

# Evaluation of the Relationship between Critical Thinking Skills and affective Control in Child Training Students of the Female Technical and Vocational College in the City of Broujerd

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## Abstract

This study is a descriptive-correlational study with the purpose of evaluating the relationship between critical thinking skills and affective control in child training students of the female technical and Vocational College in the city of Broujerd. Statistical population of this study consisted of all students in the field of child training of the technical and Vocational College in the city of Broujerd during the first semester of the 2014 academic year who was 150 in number. From the mentioned students by way of simple random sampling and based on the Morgan table, 108 individuals were selected for participation in the study. Tools for data collection were the California standard critical thinking skills test (form B) and the standard scale for affective control. Additionally, the data collected was analyzed using the SPSS 22 software with the help of Pearson's correlation coefficient and regression analysis. Meaningful correlation was found between critical thinking and affective control in students ( $P < 0.01$ ,  $P = 0.000$ ) ( $r = -0.59$ ). Among the subscales of affective control, aggression had the highest correlation ( $r = -0.70$ ,  $P = 0.000$ ) and positive affect had the least correlation ( $r = -0.29$ ,  $P = 0.002$ ) with critical thinking. Also, the variance of affective control in students was predictable by way of critical thinking ( $P < 0.01$ ). Considering the meaningful correlation between affective control and critical thinking, it can be concluded that improvement in the process of critical thinking leads to increased affective control.

**Key Words:** Critical Thinking, Affective Control, Child Training Students, Skill

## 1. Introduction

Affects are an important and fundamental part of human life in a way that imagining life without them is a difficult idea. Characteristics and changes in affects, emotional relatedness and understanding and interpreting affects of other people have important role in growth and structuring of personality, moral evolution and social relations, identity formation and self-concept (Lotfabadi, 2000). All humans experience excitements and affects in their life and it is natural that in facing with various situations, different emotions and excitabilities be expressed. Yet, severe negative excitability and affects is abnormal and they are not only unconstructive but also have destructive and harmful effects as well (Ghadiri, 2005). Excessive emotions in individuals lead to lack of coping, aggression, anger, hatred and anxiety that uncontrollably threaten psychological and emotional health of individuals in a serious way (Ahmadi, 2001). In fact, we can never escape negative emotions, because emotions are an inseparable part of life (Robbins et al, 2013). It is better that instead of preventing expression of emotions, we decrease their reactive effects so sufficient time is acquired for better decision making, foresight and creativity (Sharifi Daramadi et al, 2007). By the skill of controlling affects it is meant that the individual should learn how to identify his or her affects in various situations and express and control those (Gross, 1998).

In fact, managing emotions leads to individuals being realistic, well thought and good doing and be counted as a useful and efficient individual in societal progress (Shoarinejad, 2013). Among groups of people who in the future can as useful and efficient individuals become part of the most important human resources in the direction of growth and development of societies are students. Particularly in our country, according to official statistics of the department of sciences and evaluation organization, more than half of the students are girls. This important and effective group needs affects control, because young students in facing pressure by friends, educational tensions, endeavor for independence and numerous decision makings and acceptance of responsibility in the future may feel confused and anxious and think that everything is out of their control and that they do not have the ability to control their affects in social and familial situations. Therefore, they may face difficulties which in addition to harming themselves lead to harm to society which can cause depression, anger, anxiety and etc (Biabangard, 2011). To prevent the mentioned harms in students, universities can by creating appropriate platforms by way of various and different programs promote students toward higher levels of thinking such as critical thinking.

Additionally, the role of educational centers as source of information and professors as transferors of information should change and students instead of memorizing information presented should increase their skill in logical thinking and use information after analyzing and processing them (Myers, 2012). The latter holds while now a day, educational centers with transfer of numerous scientific concepts and repetitive exercises and excessive

presentation of knowledge and information have taken away the opportunity to think from learners. It is completely evident that in today's complex world, transfer of information is not sufficient for solving problems and conditions for thinking should be provided for the learner and the latter is possible with changing traditional educational styles and strengthening critical thinking skills (Khodamoradi et al, 2006). On the one hand, for successful living in a democratic society, people should be able to think critically with the purpose of acquiring correct decisions regarding their personal and community issues. If students learn to think critically, they are guided in a way that life revives them (Walker Garrison, 2006).

«In recent years specialists in developmental sciences have expressed concern regarding deficiency in the ability of students for critical thinking. »(Myers, 2012) «Since one of the main goals of education and development is cultivation of critical thinking methods in individuals, in the matter of education at the same time of strengthening criticism accepting spirits in professors, the spirit of criticizing and evaluation and research should be created in students.»(Myers, 2012) Critical thinking in today's concept is a new topic. Yet, it goes back to the history of human thinking. When the sophists initiated relativism in Greece and Socrates was forced to design the problem of reality and following him Aristotle founded formal logic, critical thinking was created (Nasrabadi et al, 2005). Considering the agreement between experts and scientists regarding the importance of critical thinking and developing it, various opinions have been presented regarding the definition and quality of critical thinking (Vacek, 2009).

Every researcher with attention to his or her individual understanding and needs of his or her studies has attempted to define it (Bataneh et al, 2009). The society for critical thinking as cited by Snyder (2008) has defined it as the process of thoughtful organization, active and expert conceptualization, application, analysis, combination and evaluation of collected information or created by observation, experience, thinking, logic or communications as a guide for thought and action. In 1963, Ennis wrote an article titled «a definition of critical thinking» and created a reference point in the movement of critical thinking. In this article, he endeavors to give more importance to the applied aspects of logic and to create a connecting bridge between practical and formal logic. Later, he revised and completed his definition of critical thinking as follows:«Critical thinking is a reasoning and logical thinking which focuses on our decision making regarding what we want to do or believe in.»(Ennis, 2002)

Critical thinking is goal directed and consequence based thinking that needs judgment (Jackson et al, 2006). Critical thinking as a cognitive process is a fundamental understanding for growth and profiting from knowledge and this kind of thinking is applicable to problem solving and decision making in any tissue whether it be social, clinical, moral, managerial or political (Gul et al, 2010). Page cites Bloom in introducing critical thinking as related to thinking at higher levels of cognition (analysis, amalgamating and evaluating) (Page et al 2007). Ultimately, Facion and colleagues, consider critical thinking inclusive of evaluation, inference, analysis, deductive reasoning and inductive reasoning (Facione et al, 1994). Separate studies have been performed regarding critical thinking and affective control. Yet, regarding their relationship, no studies were found. Among studies regarding critical thinking and affective control, the following can be reviewed:

In one study, critical thinking in first semester and last semester students was in normal levels and regarding gravitation to critical thinking in the first semester students, there was meaningful difference with the model of scores of last term students (Gharib, 2006). Linley and colleagues (2009) in a study showed that the importance of teaching affective control and the method of its management to mothers of students with learning disability increases self-awareness, healthy relationship with others and physical, psychological and emotional well-being of children.

In a study titled «Effect of behavioral and emotion focused integrative counseling on affective control in girl adolescents in the city of Kashkouyeh, Rafsanjan», it was shown that integrative behavioral and emotion focused counseling has meaningful effect on affective control, depressive mood, anxiety and positive feelings and has not had meaningful affect on controlling anger in adolescents (Dahesh, 2009). In a study titled «Effectiveness of integrative group therapy on the therapeutic approach method of re decision making and story therapy on control of affects in girl adolescents in the city of Shiraz», integrative counseling based on rethinking and story therapy had meaningful effect on control of affects in adolescents (Ghaderi et al, 2010).

Based on another study, it was shown that regular girls' skill in controlling affect, anger and depressive mood is higher than martyr girls and meaningful difference has not been observed in control of anxiety and positive affect between the two groups (Asadi, 2010). In another research titled «Comparison of the level of critical thinking skills in students at the Boushehr University of Medical Sciences», meaningful difference was not found between mean scores of medical, nursing and midwifery students. Although, the scores of the first to last term had an increasing trend; yet, this difference was not statistically meaningful (Azodi et al, 2010).

Additionally, in another research, the trend in evolution of critical thinking in students at Mashad's Ferdowsi University was evaluated. Results of the study showed that meaningful difference exists between mean scores of critical thinking of students in the first and fourth year (Javidi Kalateh Jafarabadi et al, 2010).

In a study titled «Evaluation of critical thinking in students at Payame Nour University in Shiraz», it was concluded that total critical thinking scores of first and last semester students at the Payame Nour University in Shiraz did not have meaningful difference (Mehrabi et al, 2011). In a research titled «Evaluation of the level of gravitation to critical thinking in MS students of nursing of Shahid Sadoughi Universities of Medical Sciences and Health-Treatment Services and Azad Islamic University of the city of Yazd», it was concluded that the gravitation of 81.8 percent of nursing students evaluated towards critical thinking is unstable (Barkhordari, 2011).

In a research titled «Comparison of the level of critical thinking skills in first and last semester students at the MS level of selected fields at the medical sciences university's of the city of Tehran», it was concluded that meaningful difference exists only between mean scores of the first and last semester of nursing students at the Shahid Beheshti University of Medical Sciences and the midwifery students at the Iran University of Medical Sciences (Khodamoradi, 2011).

In a study titled «Comparative evaluation of critical thinking skills and gravitation to critical thinking in students from martyr and non martyr families in Western Gillan», it was concluded that meaningful statistical difference in the gravitation to critical thinking scores in the subscale of reality seeking and in the subscales of investigation and growth, children of martyrs showed more positive gravitation (Mahboubi et al, 2012). Also, in another study, results showed that group therapy by the integrative method and analysis of mutual behavior had meaningful effect on the overall scale of affect control and subscales of anger, depression, anxiety and positive affect (Tarfii, 2013).

Acton and colleagues (2000) in a study showed that teaching management and control of affects leads to increased skills of communication, problem solving and sympathy in individuals. On the other hand, according to research in the past, teaching critical thinking leads to motivation for learning, acquiring problem solving skills, decision making and creativity (Mirmolaii, 2008). Additionally, critical thinking is necessary as a key constituent of psychological health (Nardi et al, 1997). The reason is that problems related to health lead to disruption in attention and the students' thinking process (Jain et al, 2009).

Students who focus and think about problems cope better with various successes and have better psychological health (Thoyts, 1995). In other words, students with distorted thoughts have less control over their own life and have lower psychological health (Gotlib et al, 1993).

With attention to clarity of the importance and relationship of critical thinking and affect control, evaluation of the effect of educational programs at universities for development of critical thinking and its level of relationship with affect control appear necessary. On this basis, the researcher performed a study with the goal of determining the relationship between critical thinking skills and affective control in child training students of the female technical and vocational college in the city of Broujerd.

## 2. Method

This study was a descriptive-correlational study with the purpose of evaluating the relationship between skills of critical thinking and affective control in child training students of the female technical and vocational college in the city of Broujerd during the first semester of the 2014 academic year. Statistical population constituted of all Bachelors' of Science students in the field of child training which were 150 individuals and all were girls. According to the Morgan table, a sample with 108 individuals was selected by simple randomization for participation in the study. Tools of data collection in this research included the California Critical Thinking Standard Test (CCTST) and the standard affective control scale (ACS). The data collected was analyzed and interpreted using the Pearson correlation coefficient and regression analysis with the help of The SPSS 22 software. Data collection tools in this research were the two following questionnaires.

### **A-California Critical Thinking Standard Test-form B (CCTST-B):**

This test is a developed instrument for evaluation of critical thinking skills in students and has 34 items. Some questions have 4 choices and most are 5 choices. This questionnaire has been designed in four subscales for critical thinking cognitive skills including analysis, inference, deductive reasoning, inductive reasoning and evaluation. In design of this questionnaire, a general background in knowledge that is accessible simply and by way of natural adolescence and in primary schools and high schools has been assumed. No content knowledge relevant to specialization in a particular field is necessary for responding to the questions (Higuchi et al, 2002).

In this questionnaire, for each correct answer one point is given and the sum of correct answers forms the person's score. Least score is zero and maximum score is 34.

The scores of the analysis section are 9, inference section 11, deductive reasoning and inductive reasoning 16 and 14 respectively (Higuchi et al, 2002).

The California critical thinking test has strong content validity, because it has been prepared based on critical thinking and has been formulated by the community of philosophers of America and the California university system. Researchers have determined the reliability of form B to be 0.71 using the kuder-Richardson formula 20 (Facion et al, 1993).

Validity and reliability and psychometrics of this test in Iran have been evaluated by Khalili. The reliability coefficient of 0.62 has been calculated using the Kuder-Richardson formula 20 (Khalili et al, 2003).

Researchers after selecting the sample group provided short and necessary explanations about the goals of the research and method of responding to the questionnaire and the participants completed the response sheet anonymously during 45 minutes in a calm and appropriate environment with the presence of the researcher.

### **B-Affect Control Scale (ACS):**

This questionnaire has 42 items and its purpose is evaluation of the ability to control affects and its subscales (anger, depressive mood, anxiety and positive affect). Use of this scale is recommended for individuals above the age of 15 years. Response is by the Likert scale and answers to the expressions is in a seven degree scale from «strongly disagree=score 1» to «strongly agree=score 7». Response to expression 4-9-12-16-17-18-21-22-27-30-31-38 is scored in reverse such that the response of strongly disagree has a score of 7 and strongly agree a score of 1.

Among the total of 42 items of this questionnaire, 8 is related to anger, 8 to depressive mood, 13 to anxiety and 13 to positive affect. High score on this questionnaire shows disability in controlling affects (Ghaderi et al, 2010). Internal reliability and re-test of the scale in order for the total scale score are 0.78 and 0.94 and for the subscales of anger 0.73 and 0.72, depressive mood subscale 0.76 and 0.91, anxiety subscale 0.77 and 0.89 and for positive affect 0.66 and 0.84 obtained for a sample of BS students. Additionally discriminate and convergent validity has been obtained for it (Williams et al, 1997).

Also the reliability coefficient for the affective control scale has been estimated by Dahesh (2009) in a 200 individual group of students in junior high school and the results are as follows: The Cronbach's alpha value for the scale of effective control was 0.84 and in the subscales of anger 0.53, positive affect 0.60 that shows that this scale is appropriate for research work.

Additionally, reevaluation of the reliability of the scale by Dahesh (2009) showed that in addition to content validity which was approved by experts, another index was also used for estimation of internal consistency. In this estimation, every scale which is measured by way of subscales is also measured by the overall scale as well. Therefore, it is expected that meaningful and high correlation is present between the total score of the scale and each of the subscales. Values obtained are as follows:

Correlation coefficient of the affective control scale with the subscale of anger is 0.71 and with subscale of positive affect it is 0.68. Additionally, it is observed that all coefficients found were meaningful with a statistical confidence of 0.99. Therefore, the validity of the scale in reevaluation in this research was confirmed (Dahesh, 2008).

### **3. Results**

Participants in this study were 108 students in the child training field. All students were girls and were studying for a bachelor's degree. As previously mentioned high score in this questionnaire shows disability in affective control. On this basis, students in the subscales of affective control had lower depressed mood. In other words, they had more control over depressed mood and similarly after depressed mood, the highest level of control was related in order to anger, anxiety and positive affect. Additionally, in skills of critical thinking, highest means were related to deductive reasoning and the least to analysis [Table (1)].

Table 1. Mean and standard deviation of critical thinking and affective control and their constituents

Variables	<u>M</u>	<u>SD</u>
Critical thinking:		
Analysis	2/38	1/25
Evaluation	4/11	1/84
Inference	2/66	1/31
Deductive reasoning	4/42	1/93
Inductive reasoning	3/48	1/72
Affect control:		
Anger	33/91	6/78
Depressed mood	31/75	10/67
Anxiety	42/91	9/81
Positive affect	45/33	8/82

Additionally, findings of Table (2) show that in the subscales of affective control, anger has the highest correlation ( $r = -0.70$ ,  $P = 0.000$ ) and positive affect the lowest correlation ( $r = -0.29$ ,  $P = 0.002$ ) with critical thinking.

Table 2. Results of correlations coefficients of the subscales of emotional control with critical thinking

Subscales of affective control	Critical thinking	
Anger	Pearson correlation coefficient	-0.70**
	Significance level	0.000
	Number	108
Depressed mood	Pearson correlation coefficient	-0.62**
	Significance level	0.000
	Number	108
Anxiety	Pearson correlation coefficient	-0.42**
	Significance level	0.000
	Number	108
Positive affect	Pearson correlation coefficient	-0.29**
	Significance level	0.002
	Number	108

( $P < 0.01$ )\*\*

Mean and standard deviation of the total score for critical thinking in students was  $11.64 \pm 2.03$  and mean and standard deviation of the score on the affective control scale was  $156.53 \pm 34.28$ . Evaluation from analysis of the data in Table (3) shows that the value for the correlation coefficient obtained ( $r = -0.59$ ) is statistically meaningful ( $P = 0.000$ ) at a significance level of ( $P < 0.01$ ). Therefore, meaningful correlation exists between critical thinking and emotion control [Table (3)].

Table 3. Correlation coefficient of critical thinking and emotional control

Variable	Number	Mean	Standard deviation	Pearson's correlation coefficient	Significance level
Critical thinking	108	11.64	2.03	-0.59**	0.000
Affective control	108	156.53	34.28		

( $P < 0.01$ )\*\*

For precise evaluation of the relationship between critical thinking and affective control and determination of the share of critical thinking (predicting variable) in prediction of affective control (criteria variable), simple regression analysis was used the result of which for all students has been shown in Table (4).

Table 4. Results of simple regression for predicting emotion control by way of critical thinking in all students

Source of changes	SS	df	MS	F	R <sup>2</sup>	P
Prediction	43930.493	1	43930.493			
Remainder	81826.359	106	771.947	56.90	0.34	0.000**
Total	125756.852	107				

( $P < 0.01$ )\*\*

In this evaluation, the value for the correlation coefficient between the predicting variable and affective control - 0.59 and the level of R<sup>2</sup> is equal to 0.34. In other words, 0.34 of the variance of affective control of students is explainable by way of critical thinking ( $P < 0.01$ ).

To evaluate the significance of the correlation coefficient obtained, the results of analysis of variance shows that the level of F observed is meaningful ( $F = 56.90$ ,  $P < 0.01$ ). Therefore, critical thinking is able to predict affective control.

Additionally, attention to Table (5) regarding the test of meaningfulness of the regression coefficient shows that critical thinking ( $t = -7.54$ ,  $P < 0.01$ ) can explain the variance of affective control in students. In other words, probably students who have a higher level of critical thinking have higher affective control.

Table 5. Results of the regression

Predicting variable	Regression coefficient b	SE	Beta	t	P
Critical thinking	-9.94	1.31	0.59	-7.54	0.000**

( $P < 0.01$ )\*\*

#### 4. Discussion

The purpose of this research was evaluation of the relationship between critical thinking and affective control of child training students in the female technical and vocational college in the city of Broujerd. The results of the Pearson's correlation coefficient showed that meaningful correlation exists between critical thinking and affective control ( $P < 0.01$ ,  $r = -0.59$ ). Additionally, results show that among the subscales of affective control, anger has the highest correlation ( $P = 0.000$ ,  $r = -0.70$ ) and positive affect the least correlation ( $P = 0.002$ ,  $r = -0.29$ ) with critical thinking. It should be noted that up to now no research has been performed regarding the relationship between critical thinking and affective control.

In explaining this meaningful correlation, it is inferred that students who have the ability to analyze, inference, reason and evaluate have higher control over their affects. Regarding the meaningful correlation between anger and critical thinking, it can be stated that anger is a controllable phenomenon and with increased awareness of individuals of it and teaching effective methods and strategies anger can be better and increasingly controlled, because frequently repetition of internal talk leads to the logical part of the brain to overcome the older parts which gravitate to fight and flight (Pourhossein Denak, 2005). According to research in the past, thinking styles are effective on methods of instrumentation and anger control. This effectiveness shows the interaction between cognition and emotion (Motamedi et al, 2011).

Regarding the meaningful correlation between anxiety and critical thinking, it is inferred that anxiety leads the individual to mental disruption and prevents him or her from high level thinking; therefore, it can disrupt critical thinking (Broadbear, 2005). This result agrees with the findings of studies of Barkhordari based on inverse and meaningful correlation between gravitation to critical thinking and anxiety (Barkhordari, 2011).

Regarding the meaningful correlation between positive affects (feelings and excitement) and critical thinking, it is interpreted that positive affect is effective on the process of decision making and thinking and leads to cognitive flexibility. Therefore, people who feel happy can associate better between thoughts. On the other hand, positive affect creates creative and innovative responses (Eisen, 2005). As a result, in the opinion of Lipman (2003) a kind of causal relationship exists between creative thought and critical thinking such that creative thinking is stimulant of the sense of criticism and thankfulness in individuals.

The other finding of this research was in the context of critical thinking of all students which scored a mean of 11.64. This result agrees with the findings of Khalili and colleagues based on the mean critical thinking of students in Tehran being 11.68 (Khalili et al, 2004). It is also in agreement with the study by Azodi and colleagues with a mean critical thinking score of 11.37 in medical students at Bushehr and the study by Mahboubi and colleagues with a mean critical thinking in student children of non martyrs of 12.45. Yet, it disagrees with the result of studies by Facion with a mean of 16 for students in the last year of BS in nursing (Facion, 1997) and the studies by McCarthy and colleagues with a mean critical thinking score of 17.26 in last year students (McCarthy, 1999). Additionally, past research in Iran shows that 93 percent of first semester students and 94 percent of last semester students and 98.3 percent of clinical nurses have weak ability for critical thinking and meaningful difference has not been shown between critical thinking of first and last semester students (Barkhordari, 2008).

Considering the low level of critical thinking scores in internal studies, it is inferred that students do not have necessary skills for the desired critical thinking or during their education, they do not acquire it. Critical thinking in students does not develop during their education without the help of professors and just by listening to lectures and reading school books and taking tests (Myers, 2012). For this reason, lack of use of desired educative methods by the scientific community for promotion of critical thinking can be one of the reasons for lack of meaningful difference in critical thinking scores.

In the next finding of this study, 0.34 of the variance of affective control in students is explainable by critical thinking. In other words, by way of critical thinking, affective control can be predicted ( $P < 0.01$ ). In explaining this issue it can be inferred that by way of high level thinking in students, their affective control can be predicted. The main limitation of this research is that it has been performed with participation of female students and generalization of the results regarding boys needs to be performed with caution. Based on the findings of the research, it is suggested that more studies be performed in relation with the topic of the study with participation of different samples in different education years including BS, MS and PhD so that the results can be generalized with more confidence and boy students be included and results compared.

#### 5. Conclusion

Based on the results of this study, critical thinking plays a role in affective control. In other words, considering the meaningful correlation between critical thinking and affective control, it can be concluded that improvement in the process of critical thinking leads to increased affective control. As a result, it is suggested that with consideration of low scores on critical thinking in internal studies, educational officials and planners of this country pay more attention to growth of critical thinking in students.

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