



**DETERMINATION OF THE EFFECTIVENESS OF ENTREPRENEURSHIP-BASED
METHODS OF APPLIED CREATIVITY TEACHING ON 4-6 YEAR CHILDREN
CREATIVITY GROWTH BASED ON PARENTS VIEWPOINT**

FARZANEH AHMADI¹, MAHDIEH RAHMANIAN², HAKIMEH AGHAE³

1: M.A. student of General Psychology, Islamic Azad University of Shahroud

2: Assistant Professor, Department of Psychology, Payame Noor University

3: Assistant Professor, Department of Psychology, Islamic Azad University of Shahroud

ABSTRACT

This study aimed at determining the effectiveness of entrepreneurship-based methods of applied creativity teaching on 4-6 year old children creativity growth from parents' viewpoint in Semnan province nursery schools. The method of study was of a semi-experimental type with pre- and post-tests plan on a control group. The statistical population included all the 4-6 year old children in Semnan province nursery schools and preschools who were involved in entrepreneur and creativity program. Thirty children were chosen as samples (15 as control group and 15 as case group) by cluster sampling. Torrance creativity questionnaire was used for data gathering. One-way covariance and independent groups t-test statistical procedures were used for data analysis. The results indicate that the effectiveness of entrepreneur-based teaching was significant in total mark of creativity for girls ($p < 0.004$) and flexibility for boys ($p < 0.044$) and total mark of creativity ($p < 0.002$), as marked by the parents. Regarding the teachers markings, the values were significant in creativity for girls ($p < 0.019$), total mark of creativity ($p < 0.004$), and total mark of creativity for boys ($p < 0.002$). According to the results obtained from covariance analysis, the effectiveness of entrepreneurial behavior as marked by the teachers proved that entrepreneurial behavior teaching increases the flexibility in girls group ($p < 0.05$, $F = 7.252$).

Keywords: Creativity, Entrepreneurial Behavior, Nursery School and Preschool

INTRODUCTION

Today, the human societies are in a higher need for creativity teaching, due to natural resources erosion, the countries' interdependence, and the high rate of changes. It is necessary for every society to have a more precise and comprehensive image of the future. Such images of future motivate the society members to obtain the highest levels of intellection and creativity (Torrance, 1979). Torrance believes that continuance of a society existence depends on the people's creativity and originality, as this creativity is its most important weapon against stresses imposed by different aspects of life (Golkari et al, 2013). Parker (2008) defines the term "creativity" as a series of mental procedures which lead in solutions, ideas and conceptualizations, artistic forms, and unique and new theories.

Regarding the competition for accessing the dominant technology and establishing a more dominant, dependent and prosperous country in science and power realms and changing into a superpower, the society need to creativity and originality teaching. Torrance believes that the best time for educating this creativity in society is childhood (nursery schools and preschools) (Golkari et al, 2013).

Having a transient look at science advancement, especially in developed countries, we find out that the world is

advancing with a higher rate by creating growing movements such as creativity and originality talent movement. If we want more creative and imaginative adults, we should plan for them from their childhood. If the children's creativity and imagination is not encouraged, they will not be creative adults (Duffy, 2001). Therefore, creativity education plays a very important role on which Torrance emphasizes. In the new educative approaches, educating entrepreneurial behavior is a valuable method for teaching the children's intellect and their creativity. Entrepreneurial behavior means finding paths through impasses. Regarding what has been mentioned, entrepreneurship is among variables directly related to creativity. Entrepreneurship has creativity in his nature, and we will not have entrepreneurial people without creativity and originality.

Numerous scholars have commented on creativity educations who generally has approved of viability of such educations. Parnes (1962) and Strenberg (1999) are among scholars who believe it is viable. Torrance in book published in 1972, account 142 researches which all indicate the creativity education is viable (Abedi, 1993).

Torrance defines creativity as "feeling a gap, damaging or missing on of previous

elements and growing new ideas including hypothesis making and testing it, comparison between the results and their changes, and retesting new hypotheses if needed” (Ghorbani et al., 2011). Creativity has four components of which Guilford (1967) has determined three, and the last one was added by Torrance. According to Guilford (1967) the divergent thinking, or in other words, creative thinking includes three components as fluency, flexibility, and originality components. Torrance (1966) has added elaboration criterion to the three components.

Fluency: fluency, in creative thinking, means the rate of expression and more creation of concepts, sentences, and ideas (Amiri & Asaadi, 2007). In other words it is the talent for creating numerous ideas (Abedi, 1993).

Originality: it means distancing from routine and obvious affairs or disconnecting from habit-based thinking (Amiri & Asaadi, 2007). In other words, it is the talent of creating unique, strange and new ideas (Abedi, 1993).

Flexibility: it means the transmission from a stage of responses to another stage (Amiri & Asaadi, 2007). In other words, it is the talent of creating more various ideas or methods (Abedi, 1993).

Elaboration: it means high precision in presenting ideas, implementation, giving

value to it, and making connections to other ideas, for creating a new idea and clarifying it (Amiri & Asaadi). In other words, elaboration means talent of regarding the details (Abedi, 1993).

Several studies has shown that creativity exists in most people’s nature with potential highs and lows in level and it can be educated by implementing determined methods and techniques, creating new thoughts and setting appropriate environment (Golkari et al., 2013). Taer khani (2013) in his study “the effects of art education on students’ creativity”, showed that artistic games has a significant and positive effect on students’ creativity. Also, it has levelled up the students’ scores and has had a significant and positive effect on fluency, flexibility, originality and elaboration components.

Gnaji, Pasha Sharifi, and Mir Hashemi (2005) in their study on the effect of brainstorming on the creativity development showed that this method increases originality, flexibility and fluency in boys as well as elaboration and fluency in girls.

Boron, Heydari & Bakhtiar Poor (2013), in a study investigated the effect creative problem solving on creativity components of third grade students of secondary schools in Ahwaz. The results indicated that educating the creative problem solving

increased the fluency, originality, and flexibility components of the students.

Jebeli Ade and sobhani (2012) did a study on effects of implementing creative teaching methods on students' creativity. The results indicated that there are significant differences between the case and control groups in four components of creativity (fluency, flexibility, originality and elaboration). In other words, creativity growth is higher in case group compared to control group.

McCormac (Ghasemi & Oghlidos, 2005) in study investigated 30 graduates of primary school educating as case group and 39 graduates as control group. The control group was provided with different techniques such as brainstorming, problem analysis, and creative thinking practices. The obtained scores from Torrance creativity test in pre- and post-test using covariance analysis were investigated. The results showed that case group performed better in terms of fluency, flexibility, and originality compared to control group, though there were not any significant differences between creativity scores and educational progress. Ultimately, the researcher concluded that creativity improves even without educational progress.

Chwing Chin (2010) conducted a study on educating creativity in preschoolers based on teachers' viewpoints in three Chinese societies (Hong Kong, Shanghai, and Taiwan). The scientific results mostly approved the positive effects of creativity teaching on creativity learning.

The conclusions indicate that creativity teaching increase the person's creativity either directly or indirectly. Therefore, regarding the related literature which emphasize on creativity teaching and its role in development of mind, the current study aimed at determining the effectiveness of entrepreneurship-based creativity teaching on children's creativity growth and so, it seeks to investigate the following main hypothesis:

Teaching entrepreneurship improves the creativity and its components in children based on gender.

METHODOLOGY

- a) Research design and participants (or subjects): in this study, the statistical population is all the 4-6 year old children in Semnan province's nursery schools and preschools who were involved with entrepreneurship and creativity program. The recommended number for experimental studies is at least 30 samples for each group, though they

sometimes can be conducted by 15 samples per each group in controlled situations. For the current study, 15 samples were chosen as case group and 15 as control group. The sampling was done through multi-level cluster sampling, in which the groups are randomly chosen instead of people. The design was semi-experimental in pre- and post-test framework with control group. The semi-experimental studies are the ones in which the researcher intervenes and manipulate the variables and investigate the results of these interventions and manipulations on dependent variables (Cozby, 2009). In this study, the case group were taught entrepreneurial creativity, but there were no interventions on control group.

- b) Instruments (materials): the measuring instrument for the current study is Torrance Creative thinking test (1966). This questionnaire contains 60 questions which divided to fluency part (16 articles), flexibility part (11 articles), originality (22 articles) and elaboration part (11 article). The marking method is Likert scale (0-1-2). The higher scores mean higher

creativity and the lower scores mean lower creativity (Rezaei & Manouchehri, 2008). Torrance (1990) has reported the correlation coefficients of 0.86 to 0.99 between the scores from taught and untaught markers. For the Iranian case, Pir Khaefi (1993), has reported the reliability coefficient of 0.80 in a two-week period by retesting method on 48 students for fluency (0.78), originality (0.74), flexibility (0.81) and elaboration (0.90) components. For the current study, the reliability of micro-scales of creativity using Alpha Cronbach for the scores by parents are as fluency (0.469), flexibility (0.487), originality (0.439), elaboration (0.439), and total mark of creativity (0.803) respectively. For the scores provided by teachers, we have fluency (0.458), flexibility (0.464), originality (0.639), elaboration (0.799), and total mark of creativity (0.883) respectively.

- c) Conduct:

For conducting this study, the researcher made the appointments with nursery schools which had implemented Montessori Method for teaching entrepreneurship and chose the samples. For analyzing the effects of independent variable (creativity teaching

method) on dependent variable (creativity), the subjects were randomly assigned to a case and a control group. Prior to holding sessions on teaching creativity for the both groups, the Torrance Creative thinking test (1990) was implemented. Then, creativity teaching classes based on Montessori education method with the aim teaching entrepreneurial behavior were held for case group as twelve 60-minute sessions (level1/term1). The control group received no educations. After the educations were implemented, Torrance creative thinking tested were given again for the both groups.

RESULTS

The following results were obtained on data analysis. In order to investigate the lack of significant differences in dependent variable, the average comparison tests between the two independent groups was used prior to presenting the independent variable.

The results from the above table show that there were no significant differences between boys and girls in fluency, flexibility, originality, elaboration and total mark of creativity variables in case and control groups, prior to presenting the independent variable ($p > 0.01$), and their distribution was also normal.

Also, in this study, the one-way covariance was used for assessing the homogeneity of regressions slopes. Results are provided in the following **Table 2**:

The results from the above table indicate that $p < 0.01$. Therefore, the homogeneity of regressions slopes of total mark of creativity variable and its components is significant for both the boys and girls. So, this assumption is not observed in the total score of creativity and its components.

Loin test is used for investigating the equality or inequality of scores variance between the two groups.

The results from the above **table 3** indicate that the assumption of variances homogeneity is observed in the total score of creativity and its components for both the boy and girls ($p > 0.01$)

Considering the obtained results, the assessment of covariance analysis assumptions cannot be used for investigation of effectiveness of teaching entrepreneurial behavior on creativity growth in the parents scores (girls group). So, the t-test for independent groups is utilized.

For comparison of the two groups' means, the t-test with two independent samples were used whose results are provided in the following **table 4**:

Table 1: the descriptive and inferential indices of the two independent groups' means comparison test

The descriptive analysis of inferential variances homogeneity normality

Significance level	Degree of freedom	t	Significance level	F	Significance level	Z	SEM	Standard deviation	mean	Group	variable	group
0.818	14	-	0.717	0.136	0.983	0.762	1.26	3.58	17.00	Case	Fluency	
										Control		
0.149	14	1.528	0.644	0.223	0.904	0.568	1.14	3.24	15.75	Case	flexibility	
										Control		
0.635	14	0.485	0.732	0.122	0.990	0.439	0.97	2.74	16.12	Case	originality	girls
										Control		
0.686	14	-	0.206	1.758	0.976	0.479	0.79	2.25	15.25	Case	elaboration	
										Control		
0.663	14	0.446	0.959	0.003	0.930	0.542	2.73	7.73	64.31	Case	Total score of creativity	
										Control		
0.416	12	0.842	0.144	2.448	0.947	0.523	1.50	3.98	18.714	Case	fluency	
										Control		
0.376	12	0.919	0.485	0.519	0.981	0.467	1.71	4.54	15.428	Case	flexibility	
										Control		
0.808	12	0.248	0.037		5.486	0.986	0.455	2.10	5.55	16.285	Case	originality
										15.714		
0.948	12	0.067	0.910		0.013	0.996	0.410	1.53	4.05	16.142	Case	elaboration
										16.00		
0.540	12	0.630	0.402	0.755	0.937	0.536	5.44	14.39	66.57	Case	Total score of creativity	
										62.43		

Table 2: the one-way covariance analysis test

Significance level	F	Total squares mean	Degree of freedom	Total squares	analysis Group interaction in pre-test	Group
0.007	7.253	48.214	2	96/429	Fluency	Girls
0.000	15.052	61.459	2	122.918	Flexibility	
0.000	17.785	50.440	2	100.880	Originality	
0.002	10.002	74.474	2	148.949	Elaboration	
0.000	101.876	583.676	2	1167.274	Total score of creativity	Boys
0.000	26.275	101.266	2	202.533	Fluency	
0.000	16.464	55.175	2	110.350	Flexibility	
0.000	19.285	79.143	2	158.287	Originality	
0.000	17.901	85.676	2	171.352	Elaboration	
0.000	68.750	906.876	2	1813.756	Total score of creativity	

Table 3: Loin test indices

Level of significance	In-group degree of freedom	Inter-group degree of freedom	F	analysis variable	Gender
0.105	12	1	3.007	Fluency	Girls
0.660	12	1	0.201	Flexibility	
0.783	12	1	0.079	Originality	
0.282	12	1	1.253	Elaboration	
0.106	12	1	2.989	Total score of creativity	
0.020	12	1	7.211	Fluency	Boys
0.185	12	1	1.973	Flexibility	
0.833	12	1	0.030	Originality	
0.767	12	1	0.092	Elaboration	
0.879	12	1	0.023	Total score of creativity	

Table 4: the descriptive and inferential indices of mean comparison test between case and control groups in boys and girls as scored by the parents

Significance level	Degree of freedom	t	Significance level	F	Significance level	Z	SEM	Standard deviation	Mean	Group	Variable	Gender
0.059	13	2.055	0.333	1.006	0.912	0.560	0.750	2.121	2.250	Case	Fluency	Girls
					0.825	0.628	1.033	2.923	-0.375	Control		
0.338	13	1.233	0.637	0.233	0.705	0.703	0.681	1.927	2.000	Case	Flexibility	
					0.211	1.06	0.750	2.121	0.750	Control		
0.062	13	2.030	0.959	0.003	0.857	0.605	0.319	1.187	1.625	Case	Originality	
					0.699	0.707	0.681	1.937	0.000	Control		
0.306	13	-1.062	0.257	1.393	0.980	0.370	1.016	2.875	-1.375	Case	Elaboration	
					0.537	0.537	0.801	2.267	0.000	Control		
0.003	13	3.398	0.110	2.907	0.973	0.382	0.653	1.851	3.500	Case	Total score of creativity	
					0.979	0.371	0.980	2.773	0.375	Control		
0.251	7.337	1.237	0.013	8.592	0.833	0.623	0.236	1.153	2.00	Case	Fluency	
					0.723	0.693	1.302	3.250	0.285	Control		
0.033	12	2.252	0.908	0.013	0.891	0.579	0.713	1.889	1.713	Case	Flexibility	
					0.866	0.599	0.808	2.138	-0.713	Control		
0.877	12	-0.158	0.182	2.010	0.623	0.752	0.769	2.035	1.132	Case	Originality	Boys
					0.535	0.805	0.273	1.253	1.285	Control		
0.033	12	2/416	0/190	1/926	0/796	0/648	0/704	1/864	3/857	Case	Elaboration	
					0.989	0.355	1.231	3.258	0.328	Control		
0.002	12	3.820	0.189	1.966	1.000	0.356	1.700	3.398	8.713	Case	Total score of creativity	
					0.988	0.336	0.933	2.397	1.285	Control		

The results from the above **table 4** indicate that effectiveness of teaching entrepreneurial behavior on the total score of creativity is significant for the girls group ($p < 0.004$). So, according to the comparison between the means' differences, case group (4.50) is higher than control group (0.375). as a result, it can be claimed that the mean of pre-test scores difference compared to post-test in total score of creativity is indicative of higher values for case group (4.50) than control group (0.375). it means that teaching entrepreneurial behavior is effective on girls' total score of creativity growth in case group compared to control group, though there were no significant differences between scores differences in creativity components testing, pre- and post-test.

Moreover, the effectiveness of teaching entrepreneurial behavior was significant in flexibility ($p < 0.044$) and total score of creativity ($p < 0.002$) components for the boys group, which indicate that scores difference means pre- and post-test for flexibility in case group (1.714) is higher than control group (0.714). Also, the total score of creativity for case group (8.714) is higher than control group (1.285) which is indicative of effectiveness of teaching entrepreneurial behavior on boys flexibility and total score of creativity in case group compared to control group, though there

were no significant differences in means' differences pre- and post-test for other components of creativity.

DISCUSSION

This study aimed at researching the effectiveness of teaching entrepreneurial behavior on 4-6 year old children creativity. The results showed that teaching entrepreneurial behavior has a positive effect on the children's total score of creativity in both boys and girls groups based on the scores provided by the parents. This difference was significantly confirmed between case and control groups.

Numerous studies have been conducted on direct teaching of creativity and they are in line with the results of the current study in that they are educational and creative-wise. From among these studies, those of Taher Khani (2013), Ganji et al., (2005), Boroun et al., (2013), Ross (2005) and Chuwing Chin (2010) can be named. The results from all these studies indicated that teaching creativity leads in creativity growth and if it is implemented in a consistent and disciplined way, it will have positive effects on creativity and its components.

The results of the current study showed that teaching increases the flexibility component in boys. This is directly in line with Ganji et al., (2005) research and indirectly in lines with Taher khani (2013) and Boroun et al., (2013) researches. Also, the results

indicated that there are no significant differences between the groups in terms of the creativity components for girls. It is different from the results obtained by Ganji et al., (2005) research, since the elaboration and fluency components are increased for girls in the mentioned study.

The low number of the children in each age group was a limitation for this study which made the researcher not to assess the interaction between the age groups in pre-test variable. There has been no direct studies on assessment of effectiveness of entrepreneurial behavior on children creativity. The researchers hope the results of the current study will pave the way for the future studies on effectiveness of entrepreneurial behavior. Considering what has been mentioned, it is recommended that future studies focus on researching the effectiveness of entrepreneurial behavior in a linear manner in three years of preschool based on its own educational program, so better and more precise results can be obtained.

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