Relationship Critical Thinking, Self-Efficacy and Emotional Intelligence among High School Students in Meybod-Iran

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Abstract: This study investigated the relationship between self-efficacy, critical thinking and emotional intelligence Meybod city's high school students. Therefore, 332 patients Meybod city high school students selected by a multistage cluster sampling method were studied. For statistical analysis, Pearson correlation and regression analysis were used. The results indicate a correlation between critical thinking and its subscales (inference, deductive reasoning, inductive reasoning, evaluation of non-analysis) students self and Correlation between critical thinking and its subscales (inference, deductive reasoning, inductive reasoning, evaluation of non-analysis) is the EI students. Regression analysis showed that the predictive variables (critical thinking, emotional intelligence and self-efficacy variables predict students.

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Introduction

In our age in which course books get old even as soon as they are published, and most jobs and professions experience rapid and continuous innovations, we are forced to change and amend the general end goals of education and training, and pay attention to developing the method of critical thinking in people as one of main goals of education. In addition, in the education process, while reinforcing the criticisable spirit in teachers, criticising spirit shall be developed in students and ground for assessing and researching shall be provided for them (Mayer, cited as Abili, 2004).

The most outstanding base of an individual's personality is tendency towards thinking, and ability of thinking critically. Critical thinking helps people in problem solving, decision making in their life situations and opportunities, and forming a stable identity and habit. The more dynamic is the society, the more the need for critical thinkers would be perceived. Society always needs thinkers who judge well and rationally about issues of their society and know when and how they should apply their thinking skills in their society. Possessing critical thinking in political society helps people to be aware and informed citizens and experience real freedom (Emamverdi & Neyestani, 2010).

Thinking is a natural process which, if it is left to its' own, often would be deviational, tendentious, crooked, ignorant, and fanatical. Perfection and maturity in thinking shall be promoted (Screwin & Paul, 2004; cited as Sedaghatbin, 2010). Different researches highlighted the relationship between critical thinking and problem solving, creative thinking, logical & rational thinking, and metacognition. For instance, Lomzdani (1995) believes that solving a problem creatively contributes to development of critical thinking skills (Cited as Eslami, 2003). Tamanaeifar et al. (2008) showed that students of art fields possess higher critical thinking and self-efficiency in compare with students of non-art fields. Also, students of art fields achieved higher scores in subscales of critical thinking in compare with students of non-art fields. The findings resulted from this research confirm that art education influences significantly on development of critical thinking and self-efficiency and contributes to stabilizing the high position of art in the educational system.

On the other hand, perception of self-efficiency is a cognitive task which enables the individual to control his or her thinking and to face with the problems. Those people, who have obvious, well-defined, coordinate and approximately stable and consistent feeling of self-efficiency, possess higher psychological health. These people have achieved a clear viewpoint about them and are less influenced by daily events and their evaluations (Bendoora, 1997, cited as Mohammad Amini et al., 2008).

Self-efficiency believes influence on people's way of thinking, quality of facing the problems, emotional health, decision making, and stress and depression resisting. One of the main aspects of the individual's self-efficiency is this belief that he or she can influence his or her life consequences through exerting control. Having the sense of controlling the conditions and circumstances is an important factor in getting adapted to different situations, especially in facing with stressful events. An individual's particular expectations about his or her abilities for doing especial activities influence on his or her endeavour in performing a task, persisting in accomplishing it, and developing proper motivations

(Bendoora & Storli, 1999, cited as Masoudnia, 2007).

Studies carried out by Rathi & Rastoji (2008) indicate that there is a positive relation between self-efficiency and emotional intelligence, and that both of these variables can predict each other. According to this finding, people who have high emotional intelligence perform better in all situations in compare with those with lower emotional intelligence. In his study, Chan (2007) found that students with high emotional intelligence have higher educational self-picture and self-efficiency, and that among four aspects of the emotional intelligence (optimism, emotional awareness, sense of empathy and self-regulatory) self-regulatory is considered to be main index and predictor of self-picture (Mohammad Amini et al., 2008).

Findings of William et al. (2008) indicate that emotional intelligence is correlated with self-efficiency, better function in the grounds of self-regulatory, self-assertion, independency, sympathy with others, control and optimism. Salovy et al. (2000) defined emotional intelligence as " an individual's capacity for emotions, and excitations, and increased emotional thinking which includes the ability of perceiving the emotions accurately, having access to emotions for contributing the thought, understanding the emotions, having emotional knowledge, and rational regulation of emotions for rational and emotional progress (Cited as Vakili, 2006).

Mayer et al. (2003) believe that individuals' ability in resisting to and getting adapted with life events depends on close coordination and cooperation of rational and emotional capacities, and that an individual's success in life depends on whether he or she is able to think about his or her and also others' emotional experiences and to organize his or her emotional responses to the reasoning made by mind about a person or situation (Ramazani & Abdollahi, 2006). Emotional intelligence relates to the one's perception of oneself and others, communication with others, and adaptation and consistency with his or her surrounding environment which is necessary for getting successful in meeting the socials demands, and is considered to be a tactical ability in one's performance; while cognitive intelligence possess a strategic and long-term capability. Emotional intelligence provides the possibility of predicting the success, since it indicates how an individual applies his or her knowledge immediately in different situations. In other words, emotional intelligence refers to differences among individuals in perceiving, processing, regulating and applying the emotional information (Mohammad Amini, 2008).

Considering what was said, and this fact that an individual's way of thinking can be effective on his or her ability in facing the problems and situations, and that the amount of emotional intelligence also changes the amount of function and performance in situations, this issue is proposed that in general what is the relationship between critical thinking and self-efficiency and emotional intelligence in students of high school level. Accordingly, this research tries to find the amount of this relation and the amount of predicting self-efficiency and emotional intelligence by critical thinking.

Method

The present study, considering its objective that is to study the relation of critical thinking with self-efficiency and emotional intelligence in high school students of Meybod City, is of field type, and has been carried out by descriptive-correlative method. In this research critical thinking is as predictor variable and self-efficiency and emotional intelligence are as criterion variable.

Population, sample, and sampling method

Statistical population of the research includes all high school students of Meybod City who were selected using Morgan table with sample size of 332 students, and using multi-stage cluster sampling. Sampling was done in this way that first Meybod City was divided to five regions of residency (north, south, centre, east, east), and two schools were selected from each region. Then 67 students were selected from each school using random sampling.

Measures

California Critical Thinking Skills Questionnaire, form B: this questionnaire was developed in 1990 by Facion & Facion. This test is consisted of 36 multi-choice questions with one correct answer in five areas of cognitive skills of critical thinking (analysis, inference, inferential reasoning, inductive reasoning and evaluation). The final score of the test is 34, and the achieved score in each part of the test varies between 0 to 16, set to be maximum 9 scores at the analysis part, maximum 11 scores in the inference part, maximum 16 scores at the inferential reasoning part, maximum 14 scores at the inductive reasoning part, and maximum 14 scores at the evaluation part. 6 marks were calculated for each student including one total mark for critical thinking, and five other marks for the skills of critical thinking. The reliability coefficient of the test was calculated to be 82.35 % by Eslami, Bahmanpour and Khalili, in the preliminary study in pre-test- post-test manner (Mir Molaei, 2004).

Sherer Self-Efficiency Questionnaire: this questionnaire was developed in 1982 by Sherer and includes 17 questions to which the respondent shall answer according to the five-degree Likert Scale. The lowest degree is mark (1) and the highest degree for each question is mark (5). Thus, the lowest mark of self-efficiency in this questionnaire is 17 and the highest mark is maximum 85. In order to determine the validity, Berati (2007) carried out this test together with Self-esteem Scale Test in a 100-subject group, and reported a

correlation of 61% which was significant in the level of 0.5. In order to assess the reliability of self-efficiency test, he used the halving method. The reliability coefficient was determined to be 0.76 with equal length and 0.76 with non-equal length by Spearman Brawn method, and also 0.76 by Gotman halving method. Cronbach alpha or the general consistency of the questions was determined to be 0.79 that is satisfactory (Keramati, 2004). At Keramasti's research (2004) using Cronbach alpha method, the reliability coefficient of this test was calculated to be 0.85.

Bar-on Emotional Intelligence Questionnaire: This questionnaire was developed in the 80s by Bar for assessing the conceptual dimensions of emotional intelligence. This questionnaire is consisted of 133 questions and is the first meta-cultural valid questionnaire for evaluating the emotional intelligence (Bar- An 1999, Abraham, 1999, according to Bar- An, 2000(. This questionnaire in consisted of one total mark of emotional intelligence, five compound factors, one coordination index and 15 subscales including Inter-personal scale (including consisted of subscales of emotional self-awareness (ES) , self-regard (SR), assertiveness (AS), independence, and self-actualization (SA), intra-personal scale (including subscales of empathy, social responsibility, and inter-personal relationship), adaptability scale (reality testing, flexibility and problem solving), stress management scale (including stress tolerance and impulse control), and general mood scale (including happiness and optimism).

Any article is scored from 1 to 5 according to the tester's response. Some articles are positive, that is, in responding the question of "I socialize with my favourite people" the tester would obtain 5 for "always", 4 for "often", 3 for "sometimes", 2 for "seldom" and 1 for "never"; but in responding the question "I'm annoyed by the life" the tester would get 5 for "never" (2 for often, 3 for sometimes and 4 for seldom). 107 articles of this questionnaire depend on five compound scales of emotional intelligence and 15 subscales inside them. Standard marks are evaluated according to age and sex. The 15 remaining articles are devoted to 8 positive effect and 8 negative effect scale articles. The marks are obtained in conformity with other articles, and, in the case that the sum of them is more than 12; the result is invalid and indicates the tester's lack of self-awareness and self-esteem in answering the test.

Re-testing validity of the test that is based on the temporal stability of the instrument (test stability during testing) was calculated for two groups of southern Africa testers. The re-testing validity coefficient was 0.85 after one month and 0.75 after four months. Also the validity coefficient of subscales were 0.75 for self-awareness, 0.81 for self-regard, 0.82 for assertiveness, 0.86 for independence, 0.81 for self-actualization, 0.87 for empathy, 0.84 for social responsibility, 0.82 for interpersonal relationship, 0.85 for reality testing, 0.88 for flexibility, 0.72 for problem solving, 0.78 for stress tolerance, 0.86 for impulse control, 0.81 for happiness, and 0.79 for optimism. Data analysis was carried out using SPSS 18 software and by regression analysis and Pierson correlation statistical methods.

Results

The results of table 1, which studies the Pearson correlation coefficient between critical thinking and its subscales with self-efficiency of high school students, reveal that the subscales of inference, inferential reasoning, inductive reasoning and evaluation, and also the main scale of critical thinking have a positive and significant relation with self-efficiency. However, there is no significant relationship between subscale of analysis and self-efficiency.

Table 1: results of the correlation coefficient for critical thinking and its subscales with self-efficiency of high school students

Variable		Self-efficiency
Analysis	Pierson correlation coefficient	.091
	Significance level	.097
Inference	Pierson correlation coefficient	.299
	Significance level	.000
Inferential reasoning	Pierson correlation coefficient	.301
	Significance level	.000
Inductive reasoning	Pierson correlation coefficient	.286
	Significance level	.000
Evaluation	Pierson correlation coefficient	.309
	Significance level	.000
Critical thinking	Pierson correlation coefficient	.390
	Significance level	.000

The results of table 2, which studies the Pearson correlation coefficient between critical thinking and its subscales with emotional intelligence of high school students, reveal that the subscales of analysis, inference, inferential reasoning, inductive reasoning and evaluation, and also the main scale of critical thinking have a positive and significant relationship with emotional intelligence.

Table 2: results of the correlation coefficient for critical thinking and its subscales with emotional intelligence of high school students

Variable		Emotional Intelligence
Analysis	Pierson correlation coefficient	.160
	Significance level	.003
Inference	Pierson correlation coefficient	.323
	Significance level	.000
Inferential reasoning	Pierson correlation coefficient	.390
	Significance level	.000
Inductive reasoning	Pierson correlation coefficient	.357
	Significance level	.000
Evaluation	Pierson correlation coefficient	.290
	Significance level	.000
Critical thinking	Pierson correlation coefficient	.457
	Significance level	.000

As shown in tables 3 & 4, simultaneous regression has been used for examining the contribution of critical thinking, as a predictor variable, in predicting the self-efficiency rate of the students. The predictor variable entered the transaction and the contribution of critical thinking in predicting the self-efficiency was determined. The results indicate that the critical thinking, with 0.390, predicts the students' rate of self-efficiency.

Table 3: significance results of the simultaneous regression model for critical thinking over self-efficiency

Model	R	R2	F	p-value
Self-efficiency	.390(a)	.152	59.171	.000 (a)

Table 4: Coefficients of the simultaneous regression model for predicting critical thinking over self-efficiency

Variable	B	Standard error	Beta	t	p-value
constant	55.811	1.425	-	39.160	.000
Self-efficiency	.697	.091	.390	7.692	.000

As shown in tables 5 & 6, the simultaneous regression model has been used for assessing the contribution of critical thinking as the predictor variable in predicting the rate of students' emotional intelligence. The results indicate that the critical thinking, with 0.57, predicts the students' rate of emotional intelligence.

Table 5: significance results of the regression model for critical thinking over emotional intelligence

Model	R	R2	F	p-value
Emotional intelligence	.457(a)	.209	87.084	.000 (a)

Table 6: coefficients of the regression model for predicting critical thinking over emotional intelligence

Variable	b	Standard error	Beta	t	p-value
constant	250.777	4.510	-	55.601	.000
Emotional intelligence	2.677	.287	.457	9.332	.000

Discussion & conclusion

The results of the present study on the relationship between critical thinking and self-efficiency of students of high school level of Meybod City revealed that there is significant relationship between students' self-efficiency and their critical thinking in aspects of inference, inferential reasoning, inductive reasoning and evaluation- except from analysis, and by increasing their score of critical thinking scale and its subscales (inference, inferential

reasoning, inductive reasoning and evaluation), their score of self-efficiency is also increased. The findings of the present study confirm the findings of similar researches like the research done by Teri (1994) who showed that high self-efficiency induces higher mental and physical health, while low self-efficiency expectations result in using defensive strategies like denial and self-report of which in turn result in negative physical and mental signs like anxiety, helplessness and depression.

Pentrich (1990) demonstrated that the higher self-efficiency levels, the more the cognitive strategies are used. Tamannaeifar et al. (2008) showed that students of art fields possess higher critical thinking and self-efficiency in compare with students of non-art fields; also the students of art fields achieved higher scores in subscales of critical thinking in compare with students of non-art fields.

Sarvghad (2010) demonstrated that there is a positive and significant relationship between variables of self-efficiency and all styles of thinking, except from introvert and holistic styles of thinking, among one hundred male students. In addition, there is a significant relationship between thinking styles and self-efficiency of female students. Generally, all these researches indicate that the higher are the self-efficiency levels, the higher is the rate of critical thinking. Conformity between the findings of the present study and the findings of previous studies carried out inside and outside the Country indicates that the type of thinking, and especially critical thinking, plays an important role in the individuals' self-efficiency process.

We can explicate the results of this research by using some famous psychological theories. Considering this fact that thinking styles or preferential ways of thinking, and especially critical style of thinking, vary among individuals, consequently, any individual would have different and unique abilities and functions depending on his or her preferable styles. Accordingly, understanding the concept of critical thinking and relationship between thinking styles and abilities is of great importance. For instance, an individual with legislative style of thinking may have high self-efficiency in rethinking, innovation and invention, or a dutiful employee with prominent administrative style of thinking would certainly be a self-efficient employee for the organization in following the instructions of his or her related authority optimally.

Also, people with prominent judging style of thinking would be successful and self-efficient persons in the field of investigating and judging if they are placed at proper cultural and environmental conditions. Other styles of thinking have also especial applications and positions among people. Another aspect of issue is that today's, in the education viewpoints, especial attention has been paid to thinking, to the extent that developing, training, reinforcing and evaluating the thinking is one of basic tasks of education.

Failures and successes that reattributed to abilities often are resulted due to different styles. A teacher must know that the student's weak performance is not always due to lack of ability, but sometimes it's resulted from lack of conformity between student's style of thinking and the teacher's expectations (Sternberg, 1997). Furthermore, self-efficiency, as one of main concepts of Bandura's theory, refers to an individual's believes and judges about his or her abilities, which may provide the chance of progress for the individual by inducing motivation in him or her. Therefore, teaching the student about the concept of self-trust and self-efficiency in facing problems may result in their progress and success in all affairs and especially in the education affair. Accordingly, considering that youths, and especially students, form an extended population of the Country, and that no research has been carried out in regard with this issue, conducting a research for understanding the relation of critical thinking and self-efficiency of students as the managers and contrivers of the future families is critical.

According to the results of other part of this study, there is a significant relationship between critical thinking and emotional intelligence of high school students of Meybod City in all aspects of analysis, inference, inferential reasoning, inductive reasoning and evaluation. By increasing the score of critical thinking scale and its subscales, the score of students' emotional intelligence is also increased. The researcher of this study found no other research in conformity with this hypothesis; in Addition, other found researches, including the researches carried out by Adeyemo & Ogunyemi (2008), indicated that emotional intelligence and self-efficiency alone or together are considered to be powerful predictor of job stress. William et al. (2008) demonstrated that emotional intelligent is correlated with self-efficiency and better performance in the areas of self-regulatory, self-assertion, independency, sympathy with others, control and optimism.

Stoji (2008) showed that emotional intelligence has appositive relationship with self-efficiency, and that both of them are capable of predicting each other. Penrose et al. (2007) also confirmed the relationship between teachers' emotional intelligence and their self-efficiency. Chan (2007) demonstrated that students with high emotional intelligence, have higher educational self-picture and self-efficiency. Mohammad Amini (2008) showed that emotional intelligence has a significant relationship with self-efficiency and mental health in both groups of students. Finally, Aghdami Baher et al. (2009) showed that there is a relationship between feeling of self-efficiency and

emotional intelligence, and the component of individual's sense of success. These findings indicate that there is a positive relation between self-efficiency and emotional intelligence, and, considering this fact there is also a positive relation between self-efficiency and critical thinking, thus we may conclude that there is a positive relationship between critical thinking and emotional intelligence.

Critical thinking and emotional intelligence are both the essential elements of achieving success, especially when they are proposed in the scope of education, and more especially in medical education. Since human beings' mind and body are closely related to each other, what an individual thinks about, and also his or her style of thinking, are influenced by his or her emotions and surrounding environment. The more powerful is the human being in perceiving his or her mind or thoughts, the more he or she would be able to control them and change them if it's required. In other words, reasonable thinking results in succeeding in different fields.

Since critical thinking may be developed and nourished, and different aspects of emotional intelligence may be promoted by correct educational methods, paying attention to these two issues is critical and necessary for high school students. However, it seems that in most schools of Iran, educational goals and methods of teaching and assessing are still base on memorizing a large volume of subjects of course books and booklets, and analysing, thinking and reasoning are rarely considered.

The present research had some limitations including large number of questions of the questionnaires, limited sample group, and lack of generalizability. Meanwhile, for better generalizability of the results, carrying out similar researches in different regions of the State is recommended. Also, studying the teachers', educators' and parents' opinions is suggested for better understanding of youths and their problems. At the end, we thank all people who assist us in accomplishing this research.

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