

Nurturing the Soul: A Psychometric Analysis of the Spiritual Intelligence Inventory in Married Madrassa and Non-Madrassa Women

Bushra Naeem & Jaffar Abbas

Abstract

Background: The interplay between the health and academic success of married women has long been acknowledged, with spiritual intelligence being an often underexplored yet critical factor. Despite its global implications for public health and its substantial role in religious education, spiritual intelligence is frequently marginalized and seldom recognized as a significant determinant of healthcare evaluation and health promotion. Therefore, this study was conducted to assess the psychometric properties of the Spiritual Intelligence Inventory (SISRI) in the context of married women.

Methods: Employing a cross-sectional research design and purposive sampling methodology, we recruited a cohort of three hundred women (150 married Madrassa and 150 married non-Madrassa), aged 18 to 50, from various formal religious educational institutions in Rawalpindi and Islamabad, Pakistan. Data collection spanned from January 1, 2021, to August 1, 2021.

Results: This study encompassed two distinct phases: a pilot study and a main study. Findings from the research indicated a positive correlation between SISRI-Urdu and English total scores as well as subscale scores, underscoring the robust internal consistency of the inventory. Furthermore, the test-retest reliability of both the English and Urdu versions exhibited high levels of consistency ($r = 0.94$). In the primary investigation, confirmatory factor analysis (CFA) was carried out to establish construct validity in both married Madrassa and non-Madrassa women.

Conclusions: In conclusion, the study establishes the Spiritual Intelligence Inventory (SISRI) as a robust tool for assessing spiritual intelligence in married Madrassa and non-Madrassa women. These findings emphasize the instrument's potential utility in deepening our understanding of the interplay between spirituality, mental health, and religious education, shedding light on its valuable role in healthcare assessment and promotion within these specific contexts.

Keywords: Psychometric properties, spiritual intelligence, validity and reliability, Religious Education, Married Women.

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Background

More recently, cognitive, emotional, and social intelligence have been extensively renowned as important attributes for professionals' practices in clinical and educational settings (Beni et al., 2019; Etemadnia et al., 2021). Spiritual intelligence has also been recognized as a very important skill that is urgently required by the health and education fields (Beni et al., 2019; Vaughan, 2002; Watts & Dorobantu, 2023). The idea of spiritual intelligence was developed and introduced in 1997, and the idea was built on the belief systems of Eastern religions, ancient societies, and original cultures (Andrei, 2023; Kwilecki, 2000; O'Donnell, 1997). Furthermore, neurological evidence and psychological theories such as the theory of positive disintegration facilitate the theoretical development of the concept of spiritual intelligence (Amram, 2007; Andrei, 2023). It has also been referred to as the ability of the people to utilize transcendent abilities and spiritual resources in practical conditions (Emmons, 2000a, 2000b). It represents an inner capacity related to self-awareness that empowers individuals to make ethical decisions, confront challenges, and adapt to different conditions (Burrows, 2005; Currie, 2023). It is reflected as an integrating intelligence that associates an individual's rational and emotional intelligence and is also considered the ultimate intelligence (Andrei, 2023; Emmons, 2000a). Hence, it has widely considered in different professional settings, particularly in educational and personal settings (Alizad & Sheikhloovand, 2022; Beni et al., 2019).

In the last few years, there have been a lot of studies that have explored the crucial role of religious orientation and perspective in the development of mental health in Pakistani women in religious institutes (Chua et al., 2019; Nadeem et al., 2019; Naeem et al., 2021; Pant, 2023). Several studies have reported that most women who studied in formal religious and non-religious institutes exhibited mental health problems, including sadness, anxiety, stress, and insomnia (Ebrahimi et al., 2012; Saleem & Majeed, 2023). Moreover, a few studies have also explained the strong links between an individual's spiritual abilities and their emotional issues (Carey et al., 2023), such as enhanced resilience and susceptibility to mental health issues (Chua et al., 2019; Mitchell & Weatherly, 2000). Interesting, similar studies also found that high spiritual intelligence can have positive effects, including a high level of resilience that improves personal and moral development and reduces stress levels, ultimately improving mental health (Villani et al., 2019; Wagani & Colucci, 2018).

The scientific community is keenly interested in exploring the spiritual intelligence initially proposed by Gardner (2011), which involves exploring meaning in life, personal growth, and effectively solving problems through spiritual insights (Amram, 2007; Antunes et al., 2018; Ghosn, 1997; Golovina & Kharkiv, 2016). They identified five important characteristics for spiritually intelligent people: experiencing deep spiritual consciousness, going beyond the physical, explaining everyday problems spiritually, employing spiritual skills for problem-solving and resolving every problem, and acting morally and contextually. Conversely, Mayer (2000) argued and explained that spiritual intelligence lacked abstract thinking; hence, it required showing impartiality to other intelligences, entirely tackling

and fixing spiritual problems, and going beyond basic needs and knowledge of spirituality to be accepted as a valid construct (Edwards, 2003; Mayer, 2000).

Many scientists have carried out theoretical studies to develop new spiritual intelligence frameworks in response to criticisms of spiritual intelligence. They identified four very important attributes of spiritual intelligence: personal meaning production (PMP), critical existential thinking (CET), conscious state expansion (CSE), and transcendental awareness (TA) (King & DeCicco, 2009). Interestingly, CET is characterized as a spiritual ability, and spiritual intelligence is considered a set of interconnected mental abilities that grow with age and fulfil Gardner's criteria for intelligence. For this purpose, the Spiritual Intelligence Self-Report Inventory-24 was designed to examine spiritual intelligence with different other characteristics in different populations.

It has been associated with couples' happiness and marital satisfaction in different previous studies (Hatami et al., 2009; Naeem et al., 2021, 2023; Naeem & Chaman, 2022; Vasegh et al., 2012; Zarei & Ahmadsarkhooni, 2013). It was observed that divorce rates have rapidly increased in European and Asian countries, especially in the US and Pakistan, because of societal and economic pressures (Kennedy & Ruggles, 2014; Ramzan et al., 2018). It has also been noted that there is increasing intolerance and frustration in relationships (Carver & Scheier, 2010; Choudhry et al., 2018). Therefore, deep understanding of spiritual intelligence in couples with mental health issues is important for enhancing mental health, but for this purpose, reliable spiritual intelligence assessment tools are desperately needed to evaluate the spiritual level of couples.

The SISRI-24 has also been studied in non-clinical and normal samples, with both exploratory and confirmatory factor analyses demonstrating four factors in both Chinese and English versions (King & DeCicco, 2009; Villani et al., 2019). Conversely, the Portuguese adaptation identified three distinguishing factors (Antunes et al., 2018; Koenig, 2008, 2023). There are a few studies on spiritual intelligence in the Pakistani educational context, and prior research used different instruments but lacked validated and reliable measures (Ahmed et al., 2017; Ilyas & Arshad, 2017; Munawar & Tariq, 2018). The present study aims to translate the SISRI-24 into Urdu and examine and establish psychometric reliability and validity in both university students and married women, which could be useful for research and clinical use in Pakistan.

Method

Research design

This study used a cross-sectional research design and utilized a purposive sampling technique. The study consisted of two stages: (1) a pilot study and (2) a main study.

Participants

This study was conducted in two phases: In the pilot study, the Spiritual Intelligence Inventory underwent translation and cross-cultural validation (see Figure 1). In the main study, three hundred women participants, whose ages ranged from 18 to 50 years ($M = 25.12$, $SD = 1.02$), were recruited and divided into two groups: married women from Madrassa (Islamic religious schools) backgrounds ($n = 150$) and married women from non-Madrassa backgrounds ($n = 150$). 150 married women from Madrassas (either hafiz-e-

Quran or enrolled in master's degree programmes), who had been in an intimate relationship for the past two years and were aged between 18 and 50 years, were recruited from Government Madrassas in Rawalpindi, Islamabad, and Azad Kashmir, Pakistan, during the period from January 1, 2021, to August 1, 2021. On the other hand, the other group consisted of 150 non-Madrassa women who were not currently employed, had been in an intimate relationship for the past two years, and were aged between 18 and 50 years. They were recruited from various housing societies in Rawalpindi, Islamabad, and Azad Kashmir, Pakistan. This study underwent the below-mentioned translation process. The following guidelines of translation were set in the present study.

Standard Back Translation Method

The Spiritual Intelligence Inventory underwent translation and cross-cultural validation using the standard back translation method (see Figure 1). This study was completed in phases.

In Phase 1, this study used the forward translation method of the Spiritual Intelligence Self-Report Inventory for translation from English to Urdu using established quality guidelines by Hambleton and his colleagues (Brislin, 1976; Hambleton, 1996; Sousa & Rojjanasirrat, 2011; Tinsley & Brislin, 1977, 1977). Translators were selected based on specific criteria such as proficiency and familiarity in both English and Urdu, as well as both cultures, subject matter expertise, and expertise in item writing. Ethical approval for conducting this study was obtained from higher authorities at a private sector university in Pakistan. Moreover, after obtaining permission from the original author, the SISRI-24 scale was translated from English to Urdu with the help of three proficient and familiar bilingual experts who met these criteria.

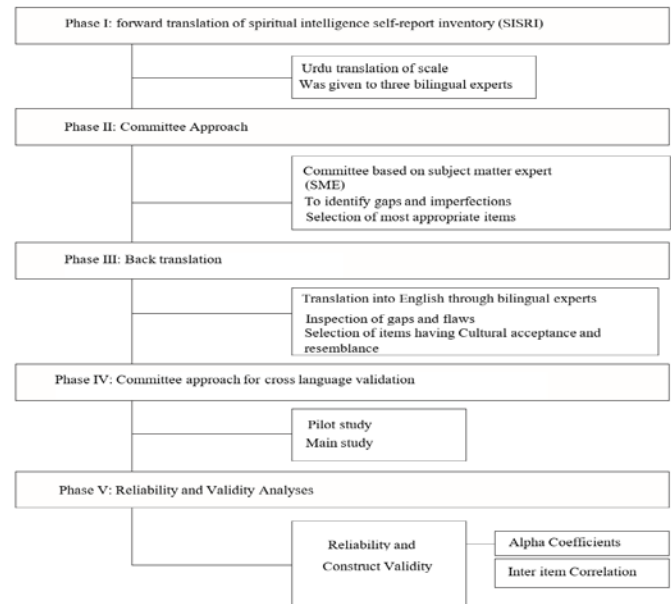
In Phase 2, we used the committee approach and followed the criteria outlined by Tinsley and Brislin (1976). A committee approach was formed by subject matter experts, such as two psychology department lecturers and one researcher. The committee members aimed to identify, examine, and rectify imperfections or gaps in the translated versions with the collaborative consent of experts. The most appropriate items were designated through consensus and verification among committee members.

In Phase 3, we performed the back translation method, a process wherein the translated version is further rendered and modified back into the original English language. This method was accomplished with the assistance of independent and appropriate bilingual experts to ensure reliability and validity in cross-cultural languages. Both original translated and back-translated items were also compared with the assistance of experts, and any discrepancies were addressed in detail (Tinsley & Brislin, 1977). Bilingual experts were involved in the present study from the English department of Foundation University Islamabad in Pakistan to perform this task. The primary focus was on maintaining conceptual equivalence and cross-cultural understanding by identifying and rectifying gaps and flaws.

In Phase 4, this study used a cross-language validation approach through a committee approach to examine content validity and test-retest reliability between the original and translated versions of the instrument. This cross-cultural validation was completed in two separate

studies, a pilot and a main study, as standard, reliable, and valid instruments are mostly available in English, necessitating validation for effectiveness in foreign languages.

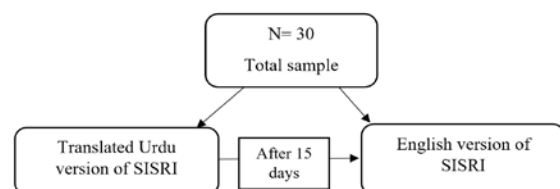
Figure 1. Diagrammatic representation of scale translation process.



Pilot study

In the pilot study, the cross-cultural examination method was comprised of two steps to evaluate potential discrepancies between the English and Urdu versions of SISRI-24 in a Pakistani context. This method aimed to establish the test-retest reliability of the translated version. In the initial examination, 30 students participated in a pilot study to evaluate test-retest reliability. In Step 1, participants were provided translated English versions of the original SISRI questionnaire. The aim of this step was to gauge the participants' responses when presented with the English version of the instrument. After that 15-day interval from the first evolution, the same group of 30 participants was reevaluated for the second examination. In this phase, participants completed the Urdu version of the SISRI questionnaire. This sequential method, using the Urdu version after the English version, was adopted to ensure the identification of any potential discrepancies between the two versions (see Figure 2).

Figure 2. Diagrammatic representation of total sample for test and retest.



Procedure

Both the pilot and main studies adhered to the guidelines outlined by the American Psychological Association (APA) and received formal approval from the Institutional Ethical Review Board at Foundation University in Islamabad, Pakistan. In the main study, three hundred participants were recruited from government madrassas and various universities located in Rawalpindi, Islamabad, and Azad Kashmir, Pakistan. Prior to their participation, participants provided both verbal and written informed consent, a process facilitated by the respective authorities of the madrassas and universities. Participants were explicitly assured that their personal information would be treated with the utmost confidentiality and exclusively used for the purposes of the present study. Moreover, the Statistical Package for Social Sciences (SPSS version 20) was applied to precisely examine the psychometric properties of the newly developed scale within the Pakistani context. This inclusive examination included item-total correlations, Cronbach's alpha reliability analysis, test-retest reliability examination, and confirmatory factor analyses. These rigorous analytical procedures were applied to ensure the instrument's robustness and appropriateness for use in the Pakistani context.

Results

Pilot study

In Table 1, the results displayed a significant and positive correlation between 24 items within the SISRI in English, including its various subcategories, such as critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion, and the total score in the student sample. This implies and shows strong internal consistency in the scale, making it a reliable and valid assessment tool for future studies in the Pakistani context.

In Table 2, the results displayed a significant and positive correlation between 24 items within the SISRI in Urdu, including its various subcategories, such as critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion, and the total score in the student sample. This implies and shows strong internal consistency in the scale, making it a reliable and valid assessment tool for future studies in the Pakistani context.

In Table 3, the findings display the test-retest reliability of the Urdu version of SISRI-U by evaluating its internal consistency over two intervals. Particularly, this study used the Pearson product-moment correlation to examine the association between the overall scores of the English version obtained in the initial test and the subsequent retest overall scores of the Urdu version across the four subscales: critical existential thinking, transcendental awareness, personal meaning production, and conscious state expansion in the student sample.

Interestingly, the Pearson correlation coefficients were found to exceed 0.80 for four subscales, displaying a robust and consistent pattern of responses between both Urdu and English versions. Furthermore, the overall value of the Pearson correlation coefficient exceeded 0.94, which reflected the high degree of consistency in both the Urdu and English versions. These remarkably significant Pearson

correlation coefficient values give convincing evidence of the promising test-retest reliability of the SISRI-U tools.

In Table 4, the internal validity of both the Urdu and English versions of the SISRI was examined through Cronbach's alpha coefficient in the student sample. The Cronbach's alpha coefficient was 0.75 for both the total SISRI scores of the English and Urdu versions. It was noted that for the English version of SISRI, they ranged from 0.14 (item 1) to 0.76 (item 24), while for the Urdu version of SISRI, they ranged from 0.13 (item 1) to 0.81 (item 24). Additionally, the Cronbach's alpha coefficients for the English of the SISRI subscales—including critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion—were 0.74, 0.77, 0.74, and 0.77, respectively. Similarly, for the Urdu version of SISRI, the Cronbach's alpha coefficients for the subscales—including critical existential thinking, personal meaning production, transcendental awareness, and conscious state expansion were 0.76, 0.78, 0.74, and 0.78, respectively. These results confirm the internal reliability and validity of both versions of the SISRI instrument.

Pilot study

In Table 5, the results display the association between the overall total scores and the three subscales of the SISRI scale. Remarkably, the subscales within the SISRI-U display statistically significant associations with each other. The findings exhibit that each item of the scale has a significant positive association with their respective subscales, demonstrating strong internal consistency within the instrument.

Confirmatory factor analysis for Urdu SISRI Analyses of invariance: multiple groups approach

In examining invariance, the purpose is to determine whether the meaning of items remains consistent among different subject groups (Cordon & Finney, 2008; French & Finch, 2008), a process important to examining construct validity and evaluating possible sources of construct-irrelevant invariance. This process not only ensures new instruments meet established validity standards but also protects against biased measurements. Invariance tests, therefore, contribute to a detailed comprehension of genuine changes in latent constructs. The measurement of invariance involves three key steps: configural invariance that evaluates whether the similar indicators maintain their link to the similar factors among groups; metric invariance that examines the correspondence of factor loadings. Scalar invariance examines the similarity of intercepts in groups. Two multiple-group analyses have been carried out to examine measurement invariance in non-madrassa and madrassa women, with a CFI difference of 0.01 as the criterion for measurement invariance. A CFA analysis was performed to ensure the proposed factor structure of the scale (King & DeCicco, 2009).

In Table 6, CFA was carried out to examine the factor structure of the Urdu version of the SISRI in married madrassa women. The model presents the global fit indices for the SISRI scale. Initially, the four-factor model displayed a chi-square to degrees of freedom (2) ratio of 3.85, exceeding the recommended threshold of 2.0 for a good

Table 1

Correlation among Subscales of Spiritual Intelligence Self-Report Inventory English Version (N = 25)

	SISRI-E r	CET r	PMP r	TA r	CSE r
1	.43 [*]	.70 ^{**}			
2	.68 ^{**}			.74 ^{**}	
3	.71 ^{**}	.76 ^{**}			
4	.53 ^{**}				.69 ^{**}
5	.23 ^{**}	.29			
6	.14 [*]			.15	
7	.62 ^{**}		.71 ^{**}		
8	.54 ^{**}				.52 ^{**}
9	.56 ^{**}	.65 ^{**}			
10	.66 ^{**}			.75 ^{**}	
11	.45 [*]		.49 [*]		
12	.76 ^{**}				.75 ^{**}
13	.59 ^{**}	.55 ^{**}			
14	.57 ^{**}			.57 ^{**}	
15	.52 ^{**}		.71 ^{**}		
16	.79 ^{**}				.82 ^{**}
17	.57 ^{**}	.57 ^{**}			
18	.69 ^{**}			.74 ^{**}	
19	.57 ^{**}		.76 ^{**}		
20	.47 [*]			.65 ^{**}	
21	.66 ^{**}	.70 ^{**}			
22	.44 [*]			.47 [*]	
23	.71 ^{**}		.73 ^{**}		
24	.45 [*]				.63 ^{**}

Note. SISRI-E = spiritual intelligence self-report inventory in English; PMP = personal meaning production; TA = transcendental awareness; CET = critical existential thinking; CSE = conscious state expansion.

Table 2*Correlation among subscale of spiritual intelligence self-report inventory Urdu Version (N=25)*

	SISRI-U	CETU	PMPU	TAU	CSEU
	r	r	r	r	r
1	.36	.58**			
2	.72**			.78**	
3	.66**	.74**			
4	.40*				.66**
5	.25	.45*			
6	.13			.07	
7	.69**		.75**		
8	.53**				.46*
9	.64**	.65**			
10	.67**			.65**	
11	.49*		.47*		
12	.77**				.82**
13	.78**	.67**			
14	.70**			.79**	
15	.81**		.87**		
16	.71**				.80**
17	.83**	.75**			
18	.67**			.67**	
19	.66**		.74**		
20	.41*			.52**	
21	.72**	.75**			
22	.63**			.68**	
23	.54**		.71**		
24	.61**				.81**

Note. SISRI-U = spiritual intelligence self-report inventory Urdu, PMP = personal meaning production; TA = transcendental awareness; CET = critical existential thinking; CSE = conscious state expansion.

Table 3

Pearson product-moment correlation coefficient, Mean and standard deviation, and minimum and maximum mean range values, the test-retest reliability coefficient of the Urdu and English versions of SISRI (N = 25)

Spiritual Intelligence	Test (E)	Re-test(U)	Correlation Coefficient	p-value
Spiritual intelligence (maximum scores:96)			.94	
Mean	54	53.62		0.01
SD	11.76	12.59		
Range	0-96	0-96		
Critical (maximum score: 28)			.93	
Mean	15.44	15.56		0.01
SD	4.13	4.19		
Range	0-28	0-28		
Personal (maximum score: 20)			.79	
Mean	11.72	11.4		0.01
SD	2.95	2.49		
Range	0-20	0-20		
Transcendental (maximum score:28)			.92	
Mean	15.32	14.96		0.01
SD	3.65	3.93		
Range	0-28	0-28		
Conscious (maximum score:20)			.83	
Mean	11.52	11.72		0.01
SD	2.78	3.08		
Range	0-20	0-20		

Table 4

Reliability coefficient of the translated (SISRI-U) and the English version (SISRI-E).

Variable	SISRI-E (α)	SISRI-U(α)	SI(Item- total)	SISRI-U (item- total)
SI-total (24 items)	0.75	0.75	0.14-0.76	0.13 -0.81
Critical existential thinking (7 items)	0.74	0.76	0.29 -0.76	0.45 -0.75
Personal meaning production (total items 5)	0.77	0.78	0.49 -0.76	0.47 -0.87
Transcendental awareness (total items 7)	0.74	0.74	0.17 -0.75	0.75 -0.79
Conscious state expansion (total items 5)	0.77	0.78	0.52 -0.82	0.46 -0.82

Note. α = Cronbach's alpha coefficient

Table 5*Correlation among total and subscales of Urdu SISRI (N=300).*

	SISRI	CET	PMP	TA	CSE
	r	r	r	r	r
1	.74**	.78**			
2	.83**			.82**	
3	.83**	.85**			
4	.79**				.75**
5	.81**	.85**			
6	.34**			.45**	
7	.80**		.76**		
8	.79**				.75**
9	.83**	.84**			
10	.81**			.83**	
11	.47**		.72**		
12	.80**				.77**
13	.80**	.83**			
14	.81**			.84**	
15	.81**		.77**		
16	.71**				.68**
17	.80**	.84**			
18	.81**			.83**	
19	.80**		.76**		
20	.79**			.83**	
21	.82**	.86**			
22	.84**			.85**	
23	.84**		.81**		
24	.84**				.80**

Note. SISRI=Spiritual Intelligence Self report inventory; CET=Critical Existential Thinking; PMP=Personal Meaning Production; TA=Transcendental Awareness; CSE=Conscious State Expansion.

Table 6*Confirmatory factor fit indices for SISRI in Urdu for married madrasa women (N = 150)*

Scale and factors	χ^2	df	χ^2/df	CFI	IFI	TLI	RMSEA	RMSEA 90% CI	ECVI	ECVI 90% CI
SISRI										
1 (24 Items)	948.65	246	3.85	0.83	0.83	0.81	0.13	.11-.14	7.4	5.8-7.8
2 (24 Items)	698.43	236	2.95	0.89	0.89	0.87	0.1	.08-.12	5.8	4.3-6.0
3 (24 Items)	455.77	227	1.94	0.91	0.92	0.92	0.08	.07-.10	4.2	3.8-4.8

Note. SISRI=spiritual intelligence self-report inventory; CFI=comparative fit index; IFI= incremental fit index; RMSEA= root mean square error of approximation; CI= confidence interval; ECVI= Expected Cross Validation Index.

Table 7*Factor loading of CFA for SISRI for married madrassa women (N= 150)*

Scale	Items	Factors		
		B	S.E	β
Critical Existential Thinking				
SI1	1	1.00	.10	.75***
SI2	3	1.15	.10	.84***
SI3	5	1.14	.10	.83***
SI4	9	1.19	.11	.83***
SI5	13	1.24	.11	.83***
SI6	17	1.19	.10	.82***
SI7	21	1.30	.11	.86***
Personal Meaning Production				
SI8	7	1.30	.07	.82***
SI9	11	1.00	.07	.85***
SI10	15	1.01	.07	.89***
SI11	19	1.07	.08	.78***
SI12	23	.94	.08	.86***
Transcendental Awareness				
SI13	2	1.00	.08	.84***
SI14	6	.61	.08	.53***
SI15	10	1.08	.07	.85***
SI16	14	1.16	.08	.85***
SI17	18	1.17	.09	.81***
SI18	20	1.12	.08	.81***
SI19	22	1.26	.09	.86***
Conscious State Expansion				
SI20	4	1.00	.08	.79***
SI21	8	1.09	.08	.85***
SI22	12	1.10	.09	.83***
SI23	16	1.11	.09	.84***
SI24	24	1.21	.09	.86***

Table 8*Confirmatory factor fit indices for the SISRI Urdu version for married non-madrassa women (N = 150)*

Scale and factors	χ^2	df	χ^2/df	CFI	IFI	TLI	RMSEA	RMSEA 90% CI	ECVI	ECVI 90% CI
SISRI										
1 (24 Items)	405.04	246	1.64	.93	.93	.92	.06	.05-.07	3.7	3.0-3.8

Note. SISRI= spiritual intelligence elf report inventory; CFI= confirmatory fit index; IFI= incremental fit index; RMSEA= root mean square error of approximation; CI= confidence interval; ECVI= expected cross validation index.

Table 9*Factor loading of CFA for SISRI for married non-madrassa women (N= 150)*

Scale	Items	Factors		
		B	S.E	β
Critical Existential Thinking				
SI1	1	1.00	.14	.67***
SI2	3	1.32	.14	.82***
SI3	5	1.26	.14	.77***
SI4	9	1.34	.14	.80***
SI5	13	1.09	.13	.70***
SI6	17	1.28	.14	.77***
SI7	21	1.41	.15	.78***
Personal Meaning Production				
SI8	7	1.00	.41	.72***
SI9	11	1.23	.41	.24**
SI10	15	.92	.11	.64***
SI11	19	1.17	.11	.80***
SI12	23	1.22	.12	.80***
Transcendental Awareness				
SI13	2	1.00	.10	.78***
SI14	6	.17	.11	-.13
SI15	10	1.06	.10	.75***
SI16	14	1.01	.09	.74***
SI17	18	.91	.08	.75***
SI18	20	.94	.09	.73***
SI19	22	.98	.09	.77***
Conscious State Expansion				
SI20	4	1.00	.09	.78***
SI21	8	.75	.09	.58***
SI22	12	.94	.09	.73***
SI23	16	.72	.11	.48***
SI24	24	1.24	.10	.80***

Figure 3. The path diagram illustration of the four-factor model with item loading from confirmatory factor analysis for married madrasa women

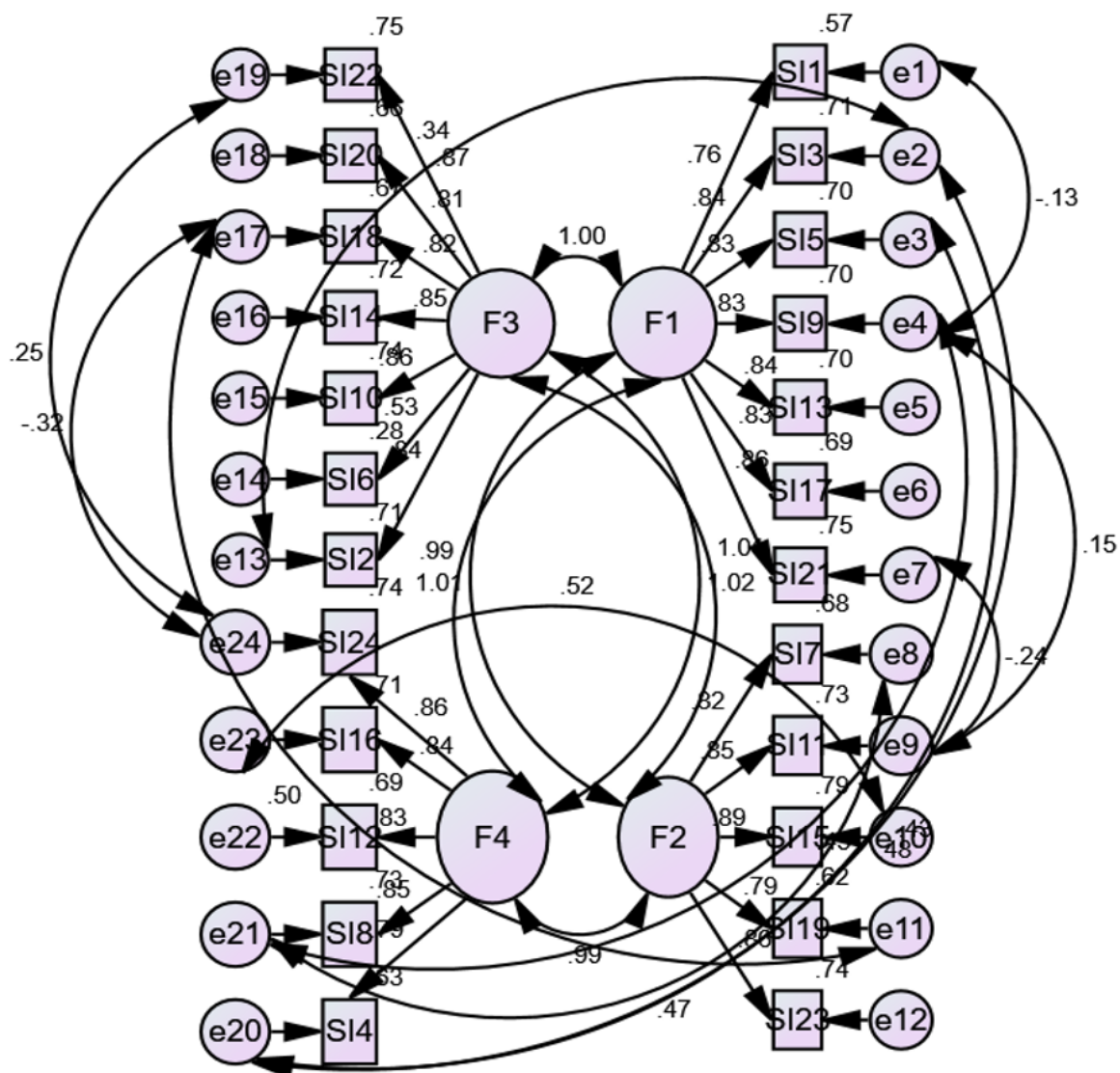
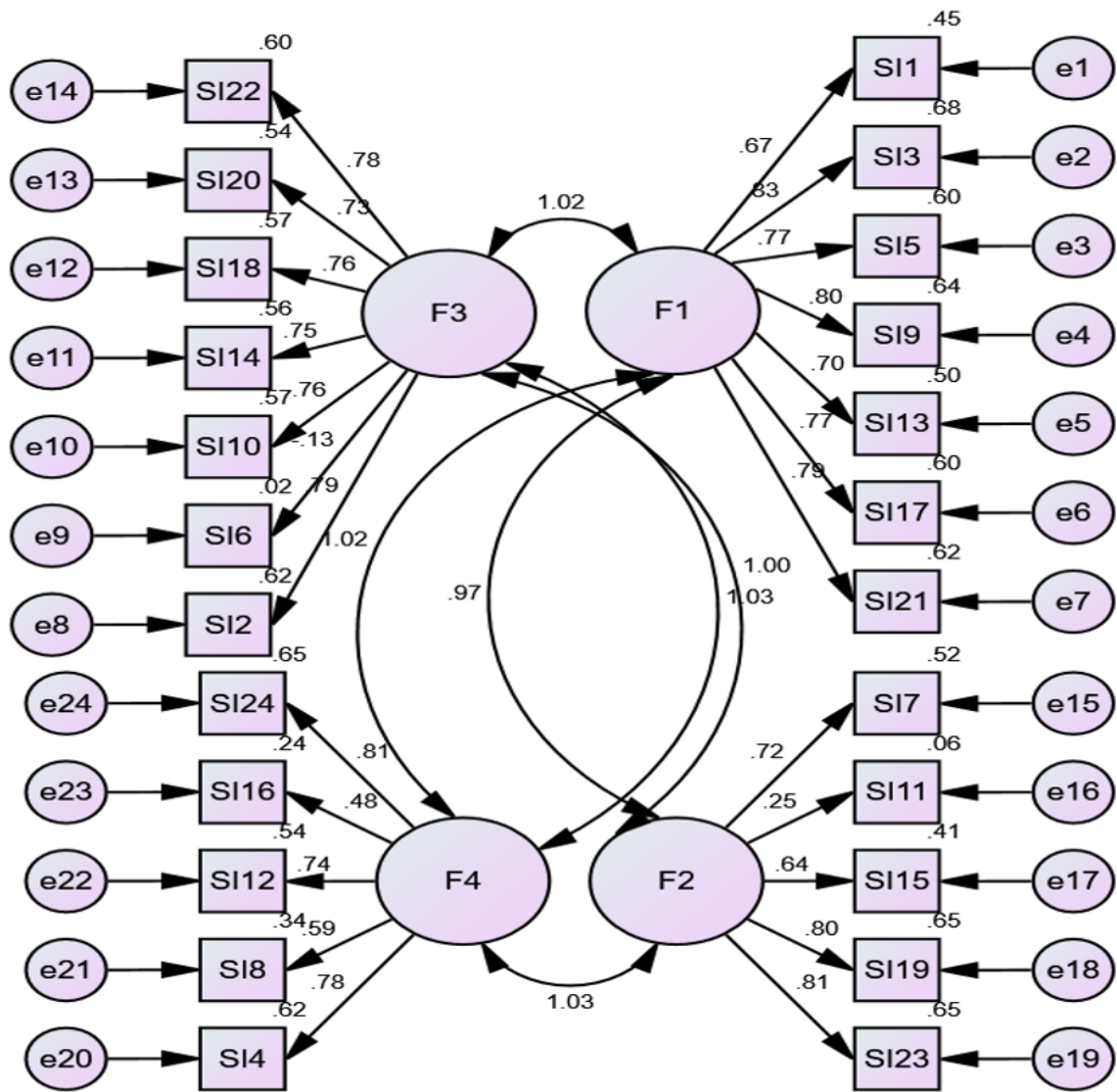


Figure 4. The path diagram illustration of the four-factor model with item loading from confirmatory factor analysis for married madrasa women



Model fit, as suggested by Tabachnick, et al. (2007). Additionally, both the Comparative Fit Index (CFI) and Incremental Fit Index (IFI) values fell below the recommended threshold of 0.90, indicating suboptimal model fit (Tabachnick et al., 2007). To enhance the model's fit, modification indices were applied, resulting in improved fit indices that aligned with good model fit criteria: $\chi^2 = 455.77$; $2/df = 1.94$; CFI = 0.91; IFI = 0.92; TLI = 0.92; RMSEA = 0.08; 90% CI = 0.07–0.10; ECVI = 4.2; 90% CI = 3.8–4.8.

Table 7 provides a comprehensive view of the standardized factor loadings for each item within the scale. Importantly, all factor loadings were found to be statistically significant. Specifically, every item related to critical existential thinking (CET) exhibited substantial loadings on Factor 1, ranging from 0.76 to 0.86. Likewise, all items associated with personal meaning production (PMP) displayed robust loadings on Factor 2, ranging from 0.78 to 0.89. Factor 3, encompassing transcendental awareness (TA), demonstrated noteworthy loadings ranging from 0.53 to 0.86 for all its constituent items. Furthermore, Factor 4, representing conscious state expansion (CSE), exhibited strong loadings ranging from 0.79 to 0.86 across all its items. These findings underscore the reliability and validity of the scale's factor structure.

Table 8 displays the global fit model indices for the Spiritual Intelligence Self-Report Inventory for married non-madrassa women. The four-factor model exhibits a chi-square to degrees of freedom (χ^2/df) ratio of 1.64, surpassing the suggested threshold of 2.0 for a favorable model fit, as suggested by Tabachnick et al. (2007). Additionally, both the incremental Fit index (IFI) and comparative fit index (CFI) values were above the recommended level of 0.90, signaling strong support for a well-fitting model.

Table 9 exhibits the standardized factor loadings for each item within the scale for the married non-madrassa women sample. All factor loadings of scale items were statistically significant, but item 6 was found non-significant in the Transcendental Awareness (TA) factor. Furthermore, all items linked to critical existential thinking (CET) displayed robust and stronger loadings on Factor 1, which ranged from 0.67 to 0.82. Likewise, all items pertaining to personal meaning production (PMP) demonstrate factor loadings on item 2, which vary from 0.24 to 0.80. Factor 3, which further comprised transcendental awareness (TA), showed significant loadings for all items except item 6, which ranged from 0.73 to 0.78. Finally, all items associated with conscious state expansion (CSE) displayed robust factor loadings on four items, ranging from 0.48 to 0.80. These findings confirm the scale's factor structure's reliability and validity, with the exception of item 6 within the TA factor.

Discussion

The present study aimed to examine and establish, in a translated version, the psychometric properties of the Spiritual Intelligence Inventory (SISRI) across married women from madrassas with religious education backgrounds and married women with formal education. The findings exhibited a robust positive

association between both at the total score and subscale levels of the Urdu and English versions of the SISRI, demonstrating strong internal consistency. Moreover, high test-retest reliability ($r = 0.94$) was observed and confirmed through the person-correlation matrix of both the English and Urdu versions in both samples. Confirmatory Factor Analysis (CFA) was also used in the main study to develop construct validity in both samples of women, with satisfactory results. Additionally, alpha Cronbach reliability analysis exhibited acceptable levels of internal consistency for the overall scale and along its subscales in the Urdu version of the SISRI, as indicated by Cronbach's alpha coefficients, which are: total scale: 0.75; CET: 0.74; PMP: 0.77; TA: 0.74; CSE: 0.77. Further, construct validity analysis has shown a significant and robust association between the overall scale and its subscales for both Madrassa and non-Madrassa women samples.

Moreover, CFA is considered a very important analytical tool to establish construct validity in different samples and provide comprehensive and detailed insights into error variance parameters, allowing the rectification and identification of potential measurement biases. The factorial structure and construct validity of the translated version were confirmed and established through CFA analysis in the Pakistani context, exhibiting and confirming four diverse factors for the Urdu SISRI in both women's samples. While CFA analysis also suggested four factors with an overall good model fit, except item 6, that did not show significant results for the non-Madrassa-educated women sample, This inequality can be recognized in the heightened engagement of Madrassa women in religious activities, which is leading to higher exposure to spirituality concepts and activities in the Pakistani context (Maccoby & Martin, 1983; Naeem et al., 2021).

It is crucial to observe that religiosity and spirituality, although separate constructs, are considered interconnected (Zarei & Ahmadi Sarkhooni, 2013). Spirituality transcends religious affiliation and includes a personal exploration of life's profound questions, purpose, and connection to higher values. Moreover, spirituality includes moral and social principles and can be triggered by contributing to different religious practices within a community (Andrei, 2023; Beni et al., 2019; Kwilecki, 2000; O'Donnell, 1997; Vaughan, 2002; Watts & Dorobantu, 2023).

Limitation and Implications

The present study has certain drawbacks that should be recognized and resolved in future studies. First of all, it solely focused on participants who were studying in religious and educational institutions, possibly restricting the generalizability of the results to an entire population. Moreover, the gender selection of the sample was extremely skewed towards women, which could generate gender-related biases when we made comparisons across two samples. Whereas the findings offer deep valuable insights in the Pakistani context, they should be further observed as a foundational step, and potential studies should endeavor to expand upon these results by incorporating more representative and diverse samples.

Conclusion

The present study concluded the utilization of the newly cross-culturally validated SISRI-Urdu, which has exhibited robust psychometric properties in married women with Madrassa education backgrounds as compared to married educated women without religious education. The results highlight the SISRI-Urdu as a reliable and valid self-reported inventory to examine spiritual intelligence in Pakistani women's populations. The study has remarkably developed high internal consistency and reliability for the Urdu SISRI along its four subscales. Additionally, it lays the groundwork for future studies into the concept of spiritual intelligence in married women in Pakistan. Further, empirical studies with a more diverse population are warranted to modify the concept of SI, establish more precise measurement tools, and gain a deeper insight into SI's development in the Pakistani population. Exclusively comprehending and explaining spiritual behaviors and conflicts in educational and clinical contexts can be invaluable. Moreover, the results of the present study contribute to improving our understanding of spiritual intelligence within these contexts.

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Ethical Consideration

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Availability of data and materials

The data sets used and analyzed during the current study are available from the corresponding author on reasonable request.

Authors' contributions/Author details

Bushra Naeem and Jaffar abbas performed this study under the guidelines of Nature-Nurture Journal of Psychology.

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Ethics declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board (*Foundation University Islamabad, Pakistan*). A written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare to have no competing interests.

Additional Information

Not applicable.

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