



**RELATIONSHIP BETWEEN META-COGNITION AND EMOTION REGULATION
WITH TEST ANXIETY AMONG THIRD GRADE HIGH SCHOOL STUDENTS IN
SARAVAN CITY**

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ABSTRACT

The aim of this study was to determine the relationship between meta-cognition and emotion regulation with test anxiety among third grade high school students in Saravan city. The study is descriptive and a correlation. The statistical population consisted of 220 students (115 male and 105 female) in third grade high school in Saravan. Data were gathered by using a stratified random sampling among 1160 students (612 male and 548 female). Data collection was done through Wells meta-cognition questionnaire, Gratz emotion regulation scale and Ahvaz test anxiety questionnaire. Data were analyzed using descriptive statistics and inferential statistics, Pearson correlation coefficient, independent t-test, and regression. The results showed a negative relationship between meta-cognitive beliefs and test anxiety and a positive and significant relationship between emotion regulation disorders and test anxiety. Besides, considering meta-cognitive components, cognitive self-awareness could predict test anxiety, while test anxiety level was also different in male and female students. Therefore, regarding negative correlation between meta-cognition and test anxiety and positive relationship between the students' emotion regulation disorder and test anxiety, it is recommended that Department of Education strengthen meta-cognitive beliefs and reduce emotion regulation disorders for students.

Keywords: Meta-cognition, emotional regulation, test anxiety

INTRODUCTION

Improving the students' school performance, evaluation and testing is a fundamental purpose of contemporary education system in Iran and it is about a century that along with developing special fields of study such as Educational Sciences and Educational Psychology, school achievement, evaluation of students and factors affecting on them have taken an important part of the experts investigations. Factors such as anxiety which is a state that almost all people face with it in different levels throughout their life, so that everyone in his life has experienced this feeling at least once (File and Hyde, 2012). Besides, test anxiety is a common and important phenomenon in education, which is closely related to general anxiety and it appears in an individual as test get close and this anxiety has special features and it is different from public anxiety (Chapel et al., 2005). However, it includes phenomenological, physiological and behavioral responses which are related to fear of failure that a person experiences in evaluation opportunities, and there were factors which played a key role in this study. The previous studies have shown that if class atmosphere is free from stress and anxiety, a stronger human and social relationship will be made between the teacher and students

and also students interact with each other well, and so they have more favorable attitudes toward school and learning (Hassani & Ahmadi, 2005). Unlike in past when it was supposed that each person's learning ability is a function of his intelligence and talents, recently; it has strengthened among psychologists that despite the crucial role of intrinsic factors of talent and intelligence in learning, there are some other non-intrinsic factors that are also considered important in this regard. One of these factors is "learning strategies" or in more technical term "cognitive and meta-cognitive strategies" that caused educational psychology has significantly progressed in order to discover these strategies. Cognitive strategies are defined as any learners' behavior, thought or actions which have been used along with learning and they aim to get, organize and store knowledge and skills and to implement this knowledge easily in future (Veinstein & Hume, 1998). The term meta-cognition is the knowledge of human's cognitive processes and how to utilize them to achieve the learning goals (Biehler & Snowman, 1993). There are similar researches which are as follows:
Farhadi, Movahedi, Kharrazi and Leshni (2013), conducted a study aimed to compare

meta-cognitive beliefs and pathological concerns among students with symptoms of test anxiety disorder and normal students, and they found a significant difference between the scores of students suffering from test anxiety and normal students in meta-cognitive beliefs and pathological concerns. Sultan Mohammadlou, Gharaie, FathAli and Gohari (2013), examined the relationship between activation systems and inhibition of behavior, difficulties in emotion regulation and meta-cognition with concern. Results showed that variables of behavioral inhibition system, difficulties in emotion regulation and meta-cognition have a statistically significant positive correlation with concern. Stepwise regression analysis showed that the concern prediction model includes variables such as behavioral inhibition system, difficulty in emotion regulation and meta-cognition. Behavioral activation system variable was not in regression model from the beginning due to significant correlation with concern. Karami, ZakiPei, Rahmzadeh and Ali Khani (2011), investigated the role of meta-cognitive beliefs and self-efficacy beliefs in the students' test anxiety and school achievement. The results showed a correlation between meta-cognitive beliefs and test anxiety and school achievement of

the students, however, no significant relationship was found between self-efficacy and test anxiety. Weiner and Carton (2012), in their study found that test anxiety is determined with disturbing thoughts, increase in heart beats, emotional outbursts during or after the test and sometimes it is so severe that it disturbs the students' daily and educational lives. This state in the students gradually forms a stable trait which is often associated with inadequacy feeling. Larson et al. (2010), in a study found that test anxiety causes cognitive disturbances and it can disrupt the learning process, and lead to bad school performance and also students' running away from school.

Capaydin (2009), reviewed the prediction of high school students' emotions, especially anxiety during the exam, through emotional regulation. The sample included 1055 persons and the findings of regression analysis showed that emotion regulation strategies can significantly predict test anxiety. As a result, the findings indicate that there is a significant and positive relationship between test anxiety and emotional regulation. Therefore, it can be noted that the emotion regulation variables, meta-cognition and test anxiety are influential and important variables in education and they can affect each other. Also considering literature review

inside and outside the country, it can be concluded that the stronger meta-cognitive beliefs and better and more powerful emotional regulation, the less test anxiety and the better school achievement can be found among students. Thus, it is necessary that the relationship between these variables be investigated in order to determine the relationship between abovementioned variables.

METHODOLOGY

Regarding the topic of this study which is "Relationship between meta-cognition and emotion regulation with test anxiety among Saravan high school students thus it is a practical research in nature, while its method of study is a correlation. The research population consisted of all 1160 third grade high school students (548 female and 612 male) studying in Saravan in 2013-2014 and by using Morgan table, a sample size of 220 (105 female and 115 male) was chosen. The sample size was selected using random cluster sampling, so that among 8 schools, 4 schools (2 female and 2 male schools) and two classes were randomly selected from each school. Data collection for meta-cognitive variables was done through using a short form of a questionnaire by Wales and Katrayt-Houghton (2004), for emotion regulation variable; Emotion Regulation

Questionnaire by Gratz, Cited in Aminian research (2009) and for test anxiety; Ahwaz test were used (Abolqasemi et al. , (1996).

The following describe the mentioned instruments in brief:

2.1. Meta-cognition questionnaire

The basic form of this questionnaire had 65 items which were designed by Cartwright Hutton and Wells (1997) to examine the disturbing concerns and thoughts. Accepted forms of this scale (MCQ-30), containing 30 questions which later was developed by Cartwright and Wales (2004) similar to the original form (Wells, 1997,1995). This scale was made based on Self-Regulatory Enforcement Function model (SREF) by Wells and Matthews and it consists of 5 subscales including; cognitive trust, positive beliefs, uncontrollability and danger of denial, and the need to control thoughts, and the response of this scale were measured based on a 4 ranging Likert scale. The minimum obtained score in this 30-item test was 30 and maximum score was 120, while the total score for the meta-cognition has been obtained through adding subscale scores. Typaldou et al (2010) measured validity and reliability of the questionnaire in a sample of 30 psychiatry residency students aged 18-33 and the obtained results reported a proper test-retest reliability of two halves.

In order to evaluate the validity of the questionnaire, it was compared with STAI-T questionnaire and a good correlation was found between them, indicating the acceptable validity of MCQ 30. In Iran, Shirin-Zadeh and et.al. (2008) examined the psychometric properties of this questionnaire and their results showed a high reliability and validity of the scale. The internal correlation coefficient by using Cronbach's alpha for the total scale was measured 0.91 and for the subscales; it was measured from 0.71 to 0.87, however, the reliability of retest in a 4-week interval for the total scale and subscale were reported 0.73 and from 0.59 to 0.83 respectively. The correlation of total scale with the scale of trait anxiety was 0.43 and subscales correlation was in a range of 0.58 to 0.87. Thus, the present study measured the reliability of questionnaire by using Cronbach's alpha which was 0.79.

2.2. Emotion Regulation Questionnaire

Gratz Emotion Regulation Questionnaire (according to the Aminian, 2009) is a multi-dimensional and self-report 36-item questionnaire assessing both emotion regulation and difficulties in emotion regulation as well. Each question has 5 choices while it is graded from 1 to 5. Thus, a minimum score is 36 and a maximum score is 180 and a higher score indicates less

emotion regulation. To determine the validity of questionnaire, Aminian (2009) measured and compared the correlation of this questionnaire scores with the score of Zukerman sensation seeking scale and the results showed a significant and positive correlation which reflects the required reliability of emotion regulation questionnaire (Asgari, 2010). Besides, the validity of this study was approved by the supervisors and advisors. The reliability of the questionnaire was measured 0.86 through using Cronbach's alpha and it was 0.80 according to doing test-retest by Aminian (2009). Also, to determine the consequent validity of the questionnaire with emotion sensation seeking scale of Zukerman, a significant and positive correlation ($r=0.26$) has been reported (Cited by Heydari et al., 2010). In the present study, the reliability of the instruments was measured 0.84 through Cronbach's alpha.

2.3. Ahvaz Test Anxiety Questionnaire

This questionnaire was developed by using factor analysis to measure symptoms of test anxiety by Abolqasemi, Assadi Moghadam, Najarian and Shokrkon (1996) which consists of 25 items, while subjects based on four range Likert scale answer the questions (never = 1, rarely = 2, sometimes = 3, often = 4). The minimum score for this test was 25

and the maximum score was 100, so the higher score indicated a higher test anxiety. To check the reliability of test anxiety questionnaire, it was simultaneously given to the subjects along with Cooper Smith Public Anxiety Test and Self Esteem Scale and the correlation coefficient between the scores of public anxiety scale and test anxiety questionnaire for the entire sample; both male and female subjects which were measured respectively; 0.67, 0.61 and 0.72. Moreover, the correlation coefficients of self-esteem scale scores and test anxiety questionnaire for total samples; female and male subjects were respectively 0.57, 0.68, 0.43 (Abolqasemi et al., 1996). In addition to the face validity of this instrument in Abolghasemi study (2009), Heidari (2010) Lashkari Poor (2005) it was considered by experts (Heidari et al., 2010). In the present study the reliability of the instrument was measured 0.81 by using Cronbach's alpha. Then, data were analyzed using Pearson correlation, regression and independent t-test through SPSS18.

RESULTS

This section examines the variables and analysis of research hypotheses by using both descriptive and inferential statistics:

Descriptive statistics

Table 1 shows the descriptive statistics of mean, standard deviation and variance of the variables used in the study.

3.2. Inferential statistics (Research hypotheses analysis)

3.2.1. First hypothesis:

There is a relationship between meta-cognitive beliefs and test anxiety. To investigate this hypothesis, Pearson correlation coefficient was used and the results of this study have been presented in table 2.

As it can be seen in table 2, correlation coefficient is -0.36 which is significant in 0.001, and since the acceptable significance level is lower than 0.05, therefore, it is concluded that there is a negative and significant relationship between meta-cognitive beliefs and test anxiety of students. Thus, the higher meta-cognitive beliefs the students benefit from, the lower test anxiety they experience.

3.2.2. Second hypothesis:

There is a relationship between emotion regulation and test anxiety. To investigate this hypothesis, Pearson correlation coefficient was used and the results of this study have been presented in table 3.

As it can be seen in table 3, correlation coefficient is 0.43 which is significant in 0.001, and since the acceptable significance

level is lower than 0.05, therefore, it is concluded that there is a positive and significant relationship between emotion regulation and test anxiety of students. Thus, the lower emotion regulation the students show, the higher test anxiety they experience and vice versa.

3.2.3. Third hypothesis:

Meta-cognitive components predict test anxiety variable. To investigate this hypothesis, first the correlation coefficient between the meta-cognition components and test anxiety have been calculated, and then multiple regression analysis was used and the results of the studies have been presented in table (4) and (5):

As it is shown in Table 4, all components of meta-cognition have a negative correlation with test anxiety and the highest correlation is for cognitive self-awareness and the lowest one is for the need to control thoughts. Thus, any increase in each of the meta-cognitive components in students decreases test anxiety and vice versa.

As it is shown in Table 5, according to $R^2=0.14$ and $F=15.40$ just cognitive awareness has a linear relationship with test anxiety behavior, this relationship suggests that 14% test anxiety variance is explained by cognitive self-awareness. The other components of meta-cognition are not able to predict students' test anxiety. This means that in order to predict the test anxiety variable by using meta-cognitive components, all the components must be together or only cognitive self-awareness component must be examined.

3.2.4. Fourth hypothesis:

Test anxiety is different between male and female students. To investigate this hypothesis, independent t-test was used and the results have been shown in the table 6:

As it is shown in Table 6, there is a significant difference between the mean scores of test anxiety of male and female students with $t=15.55$. Besides, regarding the calculated means, test anxiety is higher in female students than in male students.

Table 1: Description of the emotion regulation, meta-cognition and test anxiety of students

Statistics	Emotion regulation	Test anxiety	Cognitive trust	Positive beliefs	Cognitive Self-awareness	uncontrollability and danger of thought	Need to control the thought	Meta-cognition
Mean	95.40	68.92	14.45	15.31	15.79	17.36	13.92	76.85
Standard deviation	19.73	19.16	3.04	3.86	4.45	4.59	2.60	15.82
Variance	389.49	367.23	4.28	14.91	19.85	19.85	6.79	250.39

Table 2: The relationship between meta-cognitive beliefs and test anxiety of students

Variables	Frequency	Mean	Standard deviation	Correlation coefficient	Significance level
Meta-cognitive beliefs	220	76.85	15.82	-0.36	0.001
Test anxiety	220	68.92	19.16		

Table 3: The relationship between emotion regulation and test anxiety of students

Variables	Frequency	Mean	Standard deviation	Correlation coefficient	Significance level
Emotion regulation	220	95.40	19.73	0.43	0.001
Test anxiety	220	68.92	19.16		

Table 4

N	Meta-cognition components	Correlation coefficient with test anxiety	Significance level
1	Cognitive trust	-0.25	0.001
2	Positive beliefs	-0.31	0.001
3	Cognitive self-awareness	-0.37	0.001
4	uncontrollability and danger of thought	-0.34	0.001
5	The need to control the thoughts	-0.22	0.001

Table 5: Simultaneous regression to determine the effects of meta-cognitive components on students' test anxiety

Criteria	Predictor variable	R	R ²	F	P	B coefficient	Beta coefficient	t	Significance level	
Test anxiety	Cognitive trust	0.38	0.14	15.40	0.001	-0.07	-0.01	0.19	NS	
	Positive beliefs					0.78	-0.05	-0.28	NS	
	Cognitive self-awareness					3.03	-0.24	-	1.05	0.003
	Uncontrollability					1.56	0.11	0.48	NS	
	Thought control					0.42	-0.02	-0.17	NS	

Table 6: The difference between male and female students' test anxiety

Gender	Number	Mean	Standard deviation	T	Freedom degree	Significance level
Male	115	57.76	11.46	15.55	218	0.001
Female	105	80.42	18.71			

DISCUSSION AND CONCLUSION

The present study investigated the relationship between emotion regulation and meta-cognitive beliefs and test anxiety among high school students. In the first hypothesis, results showed a statistically significant negative relationship between meta-cognitive beliefs and test anxiety of students. Therefore, these results are consistent with results of Heidari et al (2010) who found a significant negative correlation

between meta-cognition and test anxiety, also with Behpajouh and et.al. (2009) results when they measured the impact of cognitive-behavioral strategies to reduce test anxiety among high school female students, Amiri et al (2005) examined the relationship between cognitive-behavioral training and reducing test anxiety and Vouk (2008) showed that students with higher meta-cognitive ability have less test anxiety and Naten (2000), Haghshenas and et.al. (2013), Beirami et al

(2013), Karami and et al. (2011), John (2006), Tann and et al. (2010), Matthews and et.al (1999) found a significant negative correlation between test anxiety and meta-cognitive skills which all are consistent with the results of this study and approved them. In explaining these findings, it can be said that the negative meta-cognitive beliefs that a person experiences during the test, increases anxiety. On the other hand, positive meta-cognitive beliefs about concern help a person to apply effective coping strategies during the test. In fact, this concern helps students to achieve better test scores. In the second hypothesis, the results showed a statistically significant positive correlation between emotion regulation and test anxiety among students, so this finding is consistent with Heidari et al (2010) results in which a significant relationship was found between emotion regulation and test anxiety and Capaydin (2009) results with a significant positive relationship between test anxiety and emotion regulation, Carton and Wiener (2012), Schutz and et.al (2004) and Abolqasemi et al (2011) who found a relationship between test anxiety and emotion regulation which confirmed the results of this study. In explaining these findings it can be said that the students can set up and manage their emotions, and

enforce positive and facilitating emotions and so they can control effective social communication strategies and flexibility in considering and making decision under stressful situations. In the third hypothesis, the research results indicate how to predict test anxiety by meta-cognitive elements while the results have been consistent with findings of Zivisk-Bisirovik, Givertik and Miljovik (2009) who found negative cognitive variables and different automatic thoughts are the best descriptors of the students' test anxiety, and Jayn (2006) research in which the best predictor of test anxiety is the scores of students in the development of cognitive and meta-cognitive strategies and also these results are consistent with Capaidin (2009) research results. This hypothesis can explain that the emotion changes, particularly negative emotions have a major impact on the sense of helplessness and test anxiety. On the other hand, the students' meta-cognitive beliefs about cognitive self-awareness can predict test anxiety. Another explanation could be that the meta-cognitive strategies include elements of planning, monitoring or self verification, cognitive strategies and awareness. Therefore, meta-cognition use helps people to deal with problems on the basis of information processing with the

decentralization of the problem and its consequences to their attention, and to spend a better thought processes that lead to show a better behavior and prevent from further injuries. In the fourth hypothesis, the results of study showed a significant difference between male and female students' test anxiety that is consistent with findings of Narimani et al (2006), Dehvary (2012) and Sternberg (2001) research results in which the test anxiety of female students were more than male students and it was a significant difference. In order to explain this hypothesis, it can be said that girls are more engaged with emotional conflicts related to test and they desire to have a better performance during the test, and in the other hand, due to cultural issues and gender roles, girls are more anxious than boys because anxiety has been mostly accepted by girls and women.

SUGGESTIONS FOR FURTHER RESEARCH

- Since the elements of emotion regulation and meta-cognitive beliefs are important issues to reduce test anxiety, so the principles and methods that can strengthen these elements in the evaluation system should be emphasized.
- Some researches on social and cultural factors of emotion regulation, meta-cognitive

beliefs and test anxiety have to be done in a larger population and other variables such as gender, blaming children by parents and etc. should be taken into account.

- It is recommended to do research on teachers' skills and interest to strengthen the emotion regulation and meta-cognitive beliefs in order to reduce test anxiety among students.
- Comparative studies on the present educational system in Iran and other successful educational systems can be beneficial regarding any development in emotion regulation and meta-cognitive beliefs and reducing the students' test anxiety.

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