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The codification of spiritual intelligence measurement model in librarianship and medical information science students of medical universities in Iran

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Abstract:

INTRODUCTION: According to the research mission of the librarianship and information sciences field, it is necessary to have the ability to communicate constructively between the user of the information and information in these students, and it appears more important in medical librarianship and information sciences because of the need for quick access to information for clinicians. Considering the role of spiritual intelligence in capability to establish effective and balanced communication makes it important to study this variable in librarianship and information students. One of the main factors that can affect the results of any research is conceptual model of measure variables. Accordingly, the purpose of this study was codification of spiritual intelligence measurement model.

METHODS: This correlational study was conducted through structural equation model, and 270 students were opted from library and medical information students of nationwide medical universities by simple random sampling and responded to the King spiritual intelligence questionnaire (2008). Initially, based on the data, the model parameters were estimated using maximum likelihood method; then, spiritual intelligence measurement model was tested by fit indices. Data analysis was performed by Smart-Partial Least Squares software.

RESULTS: Preliminary results showed that due to the positive indicators of predictive association and *t*-test results for spiritual intelligence parameters, the King measurement model has the acceptable fit and internal correlation of the questionnaire items was significant. Composite reliability and Cronbach's alpha of parameters indicated high reliability of spiritual intelligence model.

CONCLUSIONS: The spiritual intelligence measurement model was evaluated, and results showed that the model has a good fit, so it is recommended that domestic researchers use this questionnaire to assess spiritual intelligence.

Keywords:

Iranian Universities of Medical Sciences, measurement model, spiritual intelligence, students

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Introduction

In recent decades, the concept of spirituality and its uses in the world has become very important, especially in the western world, and researchers have become keen

on exploring how to use knowledge and spiritual experiences for a healthier and more comprehensive life. In accordance with the definition of the World Health Organization about human existential dimensions, it is referred to physical, psychological, social, and spiritual dimensions; then introduces

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the spiritual dimension as the fourth dimension in human growth and revolution.^[1] Spirituality refers to many positive outcomes in life, including more physical health, the health self-concept, and less mood disorders.^[2] Gardner introduced the concept of spirituality as an intelligence in his Multiple Intelligence Theory in 1983.^[3]

According to King, confrontation strategies and problem-solving techniques using spirituality are actually the compatible applications of spiritual intelligence. According to him, spiritual intelligence is a mediator of spirituality effects and a combination of spirituality and intelligence.^[4] Spiritual intelligence includes mental capacities complex that leads to gaining awareness, integration, and adaptation of the immaterial usage of the existence transcendental aspects and results in critical existential deep thinking, increasing the meaning of life, recognition of self-transcendence, and dominance on spiritual spheres.^[5]

Spiritual intelligence can amplify human's performance and the way of doing things or the way of life can be assessed by such intelligence. It can be said that spiritual intelligence is the ultimate intelligence of the human.^[6]

Spiritual intelligence can give creativity to people, allow them to change the rules, and change the situation. This discussion is not only considered in individual spheres but also in the organizational field and scientific activities. Studies about spiritual intelligence have shown that there is a high correlation between spiritual intelligence and mental health. Furthermore, spiritual intelligence plays an important role in having mental health and reducing negative emotional experiences.^[7] It has been also confirmed that spiritual intelligence has been effective in decreasing occupational stress, and having spiritual emotion causes people to overcome workplace stress.^[8] In addition, based on the research, there is a positive and significant relationship between spiritual intelligence and confidence and mental health of adolescents.^[9] Recent studies have shown that the King's measurement model of spiritual intelligence benefits from good fit indices among Chinese students.^[10] It was also shown in a research that people with more spiritual intelligence are more determined at the workplace and they are capable to establish a balanced and coordinated relationship with other colleagues.^[11]

It has been stated in some studies that spiritual intelligence has had a positive effect on job commitment and productivity of librarians and also increases the capabilities of librarians.^[12,13] In addition, the results of a research indicated a positive and significant relationship between academic eagerness and the variables of spiritual intelligence as well as psychological hardness.^[14] Librarianship and information sciences field

plays an important role in development and scientific production of society considering its research mission and the provision of community information needs.

To realize this important matter, it is required to be able to connect the information to users of information constructively. Students of librarianship are future makers of the field; thus, their empowerment in establishing effective communication is of particular importance in librarianship mission. The importance of this issue is more felt in librarianship and information sciences students because of the need for quick access to the correct information for physicians and health workers. Considering the role of spiritual intelligence in mental health, the ability to establish balanced relationships, reducing stress and building up self-confidence and creativity in changing unfavorable conditions, it seems that librarianship students with more spiritual intelligence benefit from the following characteristics: the ability to communicate more effectively, increase in motivation to resolve interpersonal challenges, resolving the problem constructively, and overcoming daily life stress. No resource has been used, and it has been written based on author's explanation. Therefore, it can be perceived that many studies in the field of spiritual intelligence have been conducted in different ways. One of the most important factors influencing the results of any research is the conceptual model of the variables' measurement. Therefore, the basic issue in this study is whether measurement model of spiritual intelligence has an appropriate fit or not. Accordingly, the purpose of this study is to codify a measurement model of spiritual intelligence.

Methods

This research is a correlational study which was done by structural equation modeling method. The statistical population included 270 undergraduate and postgraduate students of medical librarianship across the country. For each question, the sample size was considered 10 for each free parameter. Therefore, the sample size was determined to be 260 people and sampling was done by simple random method. To collect data, the King self-assessing scale(SISRI-24) (2008) was used. This scale consists of four subscales with 24 components including critical existential thinking with 7 items (1, 3, 5, 9, 13, 17, 21), personal meaning production with 5 terms (7, 11, 15, 19, 23), conscious state expansion with 7 items (20, 2, 6, 10, 14, 18, 22), and transcendental consciousness with 5 items (4, 8, 12, 16, 24). Scoring in the Likert spectrum varies from "it is not right about me at all" (score 0) to "it is perfectly true for me" (Grade 4), and scores range is from 0 to 96. In a research by Raghibi, the mentioned questionnaire was used. Cronbach's alpha coefficient of questionnaire was obtained 89%;

the reliability coefficient of spiritual intelligence questionnaire through a retest was also revalued 67% in a sample of 70 people with the median time interval of 2 weeks.^[15] After collecting questionnaires and data entry into SPSS 24 software (IBN Inc., in New York, USA) in this research, structural equation modeling was used for data analysis. Due to the fact that data distribution was not normal, partial least squares (PLS) approach as well as Smart-PLS software (Smart-PLS GmbH Inc., in Hamburg, Germany) was implemented.

To conduct a confirmatory factor analysis for validation as well as to obtain the validity of the questionnaire, three types of validity evaluations including content, convergent, and divergent validity assessments were used. Content validity was checked and verified through expert opinion. The average extracted variance was implemented for convergent validity measurement while calculation of the square root of average variance extracted (AVE) as well as obtaining correlation between variables was used for divergent validity. The AVE acceptable criterion is 0.4.^[16] Cronbach's alpha coefficient and composite reliability were used for reliability measurement.

Furthermore, to check the quality of the measurement and structural models, communality as well as cross-validation (CV) redundancy indices with cross-validity were used, respectively. In case communality index with cross-validity shows positive number, the measurement model has the desired quality.

Results

The characteristics of the respondents in this study were examined using four demographic variables including age, gender, educational level, and marital status, merely for reporting the individuals' specifications. In this study, 260 students were studied including 60 men and 200 women. Among them, 51 participants were married while 209 ones were single, 190 individuals were undergraduate students, whereas 70 ones were postgraduate students. Their age ranged from 18 to 27 years. To test the reliability of the model, the combined reliability and Cronbach's alpha were examined. The results in Table 1 demonstrate that Cronbach's alpha of spiritual intelligence measurement model and its items have a minimum value of 0.6,^[17] which is a high level for Cronbach's alpha. The composite reliability of spiritual intelligence and its items due to cognitive ratio ≤ 0.7 which indicates acceptable reliability is very desirable and it can be concluded that spiritual intelligence benefits from a good composite reliability. Furthermore, all AVE values for structures are more than 0.4 that confirms that the convergent validity of the present questionnaire is at an acceptable level.

Table 1: Results of Cronbach's alpha and composite reliability of spiritual intelligence

Variables	Cronbach's alpha	AVE	Composite reliability
Conscious state expansion	0.767	0.518	0.84
Transcendental awareness	0.734	0.402	0.820
Critical existential thinking	0.772	0.424	0.830
Personal meaning production	0.757	0.508	0.84
Spiritual intelligence	0.915	0.462	0.92

AVE=Average variance extracted

The results of Table 2 indicate that there is a high internal correlation among components of spiritual intelligence. Based on the results of the correlation coefficient test, it was shown that the highest correlation is between spiritual intelligence and the expansion of consciousness ($r = 0.927$) while the lowest correlation coefficient ($r = 0.819$) is dedicated to the correlation between spiritual intelligence and critical existential thinking ($P < 0.01$).

Effect coefficient, standard error, t value, and value of explained variance by each item were calculated for spiritual intelligence which indicated that item coefficient 6 at the level of $P < 0.05$ and the remaining items of the questionnaire had significant effect on spiritual intelligence at the level of $P < 0.01$. Furthermore, the significant results of the measurement model components in Table 3 represent that the component of conscious state expansion had the greatest influence with effect size of 0.316, and critical existential thinking with effect size = 0.25 had the least effect on the variable of spiritual intelligence. Furthermore, the probability values (t values) are out of the range $(-1.96, 1.96)$ and they are significant. As a result, the research tool benefits from a good validity.

Redundancy indicators with CV are 0.229, 0.267, 0.279, 0.220, and 0.361, respectively, for critical existential thinking, the personal meaning production, transcendental consciousness, conscious state expansion, and spiritual intelligence while communality indices with CV are 0.229, 0.267, 0.279, 0.220, and 0.304, respectively, which represents appropriate fit for the spiritual intelligence model. Given their positive amount, the model is confirmed, and the good fit of the spiritual intelligence model is indicated.

To confirm the extracted results from spiritual intelligence, a confirmatory factor analysis model was implemented using PLS software. Due to loading all the items on the components of spiritual intelligence as well as high Cronbach's alpha and confirming the acceptable percentage of the explanation of the variance, the final model is presented in Figure 1.

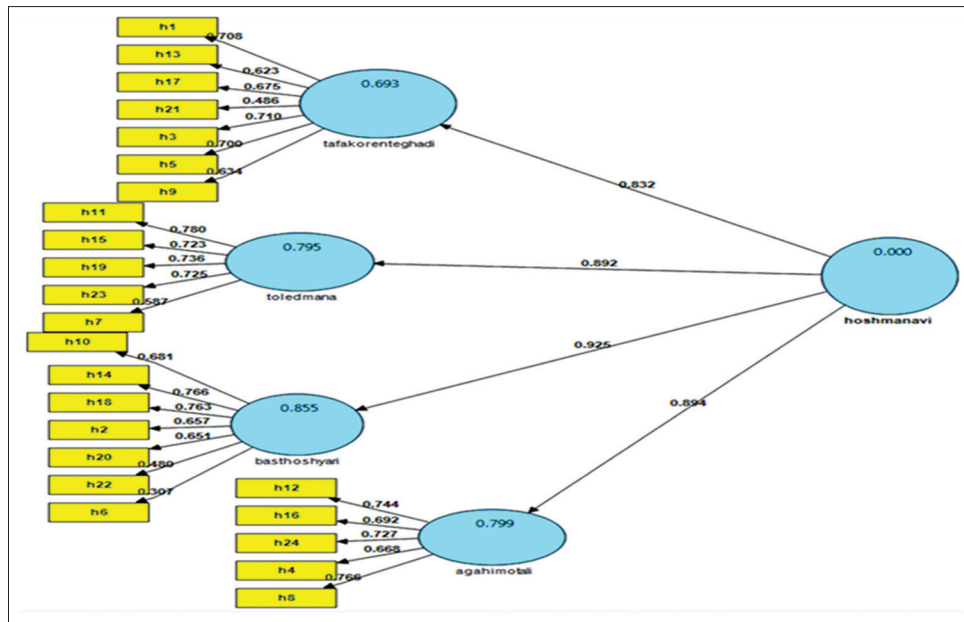


Figure 1: Codified model of spiritual intelligence and results of factor load

Table 2: Correlation between the components of spiritual intelligence

Variables	Transcendental awareness	Conscious expansion	Critical existential thinking	Personal meaning production	Spiritual intelligence
Conscious state expansion	1				
Transcendental awareness	0.782**	1			
Critical existential thinking	0.629**	0.692**	1		
Personal meaning production	0.768**	0.785**	0.621**	1	
Spiritual intelligence	0.899**	0.927**	0.819**	0.895**	1

**P < 0.05

Table 3: Significance of spiritual intelligence components

Relationship between component and spiritual intelligence	Factor loading	t	P	R ²
Critical existential thinking	0.25	9.396	0.01	0.062
Personal meaning production	0.271	12.831	0.01	0.073
Conscious state expansion	0.286	11.416	0.01	0.081
Transcendental awareness	0.316	17.038	0.01	0.046

Discussion

In the current research, the reliability of the measurement model of spiritual intelligence was examined based on Cronbach's alpha and composite reliability. The results indicate Cronbach's alpha of 0.915 and the composite reliability of 92% which express the high-level reliability of this model. The results are consistent with the research conducted by King^[5], Chan^[10], Shiasi^[12], Sharifnia^[18], Moallemi^[19], Hossenichari^[20], King^[21], Raghil^[22], Hariri N.^[23]

A high internal correlation was observed among the components including the conscious state expansion, the personal meaning production, critical existential thinking, and transcendental consciousness which are

in line with the research carried out by Hariri, Sharifnia, King, Chan, Shiasi, King, and DeCicco. Research results revealed a positive and significant correlation between hope and meaning in life and a negative relationship between meaning and depression.

Furthermore, the personal meaning plays a role as a mediator between daily stress and depression.^[24] There is also a significant relationship between personal meaning and physical as well as psychological health.^[25] Based on the results of some studies, a significant relationship was shown between self-excellence and flexibility as well as goal in life.^[26] According to some other studies, a positive correlation was also shown in among transcendental consciousness, meaning in life, and the concept of life.^[10] Some research revealed a positive correlation between existential thought, the Conscious state expansion, and personal excellence.^[5,10] Positive correlation between critical existential thinking, expansion of consciousness, and personal excellence was stated in a number of studies.^[5,10]

The results of the correlation among components of spiritual intelligence indicate that librarianship students who benefit from high rate of spiritual intelligence have

mental health, personal transcendental thinking, reduced rate of stress and depression and improved the quality of life. The mentioned matter encompasses a positive attitude and hope for the future to improve the quality of work and education.

In the present study, the highest correlation between components is devoted to conscious state expansion which is contrary to the results obtained of Chan and Siu, King, and DeCicco research^[5,10] as they acquired the highest correlation between components with the personal meaning production. The mentioned variance can be due to the difference between the Islamic-Iranian culture and the dominant western and eastern culture in those countries.

The items of all the components were significant on spiritual intelligence; thus, the outcome was consistent with the research of King and DeCicco, but it was not in line with the Chan's study which considering the fact that most Iranians are Muslim, this can be due to the difference in the meaning and understanding of the concept of spirituality in Islamic religion. The findings showed that measurement model of spiritual intelligence enjoys proper validity, given the high rate of AVE and probability values (*t* values), that is consistent with Sharifnia's results.^[18] In other cases, there was no evidence for comparison. Given the positive amount of predictive indicators (redundancy indices with cross-validity as well as communality indicators with cross-validity) and composite reliability in addition to acceptable Cronbach's alpha for components of spiritual intelligence as well as the significance level of all items of components on spiritual intelligence, the results indicate the proper fit of spiritual intelligence model. On the basis of these results, it is suggested that Iranian researchers use the current model to measure spiritual intelligence.

Restricting the study to librarianship and medical information science students of medical universities in Iran is accounted as one of the limitations of this research; therefore, it is suggested that future research is carried out at a wider community level.

Conclusion

The spiritual intelligence measurement model was evaluated and The Persian version of King spiritual intelligence questionnaire demonstrated suitable validity and reliability so it is recommended that domestic researchers use this questionnaire to assess spiritual intelligence.

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Conflicts of interest

There are no conflicts of interest.

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