of her,

i.e., sometimes, very true of true, i.e., usually, and completely true of her, always. The statements comprising the English SISRI loaded acceptably on four factors in King's (2008) study, i.e., Critical Existential Thinking, Personal Meaning Production, Transcendental Awareness and Conscious State Expansion. It is a highly reliable measure of Canadian Undergraduate University (CUU) students' spiritual intelligence ($\alpha = .92$). The reliability coefficients of its underlying factors range from .78 to .91.

2.3. Procedures

Since the second author of the present study was an officially employed teacher of English in Mashhad, Iran, she contacted her colleagues teaching in various schools and asked for their cooperation. This yielded 344 G3SHS students' agreement, certain dates were set to administer the instruments of the study. The researcher attended the classes on the specified dates and administered the Persian SISRI in person. While the participants were taking the measures, she walked along aisles and interacted with them by answering their questions and reminding them to answer all the questions. They raised a number of questions dealing with higher states of consciousness. They were told that these states were attained when a person meditated and tried to make sense out of reality. The states, they were told, included "self-awareness, environmental awareness, spiritual awareness, or some combination of these" (King, 2008, p. 73). It was further elaborated that lucid dreams were, for example, considered as higher states of awareness (Tart, 1975). The completed scales were collected after about 15 minutes and both the students and teachers were thanked for their cooperation.

2.4. Data Analysis

Following Khodadady (2013), the words comprising the SISRI were treated as linguistic schemata, parsed and classified into three domains, i.e., semantic, syntactic and parasynthetic. Each domain was further broken down into its constituting genera to have an objective measure regarding its linguistic complexity. Following King (2008), the descriptive statistics of the items comprising the SISRI was calculated to find out how well they had functioned. Based on Khodadady and Hashemi's (2010) suggestion, Principal Axis Factoring was utilized to extract the factors underlying the inventory after it had been administered to the participants of this study. The initial eigenvalues of one and higher were adopted as the main criteria to determine the number of factors to be extracted. They were then rotated via Varimax with Kaiser Normalization. The reliability level of the SISRI as well as its underlying factors were estimated via Cronbach's alpha. The factors were also correlated with each other to explore their relationships. All the statistical analyses were conducted via IBM SPSS Statistics 20 to test the two hypotheses below:

H1. The four factors underlying the English SISRI will underlie its Persian version.

H2. The Persian SISRI administered to G3SHS students will be as reliable as the English SISRI

3. Results

The linguistic analysis of the schemata comprising the SISRI showed that it consists of 302 and 125 schema tokens and types, respectively, forming the semantic, syntactic and parasynthetic domains of the scale. Linguistic semantic domain consists of adjective, adverb, noun and verb genera which are traditionally known as "content words or contentives" (Crystal, 1991, p. 78). The analysis showed that King (2008) defined spiritual intelligence in terms of 43 (34.4%) nouns, 21 (16.8%) verbs, 16 (12.8%) adjectives and five (4.0%) adverbs. These genera do in fact represent the Canadian Undergraduate University (CUU) students' spiritual intelligence as a linguistic domain consisting of 158 semantic schemata measured by the SISRI.

Along with semantic schemata, 123 and 21 syntactic and parasynthetic schema tokens contribute to the measurement of spiritual intelligence by the SISRI, respectively. They are traditionally known as function words assuming a "largely or wholly" grammatical role (Crystal, 1991, p. 147). It is argued in this paper that the linguistic complexity of scales such as SISRI should be estimated first so that they can be studied in different contexts and be compared with similar or different scales. The complexity should be determined on the basis of schema types and tokens. The adjective schema "able", for example, has been used seven times in the SISRI and thus has a token of seven. Based on semantic schema types, the SISRI has, therefore, a linguistic complexity of .68, i.e., $85 \div 125$. (The tokens and types will be elaborated further in the Discussions section.)

The descriptive statistics of items comprising SISRI are presented in Table 1. As can be seen, most mean values have generally clustered above the expected value of 2. These values show that almost all G3SHS students have agreed they have sometimes possessed or experienced the cognitive species presented within the linguistic statements comprising their spiritual intelligence domain. Statement nine, for example, brings up "developing personal theories about life, death, reality and existence". As can be seen, 67 percent of G3SHS students have sometimes (22%), usually (24%) and always (21%) done so. If never and seldom on the one hand and usually and always on the other are treated as the rarity and prevalence of such action, then it can be said that the percentage of G3SHS students who "develop their own theories of life" (45%) is more than those who do not (32%). The difference in the percentage was not, however, very large.

Upon scrutinizing the functioning of items comprising the SISRI, KMO and Bartlett's test were run to determine the degree to which it is likely that common factors explain the observed correlations among the variables. The analysis set the KMO statistic at .86. Since it is in the .80s considered as "meritorious" by Kaiser and Rice (1974 as cited in DiLalla &

Dollinger, 2006, p. 250), the sample selected in this study was adequate to run factor analysis. The value obtained by Bartlett's Test of Sphericity, i.e., $X^2 = 79658.195$, was also significant ($p < .001$), indicating that the correlation matrix was not an identity matrix.

Table 2 presents the initial and extraction communalities (ECs) of items comprising the SISRI. As can be seen, the ECs range from .16 (item 6) to .61 (item 16). Tabachnick and Fidell (2007) argued that communality values lower than .20 indicate "considerable heterogeneity among the variables" (p. 660). Among the statements, item six, "it is *difficult* for me to sense anything other than the physical and material", has the lowest EC and does not load acceptably on any factors

extracted in this study.

Table 3 presents the number of factors extracted from the Persian SISRI. As can be seen, seven factors underlie the scale and thus reject the first hypothesis that *the four factors underlying the English SISRI will underlie its Persian version*. These results are in line with the results obtained in administering similar scales such as the 21-item Religious Orientation Scale (ROS) designed by Allport and Ross (1967) and Feagin (1964). While Allport and Ross believed that the scale measured two orientations, i.e., intrinsic and extrinsic, in the West, Khodadady and Golparvar (2011) extracted four when they translated the scale into Persian and administered it to Iranian university students.

Table 1. Descriptive statistics of the items comprising SISRI (N = 344)

Item	Mean	SD	Skewness	Kurtosis	Never %	Seldom %	Sometimes %	Usually %	Always %
101	2.23	1.137	-.191	-.707	8	19	31	28	14
102	2.26	1.326	-.314	-1.079	13	17	19	30	20
103	2.71	1.100	-.586	-.383	4	11	24	34	28
104	1.95	1.314	.030	-1.126	17	22	24	22	15
105	2.20	1.284	-.163	-.998	12	18	28	23	20
106	2.68	1.265	-.683	-.547	8	10	21	27	34
107	2.62	1.211	-.596	-.674	6	16	16	35	27
108	2.57	1.210	-.619	-.503	8	11	21	34	25
109	2.18	1.358	-.197	-1.160	15	17	22	24	21
110	2.11	1.281	-.121	-1.042	13	20	25	25	17
111	2.69	1.212	-.621	-.582	6	12	21	28	32
112	1.84	1.183	-.016	-.972	16	24	27	26	7
113	3.01	1.125	-.926	-.160	3	11	15	27	45
114	1.99	1.237	-.011	-.857	15	18	34	19	14
115	2.67	1.258	-.604	-.692	7	12	21	26	34
116	2.36	1.177	-.277	-.755	7	16	29	28	19
117	2.44	1.206	-.266	-.943	6	19	25	26	24
118	2.05	1.144	.038	-.791	9	25	31	23	12
119	2.56	1.186	-.573	-.502	7	12	23	33	24
120	2.38	1.189	-.241	-.876	6	19	27	27	21
121	3.19	1.217	-1.345	.616	6	7	13	13	62
122	2.35	1.186	-.343	-.709	8	15	28	30	18
123	2.63	1.088	-.654	-.156	5	10	23	40	22
124	1.96	1.253	-.034	-.930	17	18	31	21	13

Table 2. The initial and extraction communalities of items comprising the SISRI

Item	Initial	Extraction	Item	Initial	Extraction	Item	Initial	Extraction
1	.283	.271	9	.281	.456	17	.288	.371
2	.334	.501	10	.232	.281	18	.348	.464
3	.296	.343	11	.221	.265	19	.262	.362
4	.340	.488	12	.293	.307	20	.222	.228
5	.228	.350	13	.243	.411	21	.181	.263
6	.116	.162	14	.290	.337	22	.323	.361
7	.241	.292	15	.336	.354	23	.334	.361
8	.321	.372	16	.344	.609	24	.362	.413

Table 3. Total Cumulative (C) Variance (V) Explained by factors* (F)

F	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of V	CV %	Total	% of V	CV %	Total	% of V	CV %
1	5.699	23.745	23.745	5.077	21.155	21.155	2.343	9.764	9.764
2	1.480	6.166	29.912	.841	3.505	24.660	1.687	7.029	16.793
3	1.343	5.597	35.508	.709	2.956	27.616	1.197	4.988	21.781
4	1.196	4.984	40.492	.606	2.526	30.142	1.183	4.930	26.711
5	1.171	4.881	45.373	.523	2.178	32.320	.798	3.325	30.036
6	1.084	4.518	49.891	.447	1.861	34.181	.730	3.040	33.076
7	1.022	4.258	54.149	.419	1.747	35.927	.684	2.851	35.927
8	.959	3.996	58.144						

*Extraction Method: Principal Axis Factoring.

Table 4. Rotated Factor (F) Matrix^a (Principal Axis Factoring, Varimax Normalized) for the SISRI

Items	F1	F2	F3	F4	F5	F6	F7
1	.103	.434*	.136	.153	.109	.132	.016
2	.221	.638*	.051	.008	.131	-.157	.027
3	.067	.29	.293	.205	-.028	.315*	.163
4	.348*	.337*	-.043	.409*	-.098	-.031	.271
5	.044	.059	.043	.531*	.145	.166	.11
6	.004	.006	.017	-.03	.074	-.383*	.095
7	.385*	.177	.033	.18	.239	.014	-.149
8	.441*	.045	.084	.278	.301	.001	.034
9	.144	.098	.051	.3	.315*	.454*	.165
10	.360*	.147	.239	.013	.101	.246	.048
11	.341*	.218	-.036	.035	.226	.173	.131
12	.405*	.271	.122	.121	-.018	.13	.152
13	.053	.132	.597*	.062	.119	.016	.131
14	.253	.392*	.319*	.071	.074	.027	-.08
15	.369*	.165	.29	.117	.142	-.192	.189
16	.342*	.083	.261	.154	.094	-.144	.603*
17	.197	.156	.365*	.382*	.167	-.021	-.035
18	.323*	.244	.273	.450*	-.106	.049	-.101
19	.586*	.052	-.032	.03	.075	-.026	.084
20	.207	.241	.213	.04	.266	.095	.009
21	.073	.176	.133	.064	.440*	-.101	.033
22	.124	.499*	.153	.145	.17	.106	.107
23	.471*	.198	.24	.064	.162	-.022	.109
24	.540*	.191	.198	.159	-.102	.081	.06

a. Rotation converged in 28 iterations.

* All marked loadings > .32

Table 4 presents the rotated factor matrix for the 24 items comprising the SISRI. As can be seen, the magnitude of loadings on each of the seven factors extracted in this study differs. For example, item one has the lowest loading on factor seven (0.02) whereas it loads the highest on factor two (.43). For this reason Tabachnick and Fidell (2001) were followed and the loading of .32 was adopted as the minimum acceptable magnitude for a given item because it equates to approximately 10% overlapping variance with the other items in that factor. The adoption of a minimum value for loadings resulted in having some factors upon which only

one item had loaded acceptably. As can be seen in Table 4, only item 16, "I often see issues and choices more clearly while in higher states of consciousness/ awareness", loads acceptably on factor seven (.60).

The adoption of the minimum acceptable loading of .32 for analyzing the structure of factors also showed that three statements have little contribution to make as regards determining the spiritual intelligence of G3SHS students. As can be seen in Table 4 above, item 3, "I have spent time contemplating the purpose or reason for my existence", and item 20, "I recognize qualities in people which are more

meaningful than their body, personality, or emotions”, do not load acceptably on any of the seven factors extracted in this study. Furthermore, item six, “It is difficult for me to sense anything other than the physical and material”, loads negatively on factor six after being reverse scored and has to be removed. These results show that G3SHS students’ spiritual intelligence is measured via 21 statements.

Scrutinizing items loading acceptably on seven factors also shows that five items loaded acceptably on more than one factor. Item four, “I am able to enter higher states of consciousness or awareness”, for example, loads acceptably on factors one (.35), two (.34) and four (.41). Although King (2008) believed that “items which cross-load are not desirable, as they have been designed as indicators of one particular capacity rather than many” (p. 126) and should, therefore, be dropped, the present researchers followed Khodadady, Fakhraabadi, and Azar (2012) and adopted the highest loading of an item such as item four (.41), on one factor (i.e., four) and dropped that item from other factors upon which it had cross loaded, e.g., factors one (.35) and two (.34), respectively. Following this procedure resulted in having four factors upon which only one item loads acceptably, i.e., factors three (item 13), five (item 21), six (item 9) and seven (item 6).

Table 5 presents the descriptive statistics as well as the reliability estimates of Persian SISRI and its seven underlying factors. As our outcomes indicate, the number of items comprising the factors ranges from one (*Contemplative*, *Theo-meditative*, *Theorizing*, and *Visionary*) to nine (*Purposive*). The SISRI itself provides researchers and educators with a highly reliable measure ($\alpha=.85$) of G3SHS students’ spiritual intelligence. The alpha reliability

coefficient (RC) of the Persian SISRI is, however, lower than that of English inventory administered to CUU students, i.e., .92 (King, 2008, p. 146). This result rejects the second research hypothesis that *the Persian SISRI administered to G3SHS students will be as reliable as the English SISRI*.

The alpha RC of the factors underlying the Persian SISRI was also lower than those of its English version. King (2008) reported the RCs of .78, .78, .87 and .91 for his CET, PMP, TA, and CSE factors, respectively. Out of seven factors, the RC of *Meta-conscious*, *Transcending*, and *Purposive* factors are .61, .64, and .76, respectively. The remaining four factors extracted in this study lack alpha RCs because they consist of only one item. The low RCs of the Persian SISRI and its factors might be the result of its takers’ educational level as well as the highly religious context in which they have taken the inventory. While Canada is a secular society where individuality is emphasized, Iran is a religious country where conformity to religious rules and codes is enforced publically.

Table 6 presents the correlation coefficients obtained among the factors underlying the SISRI. As can be seen, all the factors correlate significantly not only with the SISRI itself but also with each other. Among the seven factors extracted in this study, the *Purposive* and *Meta-conscious* factors show the strongest relationship ($r=.53$, $p<.01$) with each other, indicating the fact that the more *Meta-conscious* the G3SHS students are, the more *Purposive* they become in their lives. The lowest significant correlation coefficient is, however, obtained between *Theorizing* and *Theo-meditative* factors ($r=.13$, $p<.05$). Since the structure of factors underlying the Persian SISRI differs from that of English version, they could not be compared to each other.

Table 5. Descriptive statistics and reliability estimates of SISRI and its underlying factors (N = 344)

SISRI	No of item	Mean	SD	Skewness	Kurtosis	Alpha
Purposive	9	21.64	6.332	-.300	-.389	0.76
Transcending	4	8.84	3.388	-.196	-.348	0.64
Contemplative	1	3.01	1.125	-.926	-.160	-
Meta-conscious	4	8.63	3.369	-.033	-.437	0.61
Theo-meditative	1	3.19	1.217	-1.345	.616	-
Theorizing	1	2.18	1.358	-.197	-1.160	-
Visionary	1	2.36	1.177	-.277	-.755	-
SISRI	21	49.86	12.792	-.260	-.128	0.85

Table 6. Correlation coefficients obtained between the factors underlying the SISRI

Factors	Factors						
	1	2	3	4	5	6	7
SISRI 21	.890**	.733**	.410**	.747**	.362**	.464**	.532**
1 Purposive	1	.512**	.265**	.525**	.235**	.318**	.453**
2 Transcending	.512**	1	.276**	.444**	.250**	.248**	.250**
3 Contemplative	.265**	.276**	1	.246**	.162**	.130*	.261**
4 Meta-conscious	.525**	.444**	.246**	1	.165**	.350**	.346**
5 Theo-meditative	.235**	.250**	.162**	.165**	1	.125*	.144**
6 Theorizing	.318**	.248**	.130*	.350**	.125*	1	.205**
7 Visionary	.453**	.250**	.261**	.346**	.144**	.205**	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

4. Discussions and Conclusions

Khodadady (1997) addressed one of the most pressing issues in testing when he offered schema theory as a sound rationale to develop reliable and valid measures of reading comprehension ability. After reviewing the literature he argued that the ability has been rationally approached from three logical premises, top-down, bottom-up and interactive. While the top-down approach adopts broad terms such as “texts” and “messages” as the main unit of its analysis, the bottom-up advocates regard “words” as the building blocks of reading comprehension ability. Assuming the top-down and bottom up processes as unidirectional, the interactive approach, however, relates them to each other as the best way to explain reading comprehension ability involving the simultaneous application of top-down and bottom up processes.

Khodadady and Herriman (2000) believed that the application of schema theory to reading comprehension ability had proved problematic because it had been defined in subjective, vague and broad terms evading any empirical validation and leading to the lack of a “generally agreed upon formal definition of a schema” (Ellis and Hunt, 1993, p. 245). Oxford (2002), for example, defined schemata as “increasingly intricate and differentiated mental structures” (p. 125). Similarly, Yule (2006) approached it as “a conventional knowledge structure that exists in memory” (p. 132). Khodadady (2001), however, defined schema as “any concept realized in a word or phrase, syntactic or

semantic, closed or open, syntagmatic or paradigmatic, which can stand by itself or combine with other concepts to produce an idiosyncratic image in the mind of a given person. This image has a direct relationship with the person’s experiences with the concept gained through its application with other semantically and syntactically related concepts. Schemata are idiosyncratic because individuals differ from each other in terms of their experiences” (p. 111).

By adopting the single/phrasal words constituting texts such as the SISRI, Khodadady and Herriman (2000) developed empirically valid schema-based cloze multiple choice item tests (S-Tests) to measure reading comprehension ability. Schema theory has also been employed to explain the functioning and validation of the SISRI in this study as Khodadady and Bagheri (2012) did with the statistical factors underlying their 33-item Religious Orientations Scale (ROS). According to them, the main construct measured by a scale such as ROS, i.e., religious orientations, can be viewed as a schema domain which can be subcategorized under several logically established genera and validated empirically by utilizing statistical analyses such as Principal Axis Factoring. Each genus or factor can in turn be subcategorized under species, types and tokens within a hierarchical organization. The theoretically and factorially validated categories can then be employed to explain the domain or construct under investigation both linguistically and cognitively.

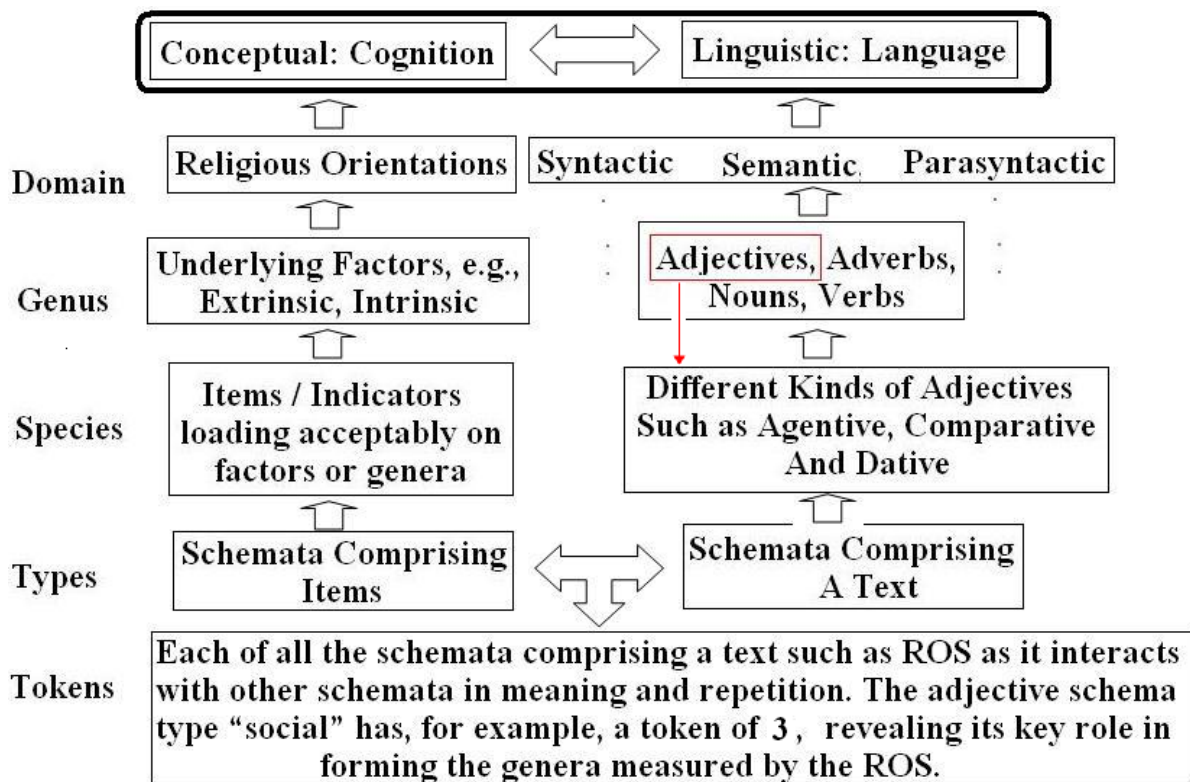


Figure 1. Cognitive and linguistic categorization of schemata constituting the ROS (Khodadady & Bagheri, 2014, p. 166)

Figure 1 illustrated Khodadady and Bagheri's (2014) cognitive and linguistic analysis of schemata constituting ROS. As can be seen, a linguistic explanation of the ROS requires specifying all the single and phrasal words forming its items as tokens whose types, species, and genera must be identified and categorized under the three broad domains of semantic, syntactic and parasyntactic schemata. The content validity of any scale, and reading passages for that matter, will depend on the items written or collected from the sources available. Cognitively, it reveals what each schema means to readers not only in and by itself but also in combination with other schemata as they form the items or species of scales. The species are, in fact, presented to the readers to determine the relevance of their constituting schemata to the genera underlying the construct by having the participants relate the species to each other on the basis of five choices, i.e., disagree completely, disagree, have no idea, agree and completely agree. The choices the participants make will depend cognitively on the activation of the experiences they have had with the concepts represented by the schemata.

As shown in Figure 1 above, the microstructural approach towards validating psychological measures such as ROS provides researchers with a theoretically sound rationale to define, describe and explain their domain of investigation empirically on several grounds. First and foremost, it shows that the validity of SISRI depends on the reading comprehension ability of participants. In order for them to evaluate their own SQ, they must activate each and all the concepts represented by the constituting schemata of the SISRI in their minds and then relate them to each other within the statements/ species in which they occur. Secondly, the composition and compilation of the species comprising the SISRI depended on King's (2008) understanding of SQ

as the Integrated Spiritual Intelligence Scale did on Amram and Dryer (2008). And finally, what the SISRI measures depends on who takes it. The SISRI is, therefore, norm referenced.

Table 7 presents the linguistic domain tokens and types of schemata constituting the English and Persian SISRI as they were taken by CUU and G3SHS students, respectively. The G3SHS students' SQ comprises fewer domain tokens than that of CUU students. For example, while it consists of 139 semantic schema *tokens* for the former, it increases to 158 for the latter. The same decrease in the constituting schemata of G3SHS students' SQ is witnessed in semantic schema *types*. Seventy seven schema types, for example, constitute G3SHS students' SQ while CUU students' SQ contains 85. These results show that the comprehension and evaluation of SQ as a language-based scale depends on educational level of participants.

Table 8 provides the descriptive statistics of the linguistic genus types comprising the SQ domain of the CUU and Iranian G3SHS students. As can be seen, similar to domain schema types, most genus schema types do increase as a result of higher education, particularly the semantic genera of adjectives, nouns and verbs. The linguistic adjective schema types of Iranian G3SHS students, for example, consist of 14 (12.4%) while they increase to 16 (12.8%) for CUU students. These results do show that schema theory does have the power to explain the different functioning of SISRI in terms of its constituting schemata when it is administered to participants having different educational backgrounds. Since the language in which the scale was administered was native to both groups, it was controlled in this study. Future research must, however, show whether the findings of this study hold true for Iranian undergraduate university students as well.

Table 7. Linguistic domain schema tokens and types of schemata constituting the English SISRI and those of G3SHS students

Linguistic Domain	Tokens				Types			
	Canadian		Iranian		Canadian		Iranian	
	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
Semantic	158	52.3	139	53.1	85	68.0	77	68.1
Syntactic	123	40.7	104	39.7	31	24.8	27	23.9
Parasyntactic	21	7.0	19	7.3	9	7.2	9	8.0
Total	302	100.0	262	100.0	125	100.0	113	100.0

Table 8. Linguistic genus schema types constituting the SQ of CUU and G3SHS students

Linguistic Genera	Canadian		Iranian		Linguistic Genera	Canadian		Iranian	
	No	Percent	No	Percent		No	Percent	No	Percent
Adjectives	16	12.8	14	12.4	Prepositions	10	8.0	10	8.8
Adverbs	5	4.0	5	4.4	Pronouns	9	7.2	7	6.2
Nouns	43	34.4	37	33.0	Syntactic verbs	1	.8	1	.9
Verbs	21	16.8	20	17.7	Abbreviations	2	1.6	2	1.8
Conjunctions	5	4.0	4	3.5	Para-adverbs	6	4.8	5	4.4
Determiners	6	4.8	5	4.4	Particles	1	.8	2	1.8

Following Khodadady and Bagheri (2014), Khodadady and Dastgahian (2013) and based on the results obtained in this study, it is argued that the spiritual intelligence of G3SHS students is a cognitive domain which consists of 112 linguistic schema types representing the same number of concepts in their minds. Thirty seven (33.6%) of these concepts are nouns, i.e., Ability, Aspects, Awareness, Being, Body, Choices, Connection, Consciousness, Death, Decisions, Energy, Events, Existence, Experiences, Failure, Force, God, Goddess, Issues, Levels, Life, Meaning, Nature, People, Power, Purpose, Reality, Reason, Relationship, Rest, Self, Situations, States, Techniques, Theories, Things, and Universe. These concepts are elaborated within 21 linguistic statements or cognitive species to produce the seven cognitive genera forming the domain of spiritual intelligence. Among these nouns, “life” with a token of seven is the most frequent schema followed by “awareness” and “consciousness”, each having a token of five.

Figure 2 illustrates the cognitive domain of spiritual intelligence as measured by the Persian SISRI. Through their tokens, the 112 schema types combine with each other to establish the intelligence as a factorial domain. By resorting to their own personal experiences expressed in the concepts constituting the species of the SISRI, the G3SHS students decide when and how often they employ them to solve their problems in everyday life. As can be seen in the figure, the species either combine with each other in certain numbers or stand by themselves to create the genera underlying the

G3SHS students’ SQ, i.e., *Purposive, Transcending, Contemplative, Meta-conscious, Theo-meditative, Theorizing, and Visionary*. The labels adopted for the genera in this study are simpler than those chosen by King (2008) to render them as normal actions undertaken in everyday life.

As the first genus of spiritual intelligence domain, a *Purposive* G3SHS student makes decisions according to her purpose in life, develops her own techniques for entering higher states of consciousness (HSOC), finds meaning and purpose in her everyday experiences, enters HSOC whenever she likes, moves freely between levels of consciousness, adapts herself to stressful situations, finds meaning in her failures, is aware of a deeper connection between herself and other people and defines a purpose for her life. The schemata comprising the *Purposive* genus of SQ show that the Iranian G3SHS students’ approach to spirituality is very different from those of CUU students. This is because out of nine species loading on this genus, three species, i.e., 8, 12 and 27, form Conscious States Expansion, five species, i.e., 7, 11, 15, 19 and 23, constitute Personal Meaning Production, and one species, i.e., 10, contributes to Transcended Awareness factors established by King (2008). These results suggest that Iranian G3SHS students practice spirituality to define purposes for themselves as a whole whereas CUU students differentiate their purposes from their conscious states and transcendence awareness.

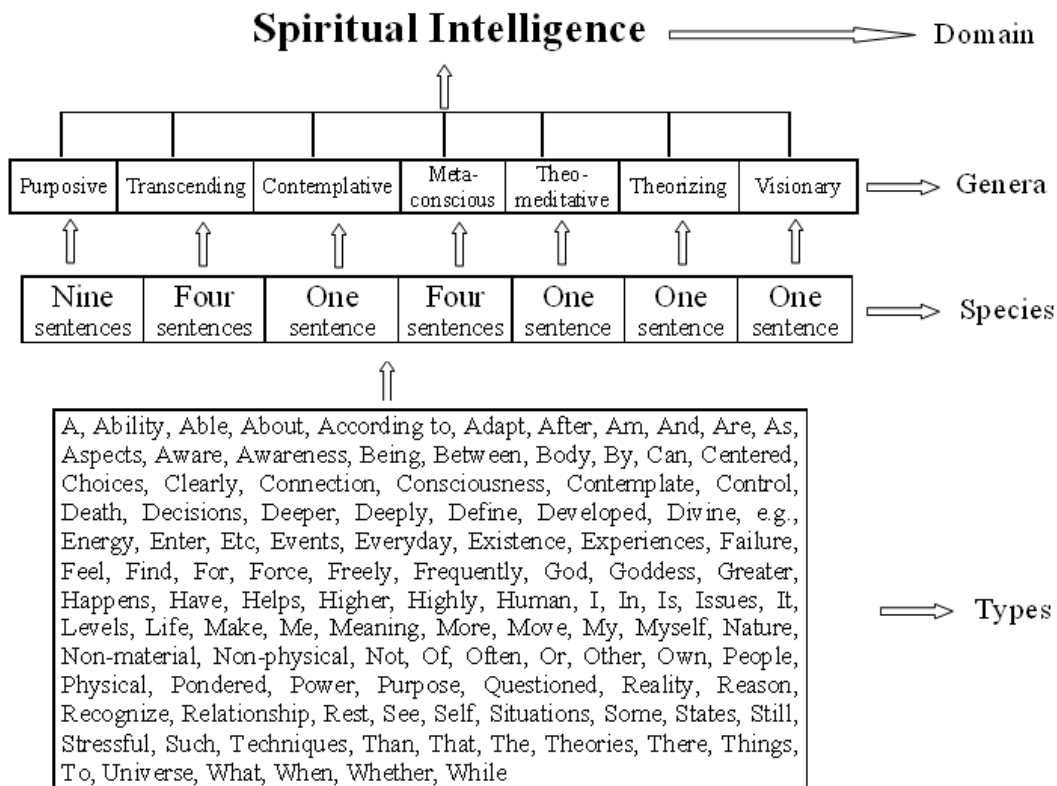


Figure 2. Schema types, species and genera forming the cognitive domain of spiritual intelligence

The second *Transcending* genus of G3SHS' spiritual intelligence relates to those students who recognize aspects of themselves that are deeper than their physical body. They also recognize the nonmaterial aspects of life which help them feel centered. Through questioning or pondering the nature of reality they define themselves by their deeper, non-physical self. This genus is almost the same for both CUU and G3SHS students in terms of its constituting species because three of them belong to Transcendental Awareness (TA) established by Kings (2008), i.e., species 2, 4 and 22. However, species one, "I have often questioned or pondered the nature of reality", loaded on the Critical Existential Thinking (CET) in Kings' study.

The loading of four out of seven species constituting the TA factor in Kings' (2008) study highlights two important principles to be considered in factorial studies. First, the number of species comprising the English SISRI, i.e., 24, does change when the SISRI is administered to Persian speakers with different educational backgrounds. This finding questions those studies which have employed the factors established in Western societies as their main variables of investigation. Doostar, Chegini, and Pourabbasi (2012), for example, explored the relationship between spiritual intelligence and organizational citizenship behavior by administering the SISRI to 322 hospital staff, nurses and doctors. Nowhere in their paper do the authors specify whether they translated and validated the inventory in Persian. They do, however, provide their readers with correlation coefficients estimated on Kings' four factors, i.e., CET, PMP, TA, and CSE!

The second important finding is the implausibility of employing reverse items in psychological measures such as the SISRI. As the only reverse species in the SISRI, i.e., "It is difficult for me to sense anything other than the physical and material" loads negatively on factor six even after being reverse scored, This result provides evidence to support Khodadady and Tabriz's (2012) study in which they converted all reverse items to positive species when they translated the EQ-I developed by Bar-On (1997) to measure emotional intelligence. Since reverse items emphasize the lack of a given attribute involved in the measurement of psychological constructs they are better to be dropped or turned into positive indicators.

Similar to the fifth, sixth and seventh genera of the Persian SISRI, the *Contemplative* genus consists of just one species, i.e., 13, "I frequently contemplate the meaning of events in my life". Among the other six genera constituting the inventory, *Contemplative* factor correlates the highest with the second, i.e., *Transcending* ($r=.28, p<.01$), revealing the key role the cognitive schema type "contemplate" plays in G3SHS students' ability to solve their problems through their transcending ability. It also contributes to the fourth factor, i.e., *Meta-Conscious* genus, which deals with the students' ability to deeply contemplate what happens after death (CET), being highly aware of the nonmaterial aspects of life (TA), entering higher states of consciousness or awareness (CSE) and contemplating the relationship

between human beings and the rest of the universe (CET). As the parenthesized abbreviations given in the description of each species indicate, the Meta-Conscious genus of G3SHS students' SQ is quite heterogeneous as regards their contributions to CUU students' CET, TA, and CSE. The term Meta-Conscious has been coined in this study to highlight the G3SHS students' ability to "go beyond or transcend" consciousness as regards schemata such as "after death" and "nonmaterial aspects of life".

Similar to *Contemplative* factor, the fifth genus of the SISRI, i.e., Theo-Meditative, consists of one statement, i.e., 21. It highlights the G3SHS students' ability to deeply contemplate whether or not there is some greater power or force (e.g., god, goddess, divine being, higher energy, etc). The label "Theo-Meditative" has been deliberately chosen to reflect the theological nature of the genus and its rather questionable inclusion of the schemata "god" and "goddess" within an Islamic society such as Iran. While the schema "god" is used for Jesus Christ in a Western Society, it refers only to Allah or one God in Islam. Based on this exclusive reference, Khodadady and Eslami (2013) compared Saffarzadeh (2007) and Sale's (1979) translations of the thirty sixth chapter of the *Quran* and concluded Sale (1979) had "violated the content validity of his translation by deleting certain schemata and changing the domains of others to Christianize his translation" (p. 170).

Sale (1979), for example, translated the proper noun Allah to God in the opening statement as well as verse (V) 47 and V74. He managed to remove its unique reference to Allah by offering "my God" as an equivalent for RABBI (رَبِّي) in V27 and "our Lord" for RABBONA (رَبَّنَا) in V16, implying that God and Lord are basically the same and can both be used interchangeably with Allah! Then he translated ALMORSALEEN (الْمُرْسَلِينَ) as "the messengers of God" in V3 and went even further and added Jesus to ALMORSALOON (الْمُرْسَلُونَ) translated as "apostles of Jesus [i.e., Christ]" (p. 431) in V13 to imply Trinity central to Christianity (e.g., Lacugna, 2005) and strongly rejected by Islam.

Based on the presence of the superordinate schema Allah in the G3SHS students' minds as a unique concept governing everything, they have subsumed the schemata "greater power or force", "god", "goddess", "divine being" and "higher energy" as the subordinates of Allah and thus defined their spirituality in religious terms, hence Theo-Meditative. The comprehension of the subordinate schemata in terms of the superordinate has resulted in the loading of statement 21 on the *Theo-Meditative* factor in this study alone while it loads on the Critical Existential Thinking (CET) along with other six statements, i.e., 1, 3, 5, 9, 13, and 17, in King's (2008) study. It is the only species among the 21 statements comprising the Persian SISRI for which the highest percentage of G3SHS students has chosen "always", i.e., 62%.

Similar to *Contemplative* and *Theo-Meditative* factors, the sixth *Theorizing* genus consists of one species (S), i.e., 9. It deals with the G3SHS students' ability to develop their own

theories about such things as life, death, reality, and existence. S9 is, however, one of the seven loading on the Critical Existential Thinking (CET) factor underlying the spiritual intelligence of CUU students. It seems that the G3SHS students have not yet gained the ability to relate the mental process of “theorizing” to the two verb schemata of “questioning” and “contemplating” to understand the “nature of reality” (S1), “meaning of events” (S13), “death” (S5) and “the universe” (S17) as the CUU students have.

Four verb schema types constitute the CET factor of the English SISRI, i.e., contemplate, develop a theory, ponder and question. These concepts do not belong to the genus of CET semantically because it differs from “contemplating”, “pondering” and “questioning”, placing it at the highest level of learning within a cognition hierarchy. While they deal with “trying to understand” a certain topic such as “reality”, developing a theory or theorizing requires forming “a scheme or system of ideas or statements held as an explanation or account of a group of facts or phenomenon” (Onions, 1973, p. 2281). In terms of Bloom’s (1954) original taxonomy, i.e., Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation, developing a theory seems to be at the highest level of learning, i.e., evaluation.

Along with *Contemplative*, *Theo-Meditative* and *Theorizing* genera of SQ, the seventh factor underlying the Persian SISRI called *Visionary* in this study consists of one species, i.e., 16. It represents the G3SHS students’ ability to see issues and choices more clearly while in higher states of consciousness/ awareness. Although Onions (1973) approached the definition of vision rather negatively and defined it as “having the nature of a revelation, supernaturally presented to the mind in sleep or in an *abnormal state* [italics are added]” (p. 4282), King (2008) could establish it as a normal practice by coining the phrase Conscious State Expansion (CSE) to establish “vision” or “seeing issues and choices” as one of the five statements comprising the second factor of the English SISRI, i.e., 4, 8, 12, 16, and 24.

In this study supplication or D’IKR is suggested as one of the most widely practiced techniques of entering the higher state of consciousness. It is frequently ordained to believing Muslims in the Holy *Quran* by telling them how to do it. For example, verse 55 of seventh Surah, i.e., ALARAF (الأعراف), reads: Call on your Lord, humbly and secretly; He loves not transgressors (ادْعُوا رَبَّكُمْ تَضَرُّعًا وَخُفْيَةً إِنَّهُ لَا يُحِبُّ الْمُعْتَدِينَ) [Arberry, 1955, p. 178]. According to Chittick (2000), “from earliest times the sources confirm the power of DIKR to provide for human psychological and spiritual needs and to influence activity” (p. 14). Providing supplication as a means of entering higher conscious in the text of the SISRI may bring about changes in the cognitive structure of its genera in future studies.

In summary, the spiritual intelligence domain of G3SHS students consists of 262 schema tokens which interact with each other with the context of 21 species. The application of the species to their personal life shows that these students

employ the species to fulfill seven genera, i.e., Purposive, Transcending, Contemplative, Meta-conscious, Theo-meditative, Theorizing, and Visionary. It remains to be explored whether the species, genera and domain of spiritual intelligence relate significantly to a host of educationally important variables such as language achievement and proficiency.

Appendix: Statements Comprising the SISRI

NO	Statement
1	I have often questioned or pondered the nature of reality.
2	I recognize aspects of myself that are deeper than my physical body.
3	I have spent time contemplating the purpose or reason for my existence.
4	I am able to enter higher states of consciousness or awareness.
5	I am able to deeply contemplate what happens after death.
6	It is difficult for me to sense anything other than the physical and material.*
7	My ability to find meaning and purpose in life helps me adapt to stressful situations.
8	I can control when I enter higher states of consciousness or awareness.
9	I have developed my own theories about such things as life, death, reality, and existence.
10	I am aware of a deeper connection between myself and other people.
11	I am able to define a purpose or reason for my life.
12	I am able to move freely between levels of consciousness or awareness.
13	I frequently contemplate the meaning of events in my life.
14	I define myself by my deeper, non-physical self.
15	When I experience a failure, I am still able to find meaning in it.
16	I often see issues and choices more clearly while in higher states of consciousness/ awareness.
17	I have often contemplated the relationship between human beings and the rest of the universe.
18	I am highly aware of the nonmaterial aspects of life.
19	I am able to make decisions according to my purpose in life.
20	I recognize qualities in people which are more meaningful than their body, personality, or emotions.
21	I have deeply contemplated whether or not there is some greater power or force (e.g., god, goddess, divine being, higher energy, etc.).
22	Recognizing the nonmaterial aspects of life helps me feel centered.
23	I am able to find meaning and purpose in my everyday experiences.
24	I have developed my own techniques for entering higher states of consciousness or awareness.

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