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## **Comparison of Relation between Critical Thinking and Spiritual Intelligent in Iranian Male and Female Students**

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### **Abstract:**

*The purpose of this research is to analyze the relation between critical thinking and spiritual intelligence in Iranian male and female students.*

*The sample includes 376 students at Islamic Azad University, Islamshahr branch which were selected in the stratified and randomly sampling from colleges. The tools include California's form of critical thinking and spiritual intelligent SSI-29 questionnaire. The data were analyzed by t test, Pearson correlation and Fisher's Z test.*

*The relation between understanding and deductive reasoning with spiritual intelligence is significant ( $p \leq 0.05$ ). Also, the relation between critical thinking and deductive reasoning with spiritual thinking in male is significantly stronger than the one in women. The females' scores compared to males' were higher only in analysis and deductive reasoning.*

*With increasing spiritual intelligence, critical thinking can be improved as the main components.*

**Keywords:** *critical thinking, spiritual intelligence, male and female students*

### **1. Introduction**

In today's developed societies, the spread of different services is focused on increasing the welfare of general population of the society. The comprehensive advancement in the areas of social welfare, industry, communication technology, etc., is geared towards welfare and peace in life despite the fact that people in different societies especially the developed ones, are suffering from disturbances and worries in different dimensions of life. Many of the knowledgeable people have been looking for answering this question as to why despite the current developments, people are more confused in modern societies. Which characteristic of individuals can decrease this confusion? What are the methods for reaching peace and tranquility?

The answers to the questions can be found in issues that are far beyond materialism. Today, the ever-increasing developments in different dimensions of life have specifically become related to materialism and have caused people's isolation from spirituality.

However, since a long time ago, the treatment for many of man's problems have become a return to spirituality.

Having a tendency to high spirituality causes people to go beyond materialistic affairs when they are evaluating different affairs in their lives. Consequently materialism will not become the foundation for their progress and reaching their goals. Those individuals who have active spiritual tendencies will focus on different issues in life. The assessment criteria for such individuals are different from those who view things from the materialistic point of view. Spirituality requires going beyond individualism in daily life and becoming integrated with a person other than himself/ herself. This awareness might lead to an experience beyond self which affects all dimensions of life and changes the way problems should be confronted (Mc Donald, 2002).

What has become the focal point of describing issues related to spirituality is spiritual intelligence. A group of psychologists believe that people have inner spiritual tendencies and have combined the issue of spirituality with intelligence because in recent year. The concept of intelligence has not been considered to be just a cognition power; it has been expanded to the point that it includes other areas such as emotional intelligence, general intelligence, existential intelligence and spiritual intelligence (Rajae, Beyzaee and Habibpour, 2009). Spiritual intelligence is considered to be a natural talent, which people use to find solutions for their problems and meaning or value for their lives- an intelligence by which human beings achieve the deepest concepts, goals and the highest motives (Zohar and Marshal, 2000). People's access to concepts and values in life and using them in their ways of thinking and making decisions gives them integrity and unity (Sisk, 2008).

The existence and growth of such characteristics in people have positive consequences. People who have spiritual tendencies better facing calamities and manage the situation that has caused the pressure better (Mc Wan, 2004). As a result, their depression will be low (Mc Donald, 2002) and they will live longer (Ghobari Bonab, 2007). They are physically healthier (Holt, 2008) and their daily work efficiency and comfort are at a desirable level (Amram, 2007). Generally speaking, consequences of having a healthy life such as quality of life, biological, psychological and social functions are generally affected by spiritual intelligence (Yong and Mao, 2007).

Experts in the area of spiritual intelligence emphasize on its cognition dimension and in fact calling it spirit intelligence is based on cognitive support for having tendencies towards spiritualities. The emphasis on cognition especially the deep and the integrating one is a search for balance and ability for solving problems which is inseparable from spiritual intelligence (Amram, 2007; sisk, 2008)

Self-awareness, intuition, integratism, comprehension of issues to discover reasons, avoidance of customary habits and respecting changes are some of the characteristics of spiritual intelligence which Zoher and Marshal (2000) have pointed out.

King & Brian (2008) has brought up the four components of expanding self-awareness, personal activation, high awareness and critical existence thought for spiritual intelligence. In his view these four components together can bring about personal growth. One who thinks critically analyzing the dimensions of his/her self-existence and his/ her evaluation criteria are high and beyond materialistic affair, can reach an attitude that can be moving, dynamic and create the achievement of knowledge and perfection. Critical existential thinking in spiritual intelligence includes the capacity of thinking of the nature of existence, reality, world, pace, time and other existential and metaphysical subjects. It also includes the capacity of thinking in non-existential subjects in individual's existential relation.

It is important to pay attention to the point that critical thinking in the existential dimensions is inseparable from spiritual intelligence.

Spirituality requires having the highest levels of cognitive, moral, emotional and individual growth. The basis of spirituality includes procedures of high levels of cognition including critical thinking. Thinking about life affairs and who we are and where we have come from connects our spirituality to a higher power and in depth of this spirituality, meaning in life and goals are created (Mc Wan, 2004). Critical thinking is some kind of multi-dimensional power and it, basically, includes the elements of cognition, meta-cognition and non-circumstantial factors (Ku, 2009; Nieto and Saiz, 2011; Phan, 2010). One, who has critical thinking at a high level, will not be influenced by others and based on intellectual and logical criteria that are free from social, group and even individual indoctrinations attempts to evaluate issues.

It is possible to consider both cognitive and emotional dimensions for critical thinking. Cognitive skills of critical thinking from experts' point of view at the American Philosophy Association (1990) as follows:

- Interpretation: interpretation means understanding and expressing meanings in classified way and bringing to attention an spectrum of experiences, date, beliefs, ideas, judgments and roles
- Analysis: analysis means examining ideas or reasons in problems, visible and mental data and probable measures. Analysis also includes skills in the evaluation of beliefs and idea, recognition of reasoning and their analysis
- Evaluation: this includes skills for analyzing subjects, beliefs and also the analysis of reasoning related to every one of them.
- Inference: inference includes recognition and achievement of necessary elements and evidence for an inference based on the results and also guesses and hypothesis for a final conclusion. In other words inference is the analysis of claims, evaluation of reasons (recognition and wrong reason) and achieving the appropriate results.
- Explanation: explanation means clear explanation and defending the reasoning by which it is possible to reach clear decisions in a specific field. Explanation includes the skills in stating the results, proof of methods and presenting reasoning.
- Self-regulation: self-regulation means your own thoughts and belief based on presented data, explanations, subject matters and the improvement of incorrect ideas, beliefs and actions. Self-regulation as one of the critical thinking skills includes self-examination and improvement skills. In the past, according to (Youssefi and Gardankeshan, 2011) these skills has been classified under the category or title of inductive reasoning and deductive reasoning.

One of the characteristics of critical thinking which has a lot of overlaps with spiritual intelligence is: imposition of intellectual standards on thinking, acceptance of responsibility for thinking growth, evaluation the effectiveness of thinking based on the goal and standard (Rudd, 2007).

On the other hand, one who enjoys the critical thinking style in life, keeps in mind a group of intellectual standards at the time of thinking and based on such standards solves problems and reaches conclusions and ultimately he/she reaches a certain awareness and perception (phan, 2010)

Intellectual standards are far from materialistic and popular issues. Intelligence in its high level is far beyond traditions, materialistic and common affairs. Such individuals are looking for the truth of the matter instead of following what the true and untrue advertisement and society suggest.

Evaluation criteria have common denominations when it comes to critical thinking and spiritual intelligence. It is likely, in simpson's (2002) view that in critical thinking, there is no place for absolute imitation. It is worth to mention that personal bias and focusing on the personal desires are doomed. Avoiding personal bias and the trends geared towards further growth and improvement of thoughts are some of the characteristics of critical thinking (Brail, et al, 1998). Individuals having high spiritual tendencies are also not dependent on others and are resistant against the common methods and traditions in the society and are not affected by them (Halama and stizenece, 2004).

Paying attention to the details of critical thinking and spiritual intelligence indicates that there is a lot in overlap between these two concepts. However, independent research in connection with these two variables shows a serious vacuum. Compared two other types of thinking, critical thinking includes a state of doubt and suspicion, confusion, complication and often times a desire to analyze, to understand and to homogenize which leads to the solution of problems (Lizarraga, et al, 2012). On the other hand, sisk (2008) in analyzing the elements of spiritual intelligence has pointed out the enjoyment of asking big questions, curiosity in how things work in the world and a search for balance which is common denominator of this characteristic with critical thinking.

In Quran, also, as one of the spiritual sources, the most important suggestions about having critical thinking have been given to people. Quran's audience is all the intellectuals, scholars and intelligent people. Since Quran emerged in an environment where there was nothing but ignorance, the greatness of its interpretations is obvious. The verses that invites the audience to paying

attention, thinking and rationality is mentioned throughout in Quran. There are 13 verses in Holy Quran that encourages people to be thoughtful, be reasonable, be prudent, have common sense and excellent understanding. Thinking according to Quran is so important that says in it.” This book that I send you is full of blessing so that you can think about its verses and become intelligent thinkers” (quoted by Sayfoori, 2009).

Many graduates in today’s society lack the necessary critical skills and desires. Many of them do not have the ability to analyze the complicated social problems and unable to solve difficult problems (Kiyani, et al, 2012). Since critical thinking leads to ease people’s confrontation with different challenges that they face in personal life, employment and civil life, its results will also be facing independent people who can face changes or new developments rationally. As a result of what was just mentioned the analysis and the identification of factors that have an impact on the elevation of critical thinking is necessary. When it comes to critical thinking, spiritual intelligence, because of having a progressive nature, has been brought to the attention of psychologists. Based on what has been mentioned above the purpose of the this research is to precisely analyze both characteristics of critical thinking and spiritual intelligence among male and female students, evaluate the relation between the two variables and compare the connection among the male and female students based on the current differences in both genders.

Questions of the Research:

Is there any significant difference in critical thinking based on the student’s genders?

Is there any significant difference in spiritual thinking based on the student’s genders?

Is there any significant relation between critical thinking and spiritual intelligence?

Are there any significant differences between the critical thinking correlation and its components with the spiritual intelligence in both genders?

## 2. The Method of Research

The current research, as far as the method of collecting the data is concerned is a descriptive research and among all types of researches in this group is one of survey research.

The statistical sample of this research is all the students at IAU<sup>1</sup> Islamshahr branch, totaling 18825 who are studying in six colleges of basic sciences, human sciences, physical education, psychology and educational sciences, technical/ engineering sciences, management and accounting. After conducting the necessary statistical calculations based on Chokran’s sampling formula, 376 students were selected.

Since the total number of female students is 57% and the number of male students is 43%, taking these numbers into consideration, the number of female students will be 220 and male students will be 160.

The volume of the samples for the research was selected based on stratified and randomly sampling method. It was done as such that is the first stage; three colleges (technical/ engineering sciences, psychology and educational sciences, basic sciences were selected out of six colleges and in the next stage, two majors were randomly selected out of different majors in every college. Ultimately, the sample was randomly selected from the students among these majors.

## 3. Research tools

To gather the data, two questionnaires about the evaluation of spiritual intelligence and critical thinking of students were used.

California Critical Thinking Questionnaire (CCTST-B)

This Questionnaire contains 34 multiple- choice questions having only one correct answer in five areas of critical thinking including evaluation, inference, analysis, deductive reasoning and inductive reasoning. Every person will receive 6 points. One of the points is for critical thinking and the other five points are for critical thinking skills. Dehghani, Jafari Sani, Pakmehr and Malekzadeh (2011) indicated that the reliability of the said questionnaire was 78%. The validity coefficient on this test in (Khalili, et al, 2003) was 62% and the construct validity for all sub- scales with high and positive correlation was reported between 60% - 65% (quoted from khandaghi, 2011)

Spiritual intelligence questionnaire (SSI-29): This test has been prepared by Abdollahzadeh et al (2009) and normed on students in this case. The normative group was 280 people; of these groups, 184 ones were female and 96 people male. The related questionnaire has 29 options.

The reliability and validity of the questionnaire: Abdollahzadeh et al reported the validity of the questionnaire 0.89 in the final step. The factorial analysis was applied to evaluate the reliability and the correlation of the whole questions was higher 0.3.

It has two dimensions of “Understanding and Communication with the Source of Existence” and “Spiritual Life, Reliance on Internal Core”. It consists of 29 questions in a five-degree Likert scale.

## 4. Findings of the Research

First question: is there a significant difference in the critical thinking based on the student’s gender?

In order to analyze the above- mentioned question, the t test in the independent groups was used.

Variables	Group	mean	Levene's test		T test			
			F value	Sig	Mean Difference	T value	df	Sig
critical thinking	Male	16.09	4.22	0.04	-0.62	-0.95	123.73	0.34
	Female	16.72						
assessment	Male	5.27	0.003	0.95	0.15	0.50	348	0.61
	Female	5.12						
analysis	Male	1.47	1.30	0.25	-0.40	-1.69	348	0.05
	Female	1.88						
inference	Male	1.70	0.38	0.53	-0.18	-0.98	348	0.32
	Female	1.88						
inductive reasoning	Male	5.11	0.06	0.80	0.31	1.11	348	0.26
	Female	4.79						
deductive reasoning	Male	2.59	2.04	0.15	-0.58	-2.46	348	0.01
	Female	3.17						

Table 1: Comparison of critical thinking and its components with the separation of genders.

The analysis of significant difference between critical thinking and its components in both groups of male and female students indicates that there is not any significant difference in the variable of critical thinking and assessment, inference and inductive reasoning.

In the two components of analysis and deductive reasoning, the difference between the scores of the two groups is significant. In both components, the scores related to the female students were higher. Therefore, it can be stated that female students compared to the male ones have higher power of deductive reasoning and analysis.

Second question: is there any significant difference in spiritual intelligence based on the student's gender?

To analyze the above- mentioned question, the t test of independent groups was utilized.

Variables	Group	mean	Levene's test		T test			
			F value	Sig	Mean Difference	T value	df	Sig
spiritual intelligence	Male	117.72	0.17	0.68	-2.74	-1.60	348	0.10
	Female	120.46						
communication with source of existence	Male	50.75	1.76	0.18	-2.57	3.04	348	0.003
	Female	53.32						
reliance on internal core	Male	66.96	0.42	0.51	-0.29	-0.26	348	0.79
	Female	67.26						

Table 2: Comparison of spiritual intelligence including the separation by gender

In table 2, the difference between the spiritual intelligence and its components were analyzed in both groups of male and female students. According to the information included in the table, the scores of spiritual intelligence and the reliance on internal core component, there is no significant difference in both groups. As far as the understanding and communication with source of existence component is concerned, the attained mean among females is higher than the one in men and attained t at  $p < 0.101$  is significant.

Therefore, we can claim with a 99% certainly that the female participation in the current research have, significantly, more relation with the understanding and communication with source of existence component.

Third question: Is there a significant relation between critical thinking and spiritual intelligence?

To analyze the above question, Pearson correlation test has been used.

Variables	Correlation (R)	Sig
Critical Thinking & spiritual intelligence	0.02	0.65
assessment	0.009	0.88
analysis	-0.10	0.11
inference	0.16	0.05
inductive reasoning	-0.06	0.33
deductive reasoning	0.19	0.04

Table 3: The correlation coefficient between Critical Thinking and its components with spiritual intelligence

The correlation coefficient between the two variables of critical thinking and spiritual intelligence is equal to 0.002 which is not significant at the  $p < 0.01$ . Therefore, there is not a significant relation between the two variables of critical thinking and spiritual intelligence.

The analysis of the relation between critical thinking with the spiritual intelligence indicates that the relation between components of inference and deductive reasoning with spiritual intelligence is significant at  $p < 0.05$ . Therefore, when it comes to critical thinking the higher the rate of enjoying inference and deductive reasoning in people, the higher rate of spiritual intelligence will be.

Fourth question: Is there a significant difference in correlations of critical thinking and its components, with spiritual intelligence in both genders?

Variables	Female		Male	
	Correlation (R)	Sig	Correlation (R)	Sig
Critical Thinking & spiritual intelligence	0.01	0.81	0.25	0.04
assessment	0.002	0.97	0.09	0.46
analysis	-0.11	0.23	-0.14	0.25
inference	0.08	0.27	0.25	0.04
inductive reasoning	-0.002	0.98	0.003	0.98
deductive reasoning	0.06	0.39	0.37	0.003

Table 4: The correlation coefficient of critical thinking and its components with spiritual intelligence when genders are separated

Separate analysis of the correlation between critical thinking and its components with the spiritual intelligence in both sexes show that there is not any relation between critical thinking and spiritual intelligence among female students compared male students the correlation of the two variables is equal to 0.25 which is significant at  $p = 0.05$  level.

The comparison of correlation of two groups was conducted using the significant correlation test for both independent groups (Z fisher). The Z figure was calculated using the following formula:

$$z = \frac{zr_1 - zr_2}{\sqrt{\frac{1}{n_1 - 3} + \frac{1}{n_2 - 3}}}$$

Z in the sample group is equal to 1.71 which is higher than the amount of critical Z (1.64) with  $\alpha = 0.05$ . Therefore, there is a significant difference in the correlation of both groups and the relation between critical thinking and spiritual intelligence in men is significantly higher than one in women.

Among different components of critical thinking in the female group, the relation of none of the components with the spiritual intelligence is significant. However, among the male group, the relation of the components such as inference and deductive reasoning with spiritual intelligence is significant.

In component of inference, the comparison correlation in both groups using the Fisher Z indicated that attained Z in the sample group is equal to 128 which is lower than critical Z(1.64) with  $\alpha = 0.05$ . Therefore, there is not a significant difference in the correlation of two variables in both groups.

In the deductive reasoning, the comparison correlation in both groups using the Fisher Z indicated that the attained Z in the sample group is equal to 221 which is higher than critical Z(1.64) with  $\alpha = 0.05$ . Therefore, there is a significant difference in the correlation of two variables in both groups and it can be said that there is a stronger relation between the deductive reasoning and spiritual intelligence in men compared to women.

## 5. Discussion and Conclusion

The result of current research indicate that there is not a significant differences between the scores of female and male groups as far as the critical thinking and the components of evaluation, inference and inductive reasoning are concerned . As far as the components of analysis and deductive reasoning are concerned, the female students' scores compared to male ones were higher and they are enjoying the higher power of comparative reasoning and analysis.

There are contradictory results in the critical thinking between males and females while in many researches, the results indicate there is a lack of significant difference as far as gender is concerned in the test of desires or skills of critical thinking (Rashidian, 2009; Alivand Vafa,2005; Mirmolae, et al,2004; Shafae, et al,2004). However there are also other researchers that indicated the females' score in critical thinking and sub- scales of cognitive and intellectual maturity to be higher (Ben Chaim, Ron Zoller, 2000; Facione, Giancarlo, Facione and Geinen, 1995). Nikoogoftar (2010) also shows that females in sub- scales of the ability of analysis and inference and also males in the sub- scale of power have higher scores.

When it comes to critical thinking, we try to clear the power of a conclusion by examing the logical reasoning and relations (Lipman, 1991). Conclusion includes inference from one or several introductory hypothesis. Attained Inferences as a result of deduction (going from whole to details) are definite and clear while the ones that are as a result of induction(going from details to whole) are probable only at the end(Neyestani and Emamverdi,2013). Therefore women in the two main sub-scales of critical thinking (analysis and deductive reasoning) are stronger than men in this research.

For the clarification of conclusion, we can state that development in the condition of women's presence in different social, cultural, political and other areas has resulted in their growth and progress in different fields because educating a citizen for a democratic society and participation in the modern world despite huge changes in the traditional style of living and thinking plus attitudes and formation requires a better understanding of others and in a more expanded area, a better understanding of the world. Needless to say that for the sake of mutual understanding, it is necessary to have peaceful exchanges of ideas, broad- mindedness and tolerance of contradictory attitudes and also the right assessment or in other words, critical thinking(Moazzamfar,2009).

In the spiritual intelligence category, there is not a significant difference in both groups and females. Very different results have been presented in relation to gender and religion. In fact in this regard, [Ayzenk\(1975\)](#), John Bozorgi and Mahfoozi( 1998, quoted from Gharae, et al,2008), have stated that women believe in religion more strongly than men. However Biyabani, et al (2008) have not reported differences in attitudes towards religion between men and women as significant. Most of the domestic researches contrary to the foreign ones indicate that there is not a significant difference between two genders(Aryan,2009; Jalilvand,2001; hadiyanfard,2001; quoted by Najafi, et al,2008).

Although, there is not a significant relation between the inference and deductive reasoning and spiritual intelligence at  $p \leq 0.05$  level is significant. Therefore, the higher the rate of enjoyment of inference and deductive reasoning when it comes to critical thinking, the higher, the spiritual intelligence.

Separate analysis of the relation between critical thinking and its components with the spiritual intelligence to both genders shows that there is not a relation between critical thinking and its components among female students. However, among men, the correlation coefficient of the two variables is positive and significant. Also, among men, the relation between the components of inference and deductive reasoning with spiritual intelligence is significant.

Despite the fact that the relation between the total score of critical thinking and spiritual intelligence (in general and in women) is not significant, there is a significant difference between sub- scales of inference and deductive reasoning which is the most determining indicator of critical thinking with spiritual thinking(in general and among men). Spiritual intelligence helps people to think more deeply about the meaning of life and the relation between life experiences and events by creating integrative understanding of life. It is possible for someone to re-interpret and re- conceptualize his/her experiences using spiritual intelligence. Thus, his/ her experiences and events will have more value (Nazel, 2004; quoted from Saghravani, 2009).

Despite the fact that women enjoy a higher level of deductive reasoning compared to men, there is no relation between this indicator and their spiritual intelligence. This result can indicate that there could be factors other than spiritual intelligence and certain characteristics related to them such as the ability to use them emergence of the spiritual values which could be related to women's deductive reasoning and also critical thinking(Amram,2005).

When combining two concepts of critical thinking and spiritual intelligence, it is possible to point out the importance of real standards in the evaluation of issues. Putting emphasis on rationality in critical thinking means using rational standards to solve problems and reaching conclusions. Rational standards mean dealing with issues other than the ones that are merely materialistic or popular. Wisdom and its transcendental level go beyond traditions and financial affairs. Such people are looking at the truth of matters instead of following what the society and the wrong or right advertisements want them to do. A person who is skillful uses, in his/her critical thinking, a set of rational standards when he is thinking and these standards both guide his/her thinking and also nurture it. What happens during the critical thinking is the decision making over the selection of measures and believes that is done by using deep thinking and reasoning. Therefore, a person who reaches a certain belief utilizing (Amram, 2005). Such an individual will not resort to the society's widespread standards when evaluating himself and different issues because genuine standards are of high priority for such individual who will go beyond physical and cognitive factors and by depending on his/her exalted experience and deeper understanding of life moving towards perfection will be predictable. This process can materialize only if what is happening in different societies is contradiction with such an issue.

One of the dangers that threaten the young generation is getting conquered by materialism. This trend can create the atmosphere for the emergence of spirituality in the society. Therefore, it is important that spirituality and spiritual standards, the factors that affect them and strategies to elevate them for the sake of spreading them among different groups to be paid attention to. It is not possible to reach spirituality unless cognitive, emotional and social factors are taken into consideration. Spiritual intelligence and critical thinking as the effective cognitive factors affecting the tendency towards spiritual affairs and paying attention to meta-physical standards in all dimension of life can become tools for man's achievement of transcendence and spirituality in the society.

Since there is no significant relation between spiritual intelligence and critical thinking, identification of other influencing factors over critical thinking including the amount of knowledge, social relations and the type of activities at leisure times is important.

Also, all the organizations related to the issue of education are suggested to plan for the growth of transcendental dimensions of intelligence among people and provide the appropriate situations for this purpose. The results of researchers indicate the lack of success for universities and academic institutes towards the elevation of critical thinking among the students (Azadi, et al, 2010) and this is important that this issue will be looked at more seriously in order to create a program that can be carried out.

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