The relative effect of emotional intelligence (EI) and its components, motivational beliefs, and self-regulatory learning strategies on the academic performance of students

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Abstract: The purpose of the study is to investigate the relative effect of emotional intelligence (EI) skills and with motivational beliefs and self-regulatory learning strategies on the academic performance of university students. The method is description-correlation and the population from which the sample was selected included all of BA Isfahan University students of academic year 2009-2010 students were selected by class random-sampling. The measurement tools included bar-on Emotional Quotient Inventory and Motivational Strategies for learning. To analyze data, the Structural Equation Modeling (SEM) was used. The results indicated that empathy (EM) and the individual relationship (IR) are not related. Moreover, the coefficients of relationship among happiness, realism, responsibility and motivational beliefs were not significant. all of paths among motivational beliefs, self-regulatory learning strategies, and academic performance were also significant. For components of emotional intelligence, self-regulation and academic performance, the relationships were significant. The findings of the present Study can be applicable for educational researchers and planner's different spheres of emotional and intelligence as well as promoting educational performance and motivational strategies.

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1. Introduction

Emotional intelligence has been increasingly an interesting issue due to the importance of social skills and effective interactions with others. It has greatly influenced the concept of the relationship between the intellect and emotions. Emotional intelligence has applications in education, personal life, and work, and can improve the overall quality of life, as well as personal and social accomplishments (Goldman, 2006). All in all, emotional intelligence can help us in at least one human- interest issue, i.e. the conflict between what individuals think and what they feel. This construct or concept declares that if people have high emotional intelligences, they can be successful despite lack of high academic degrees (Bar-on, 2000).

In fact, having emotional intelligence is another form of being intelligent which includes having a thorough understanding of one's own emotions in making proper decisions, therefore it can greatly influence academic performance. Intelligence (IQ) and academic abilities and consciousness are not conflicting concepts; rather, they are different ones. A person with high IQ but low emotional intelligence is a caricature of a wise person who is strong in the realm of intelligence but weak in his own personal life (Goldman, 2006).

The theory of emotional intelligence, which is a complement of cognitive sciences, neurological sciences, and child development, provides a new perspective toward predicting factors affecting success and preventing psychological disorders (Noori, 2006).

Emotional intelligence includes proper awareness, regulation and expression of emotions. The ability to recognize, express and control these emotions is an important aspect of emotional intelligence and inability in any of these areas leads to disorders such as anxiety and temperamental problems. Therefore, it is imperative to educate children with emotional intelligence skills that are based on a thorough understanding and control of emotions so that these disorders are reduced and their functions improve (Shamoradloo, 2004).

Edward Lee Thorndike, the prominent psychologist who played a significant role in publishing the IQ theory stated that: social intelligence includes the ability to understand others and perform wisely in human interactions. He maintained that intelligence is not composed of one component since it is impossible to measure human abilities by one single intelligence. Therefore, he theorized three different intelligences: social intelligence, abstract intelligence, and concrete intelligence. He believed that social intelligence includes the ability to understand others and maintain a god relationship with them (Khosrwo Javid, 2002).

John Dewey, investigating the nature of classrooms, concluded that classrooms are places where students need to learn democracy, skills for maintaining it, the mental speculation for enforcing it, and the essential social existence to transfer it (Dewey, 1938). According to Dewey, there is a close relationship among the materials to be learned, the time needed for learning it, and the domain where it is applied (Kiarochi et al., 2006). The problem with our educational system is that the primary focus is on academic abilities, and a set of attributes that are of great importance in individuals' destinies are ignored (Austin et al., 2005).

The underlying framework in the theory of self-regulatory learning is the way students organize their learning processes in metacognitive. motivational, and behavioral respects. Therefore, in academic settings, in addition to cognitive strategies, motivational beliefs of students should also be considered, because they have a great influence on the learning and use of cognitive strategies. Nowadays, psychologists consider cognition, motivation, and academic performance as an interconnected set. On this basis, modern approaches try to explain how learners organize their learning in metacognitive, motivational and behavioral respects (Ames and Archer, 1988).

Based on a model, cognitive and motivational factors affecting learning are divided into motivational beliefs, and self-regulatory learning strategies (Pintrich and Detroit, 1990). Motivational beliefs include a set of beliefs hold by learners regarding their abilities to fulfill their duties as well as the importance they put on an assignment or subject. It is in fact the belief that he/she holds about the assignment and the purpose he/she has for studying it (Ames and Archer, 1988). Self-regulation is a complicated construct which is defined in different ways such as the ability to agree with a request, the ability to start or stop activities based n conditions, the ability to adjust the activity, repeating and continuing verbal-action activities in social and academic settings, the ability to postpone working on favorite subjects or activities and the ability to create behaviors that are socially acceptable for the individual and in absence of outside viewers (Pintrich and Detroit, 1990).

Theoretically, motivational beliefs are associated with self-actualization (i.e. the ability to detect potentials and accomplishing tasks which are possible to do and enjoying doing them), problem solving (the ability to identify and define the problem and create and enforce strategies to solve it), optimism (the ability to look at things in a smart way and to boost positive attitudes even in the face of difficulties), self-regulatory strategies for learning with emotional self-consciousness and flexibility (the ability to adapt thoughts and behaviors with changes), problem solving and taking psychological pressures (the ability to stand hardships and pressures without giving up, and active and positive coping with pressures) which are all construct of emotional intelligence. Emotional intelligence is the ability associated with cognitive capacity, expressing, identifying, applying and controlling emotions of oneself and others (Goldston, 2008). Emotional intelligence includes the ability to accurately capture, evaluate, and express emotions, the ability to achieve emotions which facilitate thinking and the ability to identify and regulate emotions to achieve mental growth (Ekrami, 2000). Evidence shows that people with emotional skills, i.e. people who know and guide their own and others' emotions and face with them in an effective way, are excellent in all respects of life, either in emotional ones or understanding unwritten rules which help improve the organization. These people are effective in their lives and have intellectual habits which help them be effective and productive (Olson, 2008; Bradshaw, 2008; Wright, 2007). This means that although it was long believed that IQ determined success, researchers recently found out that IO is not the only indicator of success. Nowadays, the focus is on emotional intelligence. which is considered as another indicator of success (Kiarochi et al., 2006). The relationship between emotional intelligence and academic performance. age, and gender has been studied in various studies (Olson, 2008; Bradshaw, 2008; Besharat et al., 2005; Sobhani, 2004). Given the importance of the emotional intelligence in everyday life and academic performance, and given the theoretical link between EQ, motivational beliefs, self-regulatory learning strategies, and academic performance, in this study, the relationship between EO and these constructs are conceptualized using the structural equations modeling (SEM). Therefore, four research hypotheses are developed and tested:

H1. EQ components and academic performance are related.

H2. EQ components, motivational beliefs, and self-regulatory learning strategies are related.

H3. Motivational beliefs and self-regulatory learning strategies are related to academic performance.

H4. EQ components, motivational beliefs, and self-regulatory learning strategies are related to academic performance.

4. Methodology

The study is a descriptive and correlative type. The population consists of all undergraduate students of Isfahan University during 2009-2010 academic year. In this study, the Structural Equation Modeling was utilized. In this method, the smallest sample needed for each observed variable is 10. Since the maximum number of observed variables in this study was 130, the estimated size of the sample was 1300. Due to the likelihood of the fall of subjects, 50 other ones were added and, the sample totally consisted of 1350. The sample was developed using random-class method. To do so, 10794 undergraduate students from Isfahan University in 2009-2010 academic year, 1350 students were selected by class proportion-to-size sampling. The statistical operations were performed using the SPSS15 and LISREL 8.8.

5. Instruments

The bar-N EQ questionnaire

The basic layout of this questionnaire contains 117 items and 15 scales, which was developed and normed by Bar-N in 1980 to measure the non-cognitive intelligence. The test has a good level of validity and reliability. The responses are set on a 5 point scale on the Likert continuum (absolutely agree, agree, somewhat agree, disagree, and absolutely disagree). It was investigated for validity and reliability in Iran by Samooie (2006) with the Cronbach's alpha 0.93, which is acceptable for a wide range of purposes. It contains 15 scales, including problem solving, happiness, independence, tolerating psychological pressure, self-actualization, emotional self-consciousness, realism, interpersonal relationships, optimism, impulse control, flexibility, social responsibility, sympathy, self-expression, and self-esteem.

Validity and reliability of the test was measured by the researcher using confirmatory factor analysis. The RMSEA was lower than 0.05 and the GFI was over 0.90, which shows the model has enough goodness of fit and fits the data. Since the RMSEA was lower than 0.05 and the GFI value was over 0.90, and the T values are over 1.96, we could firmly say that the Bar-N test is confirmed and is adequate for this study.

In order to measure the validity of the test, the internal consistency method using the Cronbach's alpha was utilized. The Cronbach's alpha values for problem solving, happiness, independence, tolerating psychological pressure, self-actualization, emotional self-consciousness, realism, interpersonal relationships, optimism, impulse control, flexibility, social responsibility, sympathy, self-expression, and self-esteem were 0.88, 0.73, 0.79, 0.81, 0.72, 0.88, 0.76, 0.83, 0.90, 0.87, 0.85, 0.71, 0.93, 0.77, and 0.74, respectively.

The motivational strategies for learning questionnaire (MSLQ)

It contains two scales of motivational beliefs (25 items) and self-regulatory learning strategies (22 items), which was developed by Pintrich and Di-Growth (1990). The motivational beliefs scale contains three sub-scales namely, self-effectiveness, internal valuation and exam anxiety. The selfregulatory scale includes two sub-scales namely, cognitive and self-regulatory strategies. The items of this questionnaire are 5-point scale type (ranging from absolutely agree to absolutely disagree) in order to measure the validity and reliability of the questionnaire, the confirmatory factor analysis and the Cronbach's alpha were used (Kiarochi et al., 2006). The results showed that the validity powers of self-effectiveness, internal valuation, and exam anxiety were 0.89, 0.87, and 0.75, respectively, and for cognitive strategies, 0.83 and for self-regulatory strategies, it was 0.74. The reliability of this test was measured by Hosseini Nasab using the CFA (Besharat et al., 2005). The results of the Cronbach's alpha for self-effectiveness, internal valuation, exam anxiety, cognitive and Meta -cognitive strategies were 0.68, 0.77, 0.64, and 0.68, respectively. In addition, in order to test the validity of the test was measures using reevaluation method, which was 0.76 (Alborzi and Samani, 1999).

The factor structure of the questionnaire was measures by the confirmatory factor analysis and the relationships between each item and each factor was studied using exploratory factor model and the goodness of fit for the hypothesized conceptual model was measured. The RMSEA was near 0.05, which shows the model is acceptable, but in order to improve the model, the error covariance of items 29 were considered correlated with 17 and 22 with 33. The free paths were chosen in a way that they had conceptual fit, each path was related to only one factor, and the Chi-square decreased with the maximum amount These variables were hypothesized as correlated and were fit again. The modified model shows to have a proper goodness of fit. The chi-square was 148.09, the RMSEA was, 0.001, and the AGFI was 0.92, which shows the model fits the data and has a good fit, and all of T values are over 1,96 and significant. Since the RMSEA is lower than 0.05 and the GFI is over 0.90, and T values are over 1.96, it could be firmly

concluded that the MSLQ is confirmed and adequate for the study.

6. Findings

H1: The components of emotional intelligence are related to academic performance.

In order to test this hypothesis, the regression model with LSREL was used and the relationship between each component of EQ and academic performance was modeled. The series of EQ components was considered as variables of model X, and academic performance was considered as variable of model Y. the results of the fitness of regression model are presented in Figure 1.



Figure 1. Standard Path coefficients of the effect of emotional intelligence on academic performance

Figure 1 shows the coefficients of the standard path. The estimation error of academic performance is 0.86, which indicates 15 factors of EQ explain 34% of variances for academic performance.



Figure 2. T values for EQ components and influences on academic performance

In order to study the significance of each coefficient, the T index was used, which is shown in Figure 2. Except for paths related to sympathy and interpersonal relationships, the value of T is over 1.96 for all paths and all of them are significant, but the influence of responsibility and interpersonal relationships is nit significant (T<1.96).

H2: The components of EQ and motivational belief and self-regulatory learning strategies are related.

In order to test this hypothesis, the structural model was used, the hypothesized model is represented in figure 3.



Figure 3. Structural model for EQ skills and components with motivational beliefs and self-regulatory strategies

As it shows, the relationship of EQ components with motivational beliefs (with sub-factors self-effectiveness, internal valuation, and exam anxiety) and self-regulatory learning strategies (with sub-factors cognitive and self-regulatory strategies) were considered and the model was fit.

Table 1. The adjusted goodness of fit index for the structural model

RMR	RMSEA	AGFI	GFI	df	AIC
0.01	0.001	0.90	92	156	428

Table 1 show the fit indexes of the model. As it shows, the RMSEA is lower than 0.05 and the adjusted goodness of fit index is 0.90, which shows the model fits the data and is acceptable. In order for the standard path to be clear and simplifying the model the path coefficients and T values are presented in Table 2.

Table 2. Path coefficients and t values

Factors	Self-regulatory		Motivational				
	strate	strategies		ets			
	t	PC	t	PC			
Problem solving	29.14	0.08	17.16	0.06			
Happiness	23.48	-0.07	0.86	0.01			
Independence	38.30	0.09	19.64	0.07			
Tolerating psychological pressure	49.01	0.11	18.01	0.05			
Self- actualization	24.02	0.07	19.91	0.07			
Emotional self- consciousness	37.09	0.09	-18.18	-0.06			
Realism	23.46	0.06	1.01	0.02			
Interpersonal communication	-0.09	-0.01	-34.14	-0.09			
Optimism	-19.06	-0.05	20.21	0.07			
Impulse control	23.88	0.06	-46.15	-0.10			
Flexibility	-30.16	-0.08	19.12	0.06			
Responsibility	24.19	0.07	0.90	0.01			
Sympathy	-1.02	-0.02	18.98	-0.06			
Self-expression	-1.12	-0.02	20.02	0.07			
Self-esteem	-44.13	0.10	49.19	0.11			
Note: PC=Path Coefficients							

As Table 2 suggests, the path coefficients of happiness, realism, responsibility, with motivational beliefs, and interpersonal communication, sympathy, and self-expression with self-regulatory strategies are not significant (T<1.96) and other paths are significant.

H3: the components of motivational beliefs and self-regulatory strategies are related to academic performance.

In order to test this hypothesis, the regression model was used and the relationship f each component of motivational beliefs and self-regulatory learning strategies with academic performance was tested. The components of motivational beliefs and those of self-regulatory learning strategies were considered as model X and academic performance was considered as model Y. the results of the regression fit model are presented in Figure 4.



Figure 4. Standard path coefficients for motivational beliefs and self-regulatory learning strategies are related

Figure 4 shows the standard paths coefficients for each path. As it shows, the estimation error of academic performance was 0.71, which indicates 5 factors given in the regression model explain 29% of variances for academic performance.



Figure 5. T-values for the effect of motivational believes and self-regulatory learning strategies on academic performance

In order to test the significance of each coefficient, the T index was used. Figure 5 shows the T value of each path. As it shows, the T value is over 1.96 for all paths and all paths are significant. (T>1.96).

H4: EQ components, motivational beliefs, and self-regulatory learning strategies are related to academic performance.

This relationship was modeled by the conceptualized model in figure 6. In this model, the role of motivational beliefs and self-regulatory strategies are considered as intervening factor in academic performance and EQ. The results of the fitness of the path model are presented in Table 3. Table 3 shows the path model for EQ, motivational beliefs, and self-regulatory learning strategies with academic performance.

Table 3. Path model for EQ components, motivational beliefs, self-regulatory strategies with academic performance

RMR	RMSEA	AGFI	GFI	df	Chi-square
0.02	0.04	0.99	1.00	1	3.33

As it is shown, the chi-square value is 3.33. The index of fit is 0.98 and the RMSEA is lower than 0.05. Also the adjusted goodness of fit index was 0.96 which shows the model fits data. The graphs and coefficients of standard paths are shown in figure 6.



Chi-Square=3.33, df=1, P-value=0.06815, RMSEA=0.042



In order to investigate the significance of paths, the T index was used. The values are shown in figure 7.





As the figure shows, all T values are significant ($\left|T\right| > 1.96).$

7. Discussion and conclusion

Emotional intelligence is one of the most important factors in psychology which can greatly influence people's lives and successes. The results for the first hypothesis in Figures 1 and 2 showed that among all components of EQ, only sympathy and interpersonal communications did not influence academic performance. This is also indicated in some other studies (Goldston, 2008; Olson, 2008; Bradshaw, 2008; Wright, 2007). EQ directs people by increasing their spiritual capacities and helps them find the way of their lives (Wright, 2007). Responsibility as a component of EQ had the most significant influence on academic performance, which the findings of this study do not support. EQ can improve responsibility by increasing problem solving abilities, flexibility and adaptability, impulse control, etc. and it can increase achievements.

The results for the second hypothesis presented in Figure 3, table 1 and 2 showed that the relationship between EQ components and motivational beliefs in happiness, realism and responsibility was not significant. So, they did not influence motivational beliefs. In other words, among EQ components, problem solving, sympathy, selfexpression, and self-esteem influence motivational beliefs and can improve them. These beliefs change in a way that helps people achieve their goals (Hosseini Nasab, 2000). Studies showed that motivational beliefs can positively influence academic performance, therefore, it can be concluded that EO can improve motivational beliefs (Hosseini Nasab, 2000) and therefore, improve academic performance. EQ can improve motivational beliefs by improving problem solving abilities, tolerating psychological pressure, self-actualization, and selfesteem. Other findings on the influence of EQ on self-regulatory strategies showed that problem solving abilities, independence, tolerating psychological pressure, self-actualization, emotional self-consciousness, optimism, impulse control, flexibility, happiness, responsibility, and self-esteem have a significant correlation with self-regulatory strategies, which means EQ makes individuals control and regulate their behaviors to learn better and direct their activities. The results showed that people with high EOs have controlled academic behaviors and act properly to learn better.

The results about the third hypothesis presented in Figure 4 and 5 showed that selfeffectiveness, internal valuation, exam anxiety, cognitive and self-regulatory strategies influence academic performance. In other words, the beliefs that people have about their abilities, putting importance on assignments and reaching educational goals, developing thinking strategies, creating, exploring, and memorizing, can influence and improve their academic performance. When a person learns how to think and direct his thought in good directions and have a good attitude towards studying, they can improve their academic performances. Brad Shaw (2008) thinks the essential factor improving performance is changing attitudes, and believes that in order to achieve academic goals people need to have positive attitudes. The results of this study are in line with those of Brad Shaw (2008) since it indicates that self-effectiveness and internal valuation can improve academic performance. In this study, the influence of exam anxiety on academic performance was reported significant, which shows exam anxiety can have a negative influence on academic performance. Golstone (2008) believes that a minor level of anxiety can motivate studying and people with high EQs never increase their anxiety and direct it toward motivation. Therefore, if anxiety is directed, it can improve academic performance. Other findings indicate that cognitive and self-regulatory strategies can improve academic performance. In fact, individuals can organize their thoughts and improve thinking strategies to improve academic performance because they know how much and in what ways to study in order to achieve the most. The findings are in line with those of BradSahw (2008), Golstone (2008), Pantridge and Digrowth (1990), Zimmerman (1990), Gardner (1990), Butlerwine (1995), Khodapanahi (2000), Ekhtiari (1998), and Samani (1999).

The results of the fourth hypothesis presented in table 3 and figures 6 and 7 indicated that there is a relationship between EQ components, motivational beliefs and self-regulatory strategies with academic performance of college students. The findings are in line with those of Bradshaw (2008), Goldstone (2008), Pint Rich and Di growth (1990), Zimmerman (1990), Gardner (1990), Butlerwine (1995), Khodapanahi (2000), Ekhtiari (1998), Elson (2008) Isaguir (2008), Rice (2007), Holt (2007), Wright (2007), Drago (2004), Abdollah et al (2004), Lasivita (2003), Samari and Tahmasbi (2007), Samani (1999), Zare (2001), Hakim Javadi and Ejeie (2004), and Asadi (2005). Therefore, if students can improve EQ, motivational belief, and self-regulatory strategies, we could predict that they will achieve success in academic fields.

8. Implications

- Based on the results showing the relationship between EQ and academic performance, college deans are advised to educated students in improving EQ skills and improve their academic performance.
- Based on the findings showing the relationship between motivational beliefs and EQ, college deans are advised to educate students in EQ skills and motivational beliefs to improve their performance.
- Based on the findings showing the relationship between happiness ans academic performance, college deans are advised to have classes in consultancy centers to help students solve their psychological problems.
- Based on the findings indicating the relationships between exam anxiety and academic performance, the consultancy centers are advised to teach students how to overcome stress and anxiety.

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