

The Relationship between Early Maladaptive Schema with Academic Achievement and Mathematics Test Anxiety

Kazhal Shaikhahmadi, Seyed Amanollah Sajjadi, Ali Kalvandi

Department of Educational Psychology, M.A. of Educational Psychology, Hamedan Branch, Islamic Azad University, Hamedan, Iran

Received: April 20, 2015

Accepted: June 15, 2015

ABSTRACT

This present study determines the role of early maladaptive schemas in predicting academic achievement and math test anxiety at students in sanandaj city. The samples of this study are 400 secondary states who are elected from 4 schools by applying grouping sampling method and using Cochran formula among statistical society. Research tools of this study are Young early maladaptive schema scale (EMSS), inventory of math test anxiety, and score of last two educational semesters of students as their academic achievement scale. Analysis of the results has been done by correlation method and multivariate regression by applying SPSS.19 statistical software. Based on the finding of this study early maladaptive schemas has direct effect on math test anxiety, also early maladaptive schemas in disconnection and rejection area could predict math test anxiety. Based on mentioned findings we could design a model, which prevents math test anxiety based on a provided schema therapy in educational-consulting institutes.

KEY WORDS: Early maladaptive schema, Academic achievement, Math test anxiety, Students

INTRODUCTION

In any educational system of educational progress is one of the indicators of success in the scientific activities. Cooper research results (According to the Haghshenas and others, 2009) suggests that, in addition to the structure and content of training courses that several factors such as mental health, cognitive abilities, emotional and personal and family characteristics have a major role in the students' academic performance. One of these factors is the math test anxiety. Math test anxiety as a major phenomenon common in educational institutions, which are involved with it, most teenagers is a kind of mental preoccupation and with minimization, and uncertainty in certain abilities that leads to lack of concentration and adverse physical reactions, and its negative consequences is reduced to dealing with the location of the exam and their inefficiency. Miller research results (1990) corroborate the notion that high math test anxiety is associated with education inefficiency, poor mental health and unpleasant emotions. Also math test anxiety refers to negative feelings, anxiety, psychological arousal and behavior, along with concerns about the competency exam. (Foolad Chang, 2005). At reviews causes of educational failure, in addition to factors of educational, social and environmental are of particular importance the personal and psychological factors, including the schema, however until now, did not study directly the relationship between early maladaptive schemas with progress education and math test anxiety, but a lot of research has been done, which have pointed to the relationship and the impact of the inalienable, individual internal factors, personal external factors and psychological factors on the performance and academic achievement. Such as found in a study of Khosravi and Bigdeli (2008) predicts that the personality traits of neuroticism of test anxiety. Also, have been reviewed and approved the relationship between test anxiety and academic achievement (Mohammadi, 2006), the impact of stress factors on the development of mathematics (Razavieh and others, 2000); math test anxiety and not the academic performance with perfectionism, the position of internal control and self-efficacy (Bkhtiarpour and others, 2010), emotional regulation and test anxiety in math (Heidari et al., 2010), met cognitive beliefs interfere with academic success (Abolghasemi et al., 2010), self-concept and self-regulation with academic achievement (Talebzade Nobarian et al., 2011), emotional intelligence and self-regulation learning with educational attainment varying. (Farmahini Farahani and others, 2008). At reviews psychological factors affecting school performance, in addition to the above factors, also play a major role the personality traits (Musgrave and others, 1997; De Fruty and Mervielde, 1996; Matthews and Davies, 2000; Diseth, 2003; Chamorro and Furnham, 2003; Wagerman and Funder, 2007; Chamorro, Ahmet Oglu and Furnham, 2008). In this regard, Kooshki and others (2010) showed that there is a relationship between personality characteristics with test anxiety and achievement motivation among students. Therefore, we can say, early maladaptive schemas which are caused bias in our interpretation of events (Pascal, Christine and Jean, 2008) could

* **Corresponding Author:** Kazhal Shaikhahmadi, Department of Educational Psychology, M.A. of Educational Psychology, Hamedan Branch, Islamic Azad University, Hamedan, Iran.

be of influence on the math test anxiety and academic performance. Early maladaptive schemas are patterns or within a deep and pervasive themes that formed during childhood or adolescence and continued in adulthood are related to one's relationship with others, fail to strictly and control an individual's response to events environment. (Young, 2007). Early maladaptive schemas find transformation during growth childhood and are the result of dysfunctional relationships with other important people in life. (Go Ya et al., 2006; quoted Young, 2007). Schemas are also influenced by culture, family, religion, and factors related to gender, age or personality. This schema, not only are structured on the basis of cognitive elements, but also are structured according to factors of emotional, behavioral and biological. Young (2003) expressed eighteen schemes in five distinct areas, including areas of rejection and disconnection, the scope of autonomy and impair performance, impaired limits areas, otherdirectedness areas and over vigilance and inhibition areas, this schemas act as cognitive filters, which are systematic biases and distortion of the data, these data processing processes largely carried out, unconscious, automatic and out of consciousness person. Young believes that the form of failure as a response, the answer to the first adaptive and maladaptive schemas. (Yousefi et al., 2010) as early maladaptive schemas as cognitive infrastructure are leading to irrational beliefs. This schema are a component of cognitive, emotional, behavioral, and are activated when this schema published levels of excitement, directly or indirectly will lead to various forms of psychological distress, such as anxiety, lack of education, lack of ability job, interpersonal conflicts depression, and the like. Understanding the cognitive foundations and the role it plays in predicting the degree of compatibility and variability of our thoughts and beliefs, suggests the need to address as early maladaptive schemas, as the foundation of performance and achievement and math test anxiety. However, this requirement is not addressed to the role of predictive, fundamental schemas in performance and achievement and math test anxiety and unnoticed in the field of cognitive research. Therefore, based on fundamental and selective the early maladaptive schema, the main issue of this study is that, do the early maladaptive schemas are appropriate model to predict academic achievement and math test anxiety?

METHOD

The research method is descriptive of the type (correlation and prediction) because the researcher is trying to determine the relationship between early maladaptive schemas and predict academic achievement and math test anxiety. The population of research is all secondary-school students in Sanandaj city, including 38,750 people (19,850 girls and 18,900 boys) who were selected by multistage cluster sampling method, according to Morgan and responded to 400 people to questionnaires (200 girls and 200 boys) for sample. In this study, to collect data were used from two questionnaires.

A) Early maladaptive schemas scale (EMSS): Young to measure these structures making the questionnaire of early maladaptive schemas which in the first and second edition and had 75 questions, and in the third edition designed questionnaire of 90 questions, which measures schema 18 branches in five the more general areas. (Young, 2007). Young, Norman, Asechy and Thomas (1995) have been validated the third edition of early maladaptive schema questionnaire with 90 questions on the 564 people from American students, that the report's validity by using consistency internal and test-retest reliability, respectively 0.95 and 0.81.

B) Mathematics Test Anxiety Inventory (MTAI): This questionnaire is composed of 25 articles, which participants, says that based on a Likert scale of four options. Minimum score on the test is zero and the maximum is 75. Whatever person earns a higher score, which represents more anxious. To assess the internal consistency test TAI, is used Cronbach's alpha coefficient. Based on the results the alpha for the total sample of male and female subjects, respectively, is equal to 0.94, 0.95 and 0.92. To assess the validity of the scale TAI was re-test of the four weeks to six weeks to 91 male and 90 female subjects, who took part in the first stage. The mean of standard deviation of total score of subjects of female subjects and male subjects, the scale TAI on the retest are respectively ($24.34 = X$ ($17.26 = SD$), $32.28 = X$ ($15.8 = SD$), $36.2 = X$ ($19.44 = SD$). The correlation between scores of subjects in two steps, namely, test and retest for all subjects of female subjects and male subjects is respectively ($0.77 = r$), ($0.88 = r$) and ($0.67 = r$), which is satisfactory.

C) Educational attainment: Mean scores of half-year student has been used as a tool to measure their academic achievement. Data analysis using descriptive and inferential statistical methods (R. Pearson's correlation and multivariate regression of stepwise method) was done with the usage of the software spss19.

RESULTS

A- Descriptive: Descriptive findings of this study are to include statistics mean and standard deviation of the measures used and their subscales, as shown in Table 1.

Table 1. The mean and questions standard deviation of used measures

Maximum	Minimum	Standard Deviation	Mean	Subscale	Variable
120	28	15.31	73.60	-	math test anxiety
20	8.89	2.24	17.07	-	Academic achievement
139	25	21.01	66.16	rejection and disconnection	early maladaptive schema
115	20	16.23	53.55	impaired performance	
87	15	12.45	41.79	Others directedness	
105	20	16.77	56.74	over vigilance	
55	10	9.22	28.68	impaired limits	

Scores of the measures used, respectively, of the total scores of each scale. Therefore, the scale used is minimum distance. According to the data in Table 1, the mean and standard deviation of math test anxiety were obtained, respectively, 73.60 and 15.31, and academic achievement were obtained, respectively, 17.07 and 2.24. Also in variable of early maladaptive schemas the mean and standard deviation of subscales, respectively, in the field of rejection and disconnection were obtained 66.16 and 21.01, in the area of impaired performance were obtained 53.55 and 16.23, in other directedness areas were obtained 41.79 and 12.45, in over vigilance area were obtained 56.74 and 16.77 and in the impaired limits area were obtained 28.68 and 9.22. In addition, to investigate the father's education of students, indicated that 102 people had a under high school diploma studies, 156 people had a high school diploma, 102 people had a bachelor's degree, 26 had master and in the end, 14 people had PhD, also the correlation matrix variables are presented in Table 2.

Table 2. Correlation matrix of research variables

(7)	(6)	(5)	(4)	(3)	(2)	(1)	variables
						1	math test anxiety(1)
					1	-0.002	academic achievement(2)
				1	0.067	0.152**	rejection and disconnection(3)
			1	0.835**	0.066	0.150**	impaired performance(4)
		1	0.778**	0.755**	0.038	0.250**	Others directedness(5)
	1	0.795**	0.774**	0.784**	0.013	0.139**	over vigilance(6)
1	0.812**	0.734**	0.725**	0.737**	0.058	0.118*	impaired limits(7)

As can be observed, is presented in Table 2; math test anxiety have a positive and significant relationship with all areas of early maladaptive schemas, in other words, whatever scheme incompatible person to be more prominent, as will be high his math test anxiety. This is while; it was found a significant relationship with educational achievement. On the other hand, there was no significant relationship between academic achievement and early maladaptive schemas.

B- Inferential: To test the hypothesis, we used multivariate regression analysis based on the procedure step by step, therefore, before the regression, it is necessary to examine the assumptions that. Tuesday assumptions independently and normality and as well as the homogeneous distribution measured, through the scatter plot between Y, predicted (\hat{Y}) on the horizontal axis, and residuals ($\hat{Y}-Y$) on the vertical axis. Therefore is drawn in Figure 1.

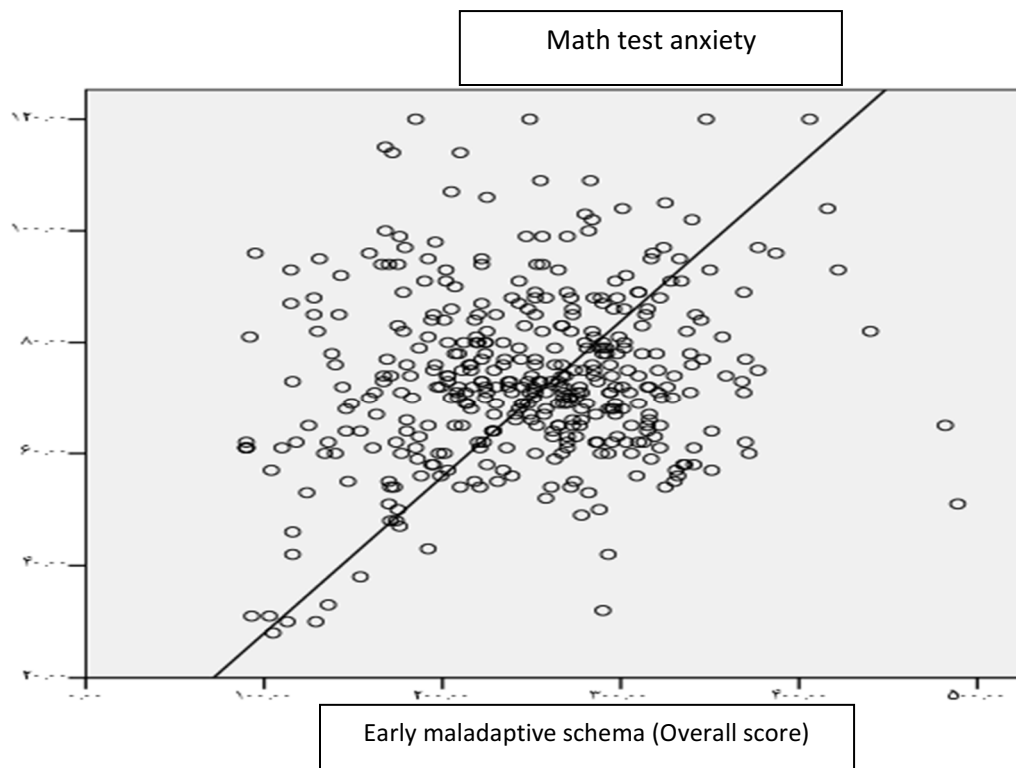


Figure 1. The scatter plot scores of predictions and residuals

According to the distribution points in Figure 1, it can be concluded that there were three assumptions, linearity, homogeneity of variance and normal distribution, since much of the plot for each level of the predicted score is near and around center of the diagram or regression line. Therefore, there are assumptions of regression analysis. Results of regression analysis come in tables 3 and 4.

Table 3: Summary of influence variables model on identity styles by using step by step

Durbin-Watson	Changed statistics			Adjusted R square	R ²	R	Predictive variables	Criteria Variable
	Significant changes F	F changes	R square change					
1.609	0.002	3.395	0.023	0.021	0.023	0.152	rejection and disconnection	Math test anxiety
-	-	-	-	-	-	-	-	Academic achievement

According to the data in Table 3, changes F, for a math test anxiety, after entering rejection and disconnection variable, there was obtained at level $0.002 > p$, and in the remaining variables were not significant. In other words, these variables have a significant effect on the math test anxiety, in total, are forecast 21% of the variance. Also changes F, for academic achievement was not significant, after entering, early maladaptive schemas model variables. In other words, early maladaptive schemas had not significant effect on academic achievement. On the other hand, values of Durbin - Watson statistics is located at a distance of 1.5 to 2.5, which is indicative of the lack of correlation model remains, therefore, is to show the independence of observations, which is one of the main hypotheses the application of linear regression.

Table 4: Factors influence of early maladaptive schema in the regression equation by using step by step method

P	T	B	Standard error of B	B	Predictive variables	Criteria Variable
0.002	3.065	0.152	0.036	0.111	rejection and disconnection	Math test anxiety
-	-	-	-	-	-	Academic achievement

In Table 4 shows the impact coefficients of early maladaptive schemas areas on the math test anxiety and academic achievement, according to the t statistic. The data in Table 4, indicate that rejection and disconnection variable with the amount of $3.065 = t$, and $0.002 > P$, has a positive and significant relationship with mathematics test anxiety. Also, the effect of rejection and disconnection variable on the predicted math test anxiety is $(0.152 = \beta)$. These findings suggest that there are multiple significant relationship between early maladaptive schemas (areas) and test anxiety in math whereas that was not approved the early maladaptive schemas multiple relationships and academic achievement.

DISCUSSION

This study was conducted to determine the role of early maladaptive schemas in the development of academic achievement and math test anxiety and regression analysis were used for data analysis. According to the findings is described the research hypotheses:

The findings are showed a significant relationship between the rejection and disconnection area variables (abandonment / instability, mistrust / abuse, emotional deprivation, defectiveness / unkindly or shame, and social isolation / alienation) with math test anxiety; so that, schemas this area alone predict the changes in the level of test anxiety in mathematics. The findings are consistent with results Chamorro and others (2008), Chamorro and others (2003), Diseth (2003), Matthews and Davies (2000), Musgrave and others (1997), De Fruty and Mervielde (1996), Talebzade Nobarian and others (2011), Farmahini Farahani and others (2008), Mohammadi (2006), Razavieh and others (2000). In explanation of these findings, we can say the students who are incompatible with schemas in this area, often shaped the yeast of emotional and behavioral and cognitive in families, which is not satisfying their needs in a way that prediction, for security, stability, compassion, empathy, sharing of feelings, acceptance and respect, and is passed down to infrastructure from the anxiety and insecurity in structure of their personalities from family interactions, in the process of education, which has been activated in the course of life and education in the face of the peripheral stimuli, such as test anxiety and try and compete with peer environment in getting success, as these schemas are incompatible and in turn to dominate the psychological security of students.

Results, in examining the relationship between autonomy schemas area and impaired performance, and academic achievement and math test anxiety, are showed a significant relationship between autonomy schema area and impaired performance with math test anxiety (the dependent variable). These findings are consistent with results of Young, Norman and Thomas (1995), Sternberg (1994), Bakhtiarpour and others (2010), Haghshenas and others (2010), and Khosravi and Bigdeli (2008). In explanation of these findings, it can be said that expectations that a person has of themselves and their environment have interaction to his sensible potential for separation, survival and function independently, or do things successfully, and the individual has grown up in an environment sensitive, which has experienced extreme attention, lack of self-reliance and independence, psychological and personal issues, which in the course of intense study and interpersonal rivalries with other peers does not have the required proficiency and independence, self-control in exams and improvements in the education process.

Also findings in examining the relationship between the schema impaired limitations area and academic achievement and math test anxiety are showed a significant relationship between the variables of limitations impaired area, i.e., schema eligibility / excel or magnanimity, self-control / inadequate self discipline, math test anxiety (the dependent variable). These results are consistent with findings Wagerman and Funder (2007), Abolghasemi et al. (2010), Heydari et al. (2010). In explanation of these findings, it can be said that the students that are incompatible scheme in this area have deficiencies in internal limits to responsibility towards others or positive direction to the long-term goals of life. In this schema are leading to problems in relation to respecting the rights of others, working with others, commitment and goal setting and achieving realistic goals. Person always finds it and the way healthy competition, and turn to militancy and the results of the work with anxiety and insecurity and concerns caused by the activation of these schemas, not reaching your goals and frustrated and is always worried.

Results, in examining the relationship between others directedness schema area and academic achievement and math test anxiety was to indicative of direct significant relationship schemas and test anxiety math (the dependent variable) which is close to the results of Young (2003), and Hamidpour and Andouz (2010). In explanation of these findings, it can be said that the students with schemes of this area have excessive focus on the desires, feelings, and responses of others in a way that ignored the needs of the individual. This work, carried out in order to receive love and acceptance, continuation and communication with others or avoid revenge and retaliation. In this schema, a person, usually giving back, emotions and your natural inclinations and is unaware of them. In general, these people known as "approval and attention beggars" and do not think to be successful and achieve their goals.

Finally, the findings in examining the relationship between much over vigilance schemas area and inhibition and academic achievement and math test anxiety is indicative of significant relationship this schemas area with math test anxiety. This finding is consistent with the results of Khosravi and Bigdeli (2008) and the Kooshki and others

(2010). In explanation of these findings, it can be said that the students have grown up in a family environment with parenting styles, that inflexible and internalized of excessive emphasis on the backlash feelings, impulses, spontaneous individual choices or to meet the rules and expectations about performance and ethical behavior, which often leads to a loss of happiness, expression, peace of mind, close relationships and health have grown up in them and their educational level and academic failure have been blamed, comparison, and in consequence of this, engaged to self-blame and self-destructive and self-punishment, therefore, with activation of these schemas the path of academic achievement and test anxiety in students to be control the deep layers of the personality and will lead to an increase test anxiety and related concerns and a drop in academic purposes. In line with the results of the study, based on research literature, it is suggested, which are designed and implemented, psychological and educational interventions with emphasis on medical scheme with the aim of reducing anxiety, which showed a good correlation with academic performance, and because, early maladaptive schemas and test anxiety the play an undeniable role in aspects of school life, in particular, academic achievement and education, as well as various measures, which provides in different levels of education to devote a section to measure the mental, emotional and personality of the students, so that could help to students and their families, in order to cope with education and academic achievement.

In general it can be said, that was approved the pattern of study and in other words from the negative early maladaptive schemas, it is predictable the test anxiety (math) and academic achievement, as well as, on the model can provide an approach to prevent test anxiety and improve academic performance and test anxiety treatment, based on medical schemes. As indicated this study the negative early maladaptive schemas is a leading role in predicting test anxiety (math) and academic performance. Also, an efficient model can be based on the negative early maladaptive schemas predictable the test anxiety and academic achievement of students and increase the efficacy of treatment and intervention in negative cognitive characteristics of students and to prevent their fall. The findings of this study also does is beneficial for students incompatible can take advantage of it the school counselors in the time before the exams and during the school year.

Acknowledgement

Hereby, I thank all the dear students that during the study helped us honestly, and also, thanks are respected colleagues that without any expectations and only to help a scientific research were facility the process of research sincerely.

REFERENCES

1. Abolqasemi, Abbas, Golpour Reza, Narimani, Mohammad and Ghamari, Hussein. (2009). Relationship between met cognitive beliefs impaired with academic success of students with test anxiety, Mashhad University Journal of Psychology, 10 (3), 20-5.
2. Bakhtiarpour, Said, Hafezi, Fariba and Shini Behzadi, Fatemeh. (2010). The relationship between the position of control, perfectionism and self-efficacy with anxiety test and academic performance in students, new findings in the Journal of Psychology, 3 (8): 64-52.
3. Haghshenas, Hassan, Bahrehdar, Mohammad Jafar and Setayesh Rahman, Zahra. (2009). Trial reducing anxiety in a group of young college Journal of Psychiatry and Clinical Psychology, 15 (1), 69-63.
4. Heydari, Alireza; Ehtesham Zadeh, Parvin and Hlajany, Fatemeh. (2010). the relationship between emotional regulation, met cognition and optimism, with anxiety students test, new findings in Journal of Psychology, 3 (8), 45-31.
5. Khosravi, Masomeh and Bigdeli Iman (2008). The relationship between personality traits with anxiety test in students. Journal of Behavioral Sciences, Vol. 2, No. 1, spring 2008, pp. 24-13.
6. Razavieh, Asghar, Seif, Diba and Taheri, Abdul Hamid. (2000). Effect of components of anxiety and math attitude on the academic achievement of high school students in math, educational innovations Journal, 3 (5), 45-32.
7. Talebzade Nobarian, Mohsen, Abolqasemi, Mahmoud, Askari Nejad, Fatemeh and Mousavi, Seyed Hussein. (2011). Structural relationship between self-concept, self-regulatory and academic success of students of methods and psychological models, 1 (4), 65-79.
8. Farmahini Farahani, Mohsen, Abdolmaleki, Jamal Rashidi, Zahra. (2008). Relationship between emotional intelligence, self-regulation and the purpose of the class and academic achievement in the junior high school students in the city of Ghorveh, scientific-Research journals of Daneshvar Behavior, 15 (1): 85-97.

9. Chang Foolad, Mahboubeh. (2005). the effects of cognitive training on academic achievement in mathematics, *Journal of educational innovations*, 4 (7): 149-162.
10. Kooshki, Shirin, Hooman, Ali and Yarmohammadi, Parvaneh. (2010). the relationship between test anxiety and personality traits with achievement motivation in students. *Journal of Psychology*, 2 (5), 67-77.
11. Mohammadi, Hossein Ali. (2006). Relationship between test anxiety, introversion - extraversion students, education and occupation of parents with academic achievement of students in third, Allameh Tabatabai University, a master's thesis.
12. YousefiNasser, Etemadi, Ozra, Bahrami, Fatemeh, Ahmadi, Ahmad and Fatehizadeh, Maryam Sadat. (2010). Comparison of early maladaptive schemas in divorced and normal, as a predictor of divorce, *Iranian Journal of Psychiatry and Clinical Psychology*, 16 (1), 33-21.
13. Chamorro-Premuzic, T., Ahmetoglu, G.,& Furnham, A. (2008). Little more than personality: dispositional determinants of academic stress (the big five, core self-evaluations, and assessed intelligence). *Learning and Individual Differences*; 18(4), 258-263.
14. Chamorro-Premuzic, T, & Furnham, A. (2003). Personality predicts academic performance: Evidence from two longitudinal studies on university students. *Journal of research in personality*; 37(2), 119-138.
15. De Fruty, F.,& Mervielde, I. (1996). Personality and interests as predictors of educational streaming and achievement. *European Journal of Personality*, 10,405-425.
16. Diseth, A. (2003). Personality and approaches to learning as predictors of academic achievement. *European Journal of Personality*, 17,143-155.
17. Jill, L., Michiel, F., &Vreeswijk, A. (2008). An empirical test of schema mode conceptualizations in personality disorders. *Behavior Research and Therapy*, 46, 854-863.
18. Matthews, G., Davies, D. R., Westerman, S. J.,& Stammers, R. B. (2000). *Human performance. Cognition, Stress, and Individual Differences*. London: Psychology Press.
19. Miller, M. (1990). An inventory for measuring clinical anxiety psychometric properties. *Journal of consulting and clinical psychology*, 2, 15-18.
20. Musgrave-Mar quart, D., Bromley, S. P.,& Dalley, M. B. (1997). Personality, academic attribution, and substance use as predictors of academic achievement in college students. *Journal of Social Behavior and Personality*; 12, 501-511.
21. Wagerman, S. A.,&Funder, D. C. (2007). Acquaintance reports of personality and academic achievement: A case for conscientiousness, *Journal of Research in Personality*, 41,221-229.
22. Young, J. E., Norman, S.,&Thomas, J. (1995). Schema Questionnaire. *Journal of Cognitive Therapy and Research*, 19, 295-321.
23. Young, J. ET, al. (2003). *Cognitive therapy for depression*: New York.
24. Young, T. (2007). The relationship between appearance Schema, Self- esteem, and indirect aggression among college women. Doctoral Thesis. Oklahoma State University.