

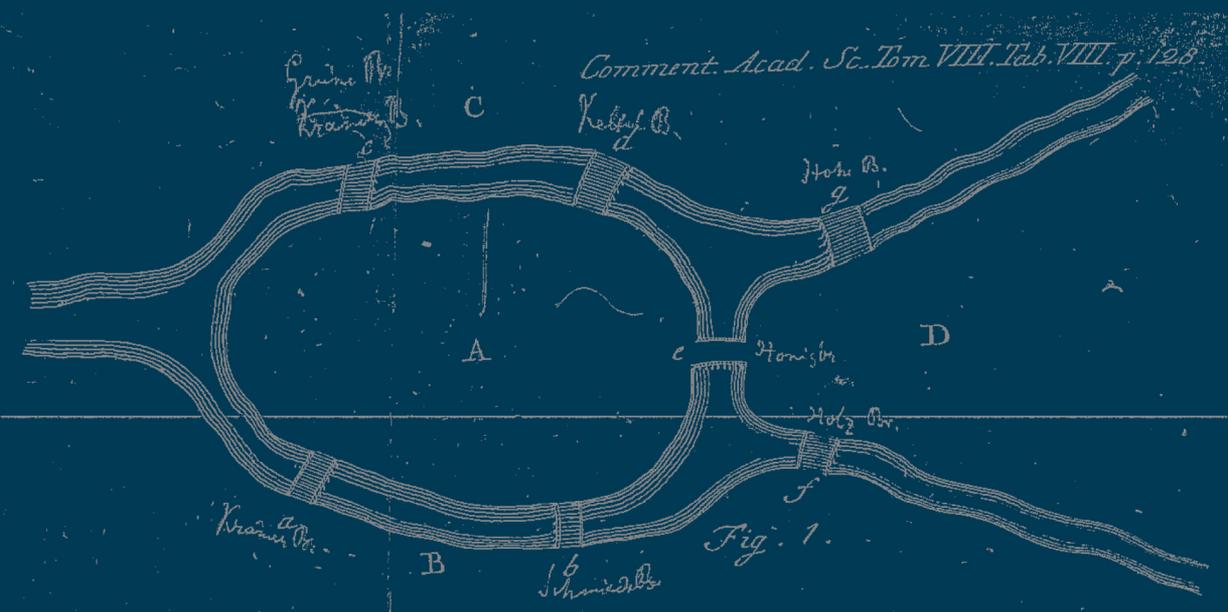
INTERNATIONAL STUDIES IN TIME PERSPECTIVE

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CHAPTER 24

EFFECT OF TEACHING CREATIVE AND CRITICAL THINKING SKILLS ON DEFENSE STYLES AND MENTAL HEALTH IN ADOLESCENTS

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ABSTRACT: Adolescence is an essential period in life course which in mental health is at risk. On the other hand, defense mechanisms that are indicators of mental health have important role in this issue. It seems that promotion of thought can impress these variables. In this regard, the purpose of this study was to examine the effect of teaching creative and critical thinking skills on defense styles and mental health in adolescents attending high school. In an experimental study 40 students who were selected using random multilayer sampling, were divided into two test and control groups and responded to DSQ-40 and GHQ in group form. Then, the test group received 10 educational sessions (20 hours) focusing on thinking skills (creative and critical). The control group didn't receive any kind of intervention. Upon completion of educational sessions, both groups were retested with questionnaires of critical and creativity thinking, thinking. Independent t-tests showed significant increases in creativity and critical thinking in the experimental group. Furthermore, MANCOVA showed significant increases in mature defense style (and all of its mechanisms) and on general mental health. Additionally, a significant decrease were seen in somatic symptoms, anxiety and insomnia, and severe depression in experimental group.

Keywords: creative thinking, critical thinking, defense style, mental health.

INTRODUCTION

Today, modernity and technology cause many changes in life that can be strong sources of stress for people in general. This issue is very important for young people because adolescence is an essential period in life course in which mental health can be put to risk, especially in the absence of mature coping skills necessary to face adversity (Kessler, Berglund, Demler et al., 2005).

In order to cope with stress and maintain mental balance, defense mechanisms play an important role (Bond & Perry, 2004). Indeed, defense mechanisms are unconscious processes (to avoid anxiety and protect the ego) are activated in threatening situations (Cooper, 1998; Freud, 1936) and that can also be seen as indicators of mental health (Feldman, Araujo, & Steiner, 1996).

Andrews and colleagues (1989) classified defense mechanisms into three categories: mature (adaptive), neurotic, and immature defense styles (the two latter are maladap-

tive). Researchers have confirmed the relations between maladaptive defense mechanisms and psychiatric symptoms (e.g. Sarno et al., 2010). Therefore, the promotion of adaptive defense styles and the concomitant inhibition of maladaptive ones (Freud, 1894; cited in Zigler-Hill et al., 2008) is a key factor in improving mental health.

The findings of Ivans and Seeman (2000) support the theory that defense mechanisms development is based on the ego maturing levels. Since the ego is the location of cognition and intellect, the promotion of cognitive processes and thought functions can lead to ego development and consequently the use of adaptive defense mechanisms can increase mental health (Cramer, 2006; Chavez-Eakle, Lara, & Cruz-Fuentes, 2006; Settersten & Lauver, 2004).

It is clear that thinking skills are key components of cognition and thought. According to the classification of thinking skills made by Swartz and Parks (1994, cited in Burk & Williams, 2008), creative and critical thinking are central cognitive capabilities. Creative thinking process involves the ability to produce original ideas, to perceive new and unsuspected relationships, or to establish a unique and improved order among seemingly unrelated factors (Piaw, 2010). Many scholars (Paul & Elder, 2005; Giancarlo, Blohm & Urdan, 2004; Silverman & Smith, 2002; Glaser, 1985; cited in Piaw, 2010) have viewed critical thinking as the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.

In this regard, in this study we want to examine the effect of teaching creative and critical thinking skills on defense styles and mental health of adolescents attending high school.

METHOD

Participants

Forty male students attending the 6th degree (fifteen years old) in one high school in Tehran that was selected using random cluster sampling method were divided into two test and control groups by random assignment. Then, the participants responded to questionnaires defense styles and general mental health. Later, the test group received 10 educational sessions (20 hours, one session per week) focusing on the teaching of creative and critical thinking skills. Finally, both groups responded to a critical thinking skills test, a creativity inventory and the questionnaires used of pre-test.

Instruments

California Critical Thinking Skills Test form B (CCTST). It is a multiple-choice instrument that consists of six subscales including analysis, evaluation, inference, explanation, interpretation, and self-regulation. The internal reliability was computed (it oscillated between 0.78 and 0.84). Validity was measured by correlating the CCTST with the Scholastic Aptitude Test verbal scores (correlation of 0.55) (Facione, 2006).

Abedi-Scumacher creativity Test (O'Neil, Abedi and Spielberger, 1994). It is a multiple choice test comprising 60 questions in which students rate themselves on a three-point scale. It measures fluency, flexibility, originality, and elaboration. Azumendi, Villa and Abedi (1996; cited in Cropley, 2005) reported internal reliability of 0.61 to 0.75 for the four subscales.

Questionnaire of defense style DSQ-40 (Andrews, Sing & Bond, 1993). This scale has 40 items corresponding to twenty defense mechanisms (two items for per mechanism), categorized in 3 defense styles: mature defense style, neurotic defense style, and immature defense style.. Reported Cronbach alpha for the original scales are satisfactory (Andrews et al., 1993). Cronbach alpha's for the Persian version, used in the present study, obtained in a student sample were respectively 0.75, 0.73, and 0.74. The test-retest coefficient after four weeks was 0.82 (Besharat et al. 2001).

The General Health Questionnaire, GHQ-28 (Goldberg, 1972). It consists of 28 items; the higher the score the lower the psychological well-being. It provides four sub-scales respectively tapping somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. Test-retest reliability has been reported to oscillate between 0.78 and 0.90 (Robinson & Price, 1982; cited in Sterling, 2011); Cronbach's α oscillate between 0.90-0.95 (Failde and Ramos, 2000; cited in Sterling, 2011).

RESULTS

Table 1 – Descriptive statistics of variables

	Group	Experimental group		Control group	
		Mean	SD	Mean	SD
Mature defense style	Pre test	46.10	9.47	50.75	11.92
	Post test	50.75	11.92	45.55	6.93
Neurotic defense style	Pre test	44.95	10.56	48.95	8.80
	Post test	48.15	9.99	45.5	6.93
Immature defense style	Pre test	124.3	25.91	130.8	23.88
	Post test	120.9	28.56	127.5	22.25
General health	Pre test	28.05	11.51	28.60	10.02
	Post test	24.65	7.93	29.15	11.36
Somatic health	Pre test	5.20	3.38	5.60	3.56
	Post test	4.45	3.68	6.35	3.91
Anxiety and insomnia	Pre test	4.90	4.28	5.40	3.26
	Post test	1.70	2.23	5.10	4.48
Social dysfunction	Pre test	14.55	2.63	14.10	2.95
	Post test	14.75	3.39	13.10	3.82
Severe depression	Pre test	3.25	5.49	3.65	4.67
	Post test	2.05	2.89	4.65	7.07

Table 1 showed that mature defense style increased but neurotic defense style, immature defense style, general health and its components decreased in experimental group.

Table 2 – Independent T-Test for creative and critical thinking between experimental and control groups

	Experimental group		Control group		t(38)	P <
	Mean	SD	Mean	SD		
Creative thinking	89.75	16.97	79.90	18.23	2.77	.001
Critical thinking	10.80	2.35	7.60	2.76	3.95	.005

Table 2 showed that creative and critical thinking significantly increased in experimental group after teaching.

Table 3 – Defense style differences before and after teaching

Source	Dependent Variable	Sum of Squares	Mean Square	F(1,35)	P <	Effect Size
Group	Post test for Mature Defense style	695.83	695.83	10.12	.003	.224
	Post test for Neurotic Defense style	169.72	169.73	2.54	.120	.068
	Post test for Neurotic Defense style	152.87	152.87	0.356	.554	.010
Error	Post test for Mature Defense style	2406.67	68.76			
	Post test for Neurotic Defense style	2341.75	66.91			
	Post test for Neurotic Defense style	15012.18	428.92			
Total	Post test for Mature Defense style	96618.00				
	Post test for Neurotic Defense style	90672.00				
	Post test for Neurotic Defense style	642366.00				

The results of the MANCOVA (see Table 3) show that the mature defense style increased in posttest in the experimental group (after the teaching sessions). Effect sizes of this variable are 0.224. Using Cohen’s instructions (1988) suggesting that large effect sizes are higher than 0.14, it can be concluded that the effect size observed in this study is in that range.

On the other hand the MANCOVA results obtained in the mental health indicators (see Table 4) point out that the scores of general health, somatic symptoms, anxiety and insomnia, and severe depression significantly decreased in posttest in the experimental group (after the teaching sessions). Effect sizes for these variables are respectively 0.124, 0.109, 0.248 and 0.114, expressing medium to large effect sizes.

Table 4 – General health differences before and after the training program

Source	Dependent Variable	Sum of Squares	Mean Square	F (1,33)	P <	Effect Size
Group	Post test of general health	166.912	166.912	4.669	.038	.124
	Post test of somatic symptoms	33.017	33.017	4.046	.050	.109
	Post test of anxiety and insomnia	98.633	98.633	10.864	.002	.248
	Post test of social dysfunction	25.667	25.667	2.141	.153	.061
	Post test of severe depression	74.056	74.056	4.226	.048	.114
Error	Post test of general health	1179.721	35.749			
	Post test of somatic symptoms	269.289	8.160			
	Post test of anxiety and insomnia	299.611	9.079			
	Post test of social dysfunction	395.535	11.986			
	Post test of severe depression	578.293	17.524			
Total	Post test of general health	32794.000				
	Post test of somatic symptoms	1750.000				
	Post test of anxiety and insomnia	1054.000				
	Post test of social dysfunction	8279.000				
	Post test of severe depression	1626.000				

DISCUSSION & CONCLUSION

This study indicated that creative and critical thinking skills as well and mature defense style increased after the teaching sessions. This finding is consonant with Ivans and Seeman (2000), and also Cramer (2006) studies, that argued that adaptive defense styles can be enhanced by improving the ego functions. While defense mechanisms are generally conceived as unconscious processes (Freud, 1996; Cramer, 2006), this study evidenced that they are subjected to change via the manipulation of conscious cognitive processes.

Furthermore, this study showed that teaching creative and critical thinking skills also promote mental health. This finding is in line with Krystal (1988), Parisooz (2011), Khandaghi and Pakmehr (2011) studies, which produce evidence that critical thinking skills and mental health indicators are mutually related.

Studies carried out respectively by Schwarzkopf (1981), Hermann (1987), Shubert (1988), Krystal (1988), Chavez-Eakle, Lara, & Cruz-Fuentes (2006), Khosravani and Gilani (2007), Ourang, Azad Fallah and Dezhcam (2010) have reached similar conclusions.

Indeed, when someone uses creative and critical thinking skills, he/she is involved in healthy behaviors (Settersten & Lauer, 2004), such as, adaptive decision making, and consequently diminishes the possibility of experiencing ill-being, such as despair, somatic symptoms, anxiety and depression.

In conclusion, it can be said that teaching creative and critical thinking skills contributes to the reduction of problems and difficulties in the adolescents.

REFERENCES

- ANDREWS, G., POLLOCK, C., STEWART, M. (1989). The determination of defense style by questionnaire. *Arch Gen Psychiatry*, 46, 455-60.
- ANDREWS, G., SINGH, M., & BOND, M. (1993). The defense style questionnaire. *Journal of Nerve and Mental Disorder*, 19(1), 246-56.
- BESHARAT, M. A., SHARIFI, M., IRAVANI, M. A. (2001). The relationship between attachment and defense mechanisms. *Journal of Psychology*, 19, 277-289, (In Persian).
- BOND, M., GRANDER, S., CHRISTIAN, J., & SIGAL, J. J. (1983). Empirical study of self-rated defense style. *Archive of General Psychiatry*, 40, 333-338.
- BOND, M. & PERRY, J. C. (2004). Long-term changes in defense style with psychodynamic psychotherapy for depressive, anxiety and personality disorders. *American Journal of Psychiatry*, 161, 1665 – 1671.
- BURKE, L. A. and WILLIAMS, J. M. (2008). Developing Young Thinkers: An intervention aimed to enhance children's thinking skills. *Thinking skills and Creativity*, 3(2), 104-124.
- CHAVEZ-EAKLE, R. A., LARA, M. C., & CRUZ-FUENTES, C. (2006). Personality: A possible bridge between creativity and psychopathology? *Creativity Research Journal*, 18(1), 27-38.
- COOPER, S. H. (1998). Changing notions of defense within psychoanalytic theory. *Journal of Personality*, 66, 947-964.
- CRAMER, Ph. (2006). *Protecting the self: Defense mechanisms in action*. New York, NY: The Guilford Press.
- CROPLEY, A. J. (1990). Creativity and mental health in everyday life. *Creativity Research Journal*, 3, 167- 178.
- CROPLEY, A. J. (2005). *Creativity in education & Learning: a guide for teachers and educators*. Oxon: Routledge Falmer
- COHEN, J. W. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- FACIONE, P. A. (2006). *Critical thinking: What it is and why it counts*. Millbrae, CA: California Academic Press.
- FELDMAN S. S., ARAUJO K. B., STEINER H. (1996) Defense mechanisms in adolescents as a function of age, sex and mental health status. *J Am Acad Child Adolesc Psychiatry* 35:1344–1354.
- FREUD, A. (1936). *The ego and the mechanisms of defense*. New York: International Universities Press.
- FURNHAM, A. & NEDERSTROM, M. (2010). Ability, demographic and personality predictors of creativity. *Personality and Individual Differences*, 48(8), 957-961.
- KESSLER, R. C., BERGLUND, P., DEMLER, O., et al. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey replication. *Archives of General Psychiatry*, 62, 593-602.
- KHANDAGHI, M. A. & PAKMEHR, H. (2010). The relationship between students' critical thinking and mental health in Mashad University of Medical Sciences. *Journal of Fundamental of Mental Health*, 13(2), 3-114.
- KHOSRANANI, S. & GILANI, B. (2007). Creativity and mental health. *Journal of Psychology and Education*, 37(2), 65-73.

- OURANG, T., AZAD FALLAH, P., & DEZHKAM, M. (2010). The Study of Defense Mechanisms Pattern Regarding Creative Thinking Level. *Advances in Cognitive Science*, 12(3), 49-58.
- PIAW, C. Y. (2010). Building a test to assess creative and critical thinking simultaneously. *Procedia Social and Behavioral Sciences*, 2, 551-559.
- PARISOZZ, A. (2010). *Effect of critical thinking teaching on mental health and academic achievement in female student of high school*. Master's Thesis of psychology. Tehran: Allameh Tabatabaei University.
- SARNO, I., MADEDDU, F., & GRATZ, K.L. (2010). Self-injury, psychiatric symptoms, and defense mechanisms: Findings in an Italian nonclinical sample. *European Psychiatry*, 25(3), 136-145.
- SETTERSTEN, L., and LAUVER, D.R. (2004). Critical Thinking, Perceived Health Status, and Participation in Health Behaviors. *Nursing Research*, 153(1),11-18.
- STERLING, M. (2011). General Health Questionnaire- 28 (GHQ-28). *Journal of Physiotherapy*, 57, 259.
- ZEIGLER-HILL, V., CHADHA, S., & OSTERMAN, L. (2008). Psychological defense and self-esteem instability: Is defense style associated with unstable self-esteem? *Journal of Research in Personality*, 42, 348-364.