



**THE EFFECTIVENESS OF ART THERAPY (PAINTING) ON THE DYNAMIC
INTELLIGENCE BASED ON RUDOLF ARNHEIM'S THEORY IN PRE-SCHOOL
CHILDREN**

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ABSTRACT

This research is aimed at designing effective methods over the expansion/enhancement of mental dynamic quality in the preschool children using quasi- experimental methods, pretest and posttest designs and the control group. The statistical community encompasses all the preschool children in Isfahan. The statistical case includes 40 preschool children studying at Hedayat school that are randomly selected and are classified into two major groups: "Experimental group" and " control group" To collect the data. Andre Raven test was used in the implementation phase. The experimental group was intervened by the designed painting methods in fifteen sessions. In the meantime, the control group benefitted from the routine schedules of their educational centers.

The research findings that were achieved/obtained through co-Variance analysis suggest that there is a considerable difference between the experimental and control group in terms of enhancing the dynamic intelligence of the preschool children in Isfahan ($P < 0/0001$). The qualitative analyses carried out using Trondheim's ideas corroborated the quantitative findings. Therefore, the research question will be answered with regard to the above conclusion.

Keywords: Art therapy, painting, dynamic intelligence, Rudolf Arnheim's theory

INTRODUCTION

Children spend approximately half of their waking hours during the week at school.

Due to the sheer number of children and adolescents who attend public schools and

the amount of time they spend in these systems, schools are uniquely positioned to intervene in their students' academic, psychological, and social worlds. The education of children is no longer encapsulated by the idea of simply teaching reading, writing, and arithmetic; schools today are also responsible for children's emotional and social well-being. (Nicole M. Randick and Shannon B. Dermer, 2013) School art therapy provides a needed component for effective, multifaceted school programs that focus in particular on students' individual development and abilities. When integrated with the ASCA National Model art therapy programs may assist school personnel in meeting certain components. Art therapy goals include ameliorating academic difficulties (Loesl, 2010), addressing peer pressure (Sassen et al., 2005), exploring conflicts with teachers and peers (Gibbons, 2010), enhancing lifeskills (Wallace-DiGarbo & Hill, 2006), increasing coping skills (Spier, 2010), and exploring relationships with self and others (Sutherland et al., 2010)

Nearly two centuries ago, Franklin opined, "intelligence without education is like silver in the mine" (p. 22). Nearly a century later, L. L. Thurstone (1921, p. 207) asked two rhetorical questions at the conclusion of his contribution to a symposium on Intelligence: "What are the mental

processes that distinguish special ability? Can these be taught to others?" Thurstone would go on to be a leader in the field of intelligence and psychometrics, and these two questions he asked in 1921 remain pertinent today. There are many competing and complementary theories of intelligence. Some are unitary, and others are multiple. Some older models even argue that intelligence is strictly inherited, and there exist no means of increasing intelligence. While none of the below modern theories of intelligence explicitly argue that intelligence is strictly inherited, the author explicitly argues here that intelligence is dynamic, and can improve through education.

Art therapists are professionals trained in both art and therapy. They are knowledgeable about human development, psychological theories, clinical practice, spiritual, multicultural and artistic traditions, and the healing potential of art.

painting therapy is recognized for many therapeutic effects on aspects of mental, physical, spiritual and notably, emotional well-being (Hagman, G. 2005): Elderly art therapy, regardless of skill or professional skill, helps overcome the problems related to condition, such as psychological, emotional, and psychosocial conflict (Jung, 2006), therapy geared towards the elderly with dementia generally is a treatment

through alleviation of the disease and the elderly people's psychological, mental, and physical problems (Shin, 2005). The visual, physical, and tactile stimulation of art exercises help the activity of the brain cells to prevent dementia, and even in patients already with dementia it can maintain or improve the ability to distinguish colors and objects to recover the reduced cognitive functions, which is the reason why it is on the spotlight as the new method of therapy in current clinical practice (Oh, 2007).

Bernhard Radloff takes his departure from cultural studies like those of Mitchell Ash (1995) and Anne Harrington (1996) and their analyses of 'gestalt' and 'holism' to make his case that such terms did not have mono-vocal conservative associations. Radloff in fact argues that, quite to the contrary of those who would see an abstract retreat to the German Volk in Nazism, Heidegger briefly, and as he admitted mistakenly, saw the only chance for real political engagement. In fact, Gestalt figures so prominently because in Heidegger's understanding it is a model of real, historical, embodied organization. It is the opposite of an abstract, unattainable idea. Because Nazism was a real engaged political process he hoped that Germans could move beyond utopias. He realized later that another utopia was promised.

Arnheim, R. (1966): *Toward a Psychology of Art*. Berkeley and Los Angeles:

Although Arnheim's theory is so insightful as to point out the inadequacy of verbal cognition, the dichotomy of visual thinking and verbal thinking still oversimplifies the breadth of human cognition. According to Howard Gardner, human intelligence can be classified into seven dimensions, namely artistic, linguistic, kinesthetic, mathematic, musical, interpersonal and intrapersonal (Gardner, 1991). I believe that this is a more comprehensive approach to look at human cognition.

In addition, it is debatable whether visual thinking is the highest form of cognition. Albert Bandura insists that mental image and verbal memory are interrelated but most of our information is stored in verbal form (p.58). Jean Piaget asserts that the development of human cognition progresses from the dependence on sensory input to the dependence on concepts (cited in Hergenhann, 1988, pp.271-288). Some psychologists distinguish field dependent from field independent thinkers. Field dependence refers to cognition based upon a clearly-defined visual object, while field independence is defined as perception without distraction or confusion by the environment. Interestingly enough, field independence is considered the higher cognitive skill of the two (Hettinger, 1988).

In short, it is doubtful that the inference that visual sense is the highest form of cognition would be supported by most psychologists.

The model of homeostatic equilibrium was also accepted by Sigmund Freud and Edward Hull. Today this model is no longer popular in psychology because psychologists found that theories of Freud and Hull are hardly applicable to the real world. It is no guarantee that we can maximize our pleasure even if we make the greatest effort to reduce tensions. Atkinson (1965) classifies personality traits into two categories, namely tendency to succeed and tendency to avoid failure (p.73). For the former, tensions might be a source of pleasure!

Regarding visual arts, Oriental paintings, in value contrast, color hues and composition, are often less tensed than their Western counterparts. I doubt that visual tensions as the major criterion in art is universal.

METHODOLOGY

This study was of quasi-experimental design, pre-test and post-test accompanied by the control group in which the impact of painting education (independent variable on the mental dynamic quality (dependent variable) were examined. The statistical community encompasses all the preschool students of Isfahan. The statistical sample included 40 preschool students who studied

in Hedayat elementary school (2013-14) that were handpicked and randomly selected and were divided into two groups: experimental group and control group.

Tools

Exploitation of visual test proposed by Andre Rey (Fig, B) that has been designed for the children as young as four to seven years old, has also become an adaptive norm in Iran. Panahi (2004) conducted a study on the preschool students of Tehran in order to normalize the visual memory test proposed by Andre Rey.

The research sample contained 300 school boys in the secondary schools of Tehran. In order to examine the validity, the correlations between the scores of the second phase (belonging to Andre Rey test) were calculated along with the scores obtained from the third phase of Kim carrad memorymeter test. In order to estimate the credibility, the reexamination technique was used. Validity coefficient was equal to 0/5 and credibility coefficient was obtained as 0/62. The above mentioned coefficients are statistically meaningful at the level of 0/01. Nazeri (2004) has conducted the same research as what Panahi (2004) had carried out about the school girls. His research sample consisted of 300 school girls studying in the secondary schools of Tehran. The validity coefficient in this research was estimated to

be 0/59 (using the standard similar to Panahi's) and the reexamination credibility coefficient was reported to be 0/60. The calculated and estimated coefficients are statistically meaningful and reliable (Panahi 2004, Nazeri 2004).

METHODOLOGY AND TOOLS

As many as 40 students in Hedayat nursery school that educated between 2013-14, regardless of their sex differences, were selected and were divided into two groups of experimental and control groups. Firstly, Andre's pretest was held for both groups. Then, the experimental group received painting educational schedule based upon Arnheim's theories. In the meantime (Meanwhile) the control group was implementing the routine schedules of the educational center. At the end, both groups received post-test in the 15th sessions.

Thirteen sessions of teaching painting had two main objectives: accelerating the promptitude in the visual and environmental perception and compatibility of eyes and hands in order to enhance mental dynamic through designing and painting based upon pre-fabricated (pre-planned) models and implementing motor activities so as to move body to create

dynamic action and to create perspective line (to move within space) weight and duration (movement speed). Creating the above points signifies organizing and complying the children's minds with the visual dynamic image that causes mental dynamics to be built up while perceiving visual dynamics.

Methods for data analyses

In this section, the collected data are analyzed using the appropriate statistical methods. The descriptive results of this study include statistical indices such as average and standard deviation. Likewise, to examine the research questions, the statistical analysis known as "co-variance" has been used with pre-test control. To use co-variance analysis, two defaults, including the data normality and equality (evenness) of variances will be examined

In order to address the normality of the data, the test known as Kolomogorov-Smirnov has been used. To examine the evenness of the variances, Leven test has been used for each micro scale. The research hypotheses will be explained below and the results will be presented separately.

Results are illustrated in Table 1:

Variable	Group	number	Pretest	post-test
			average and SD	average and SD
mental dynamic quality while duplicating the images	experimental	20	0/88 2/90	0/65 1/76
	control	20	0/87 3/09	0/74 3/3

As one can see in Table 1, the average of the scores related to the mental dynamic quality while duplicating the images in the posttest phase of the experimental group has been reduced compared to the pretest, which means the time consumed for the perceptual process has reduced. But the scores of the post-test phase regarding the mental dynamic quality when duplicating the images in the control group have not been highly reduced. In Fig 2, the average scores of mental dynamic quality while duplicating the images in both pre-test and

post-test are illustrated for experimental and control groups.

As one can clearly observe in Figures 1 and 2, the average scores for the post-test phase regarding mental dynamic quality while duplicating the images for the experimental group have reduced compared to the pre-test phase. But, there has been a slight reduction in the scores of the control group in the post-test compared to the pre-test phase. To use to co-Variance analysis, two defaults (one for data normality and another one for variance evenness (equality)) are require to be examined.

variable	F	Freedom degree 1	Freedom degree 2	level of meaningfulness
mental dynamic quality while duplicating the images	0/63	1	38	0/4

As you can see, P in the above table is $p > 0/05$. Therefore the hypothesis for the compatibility of the variances are verified

to address the analytical question, the co-variance analysis is used through which the results are illustrated in Table 3.

The source changes	Total square roots	Degree of Freedom	The average square roots	F	level of meaningfulness (P)	square roots	statistical power
pretest group	7/54 15/97	1 1	7/54 15/97	25/12 53/22	0/000 0/000	0/40 0/59	0/99 1

As it is illustrated in Table 3, after the effect of the pretest on the dependent variable was dominated with regard to the calculated F, it is evident to see that with respect to the moderated averages of the above-mentioned scores, there is a considerable difference between the participants' mental dynamic quality in terms of the group membership

(experimental and control group) and that of the post-test phase ($F = 53/22$, $P < 0/0001$). Therefore, painting has a significant impact on the enhancement of mental dynamic quality while duplicating in the experimental group in the post test phase. The great extent of this impact in the post-test phase is 0/59.

In this section, the findings related to the mental dynamic quality while recalling the images will be addressed the descriptive

results regarding the mental dynamic quality while recalling the illustrations are illustrated in Table 4.

Variable	group	Numbers	Pre test	post-test
			average and SD	average and SD
Mental dynamic quality while recalling the images	experimental	20	2/08 (0/76)	(1/18) (0/35)
	control	20	(1/79) (0/86)	(2/05) (0/96)

As it is evident from table 4, the average of the scores regarding mental dynamic quality while recalling the images among the experimental group in the post-test phase has reduced compared to pretest phase, but there has been no reduction in the scores of mental dynamic quality in the post-test phase.

Figure 3 illustrates the average scores of mental dynamic quality when recalling the images (in the pre-test and post-test phases of both experimental and control groups). Likewise in the linear graph related to the mental dynamic quality while duplicating, A is equal to experimental group while B is the same as control group, number 1 is the pretest, while number 2 is the post-test.

As one can evidently see in figure 3, the average of the scores in the post-test phase in the mental dynamic quality while recalling the images in the experimental group has decreased compared to the pre-test phase. But the scores regarding the control group in the post-test phase were decreased compared to pre-test. To use covariance analysis, two defaults, including

data normality and variance evenness, are required to be addressed.

The default for the compatibility of the variance:

According to the conducted studies, the level of meaningfulness in the variance compatibility test is less than 0/05 (about 0/01)

Therefore, the hypothesis/assumption for the variances is not confirmed. As the sample number in this survey is 40, and the number at samples in both experimental and control groups are equal (each group consists of 20 people), and considering the fact that F tests are excluded from any errors regarding this hypothesis, it will be inevitable to consider this hypothesis to be erroneous (Fergousen and Tanakeh 2008 translated by Delavar and Naqshbandi (323))

The default for the normality of the data:

In the conducted studies, it was found that the level of the test regarding the normality of the data is less than 0/05 (0/01).

Therefore, this hypothesis is rejected. But, as the number of the samples are 40 in this

study and the number of the samples is equal in both experimental and control groups (20 people for each group), and considering the fact that F tests are excluded from any errors regarding this hypothesis, it will be inevitable to consider this hypothesis to be erroneous (Fergousen

and Tanakeh 2008, Translated by Dadawar). To analytically address the question regarding the mental dynamic quality while duplicating, the co-variance analysis has been used and the results are illustrated in Table 5.

source of changes	Total square roots	Degree	average square roots	F	level at meaning fullness	square roots	Statistical power
pre-test	7/02	1	7/02	20/08	0/000	0/35	0/99
group	10/26	1	10/26	29/33	0/000	0/44	1

As illustrated in Table 5, after eliminating the effect of pre-test over dependent variable and with regard to the calculated coefficient "F", it can be evident to say that there is a difference between the moderated means (averages) of the scores for mental dynamic quality while recalling the participant's images in terms of group membership (experimental and control group) in the post-test phase ($F= 29/33$, $P< 0/0001$). Therefore, the painting drill will enhance the quality of mental dynamics when recalling the images of the experimental group in the post-test phase (0/44).

As a general conclusion, in the conducted surveys, with respect to the description results and the findings from co-variance analysis, the painting drill- in both of the components regarding the mental dynamic quality when duplicating the images and recalling them, we have observed considerable effects and it has led to the

enhancement of mental dynamic quality ($P<0/0001$). For this reason, painting may increase the children's mental dynamic quality at the preschool level.

DISCUSSION

Rubin (2005) emphasizes that the teaching aspect is secondary to the primary therapeutic aim. Namely, while an art therapist may teach a technique, it is not for the acquisition of skill, but rather is part of an objective to assist the person in achieving, for example, an increase in self-esteem (Rubin, 2005).

Significant changes such as puberty and entering high school occur during adolescence and therefore it is likely a difficult time. Peer relations are both valued and highly influential during adolescent years (Moon, 2012). Art making within an art therapy group may offer distinct benefits from individual therapy.

The Eurydice Report on Arts and Cultural Education at School in Europe (European

Commission, 2009) confirms that visual arts and music are given higher prominence than dance and drama in the arts curriculum in member states. The report also stated that arts education has less status than literacy and numeracy in that it is allocated fewer hours. However, in most member states the arts are allocated more hours than foreign languages and physical education at primary level. The number of hours spent on arts education at primary level was between 50 and 100 hours per annum. Music, in particular, was well represented among extra-curricular activities provided by schools. The aims for arts education were similar among all countries studied. Nearly all countries mentioned 'artistic skills, knowledge and understanding', 'critical appreciation', 'cultural heritage', 'individual expression/identity', 'cultural diversity', and 'creativity' as objectives.

A visual arts curriculum provides opportunities to pupils to explore, express and experiment with ideas and to investigate possibilities of a range of materials and processes, through drawing, paint and colour, print, clay, construction, fabric and fibre. Children can explore their own experiences, stories, drama, music, or activities through making and creating art, either working on their own or collaborating with others, using a range of media, materials and processes. Children

are also afforded opportunities to experience the work of artists and to appreciate the visual world through looking and responding to art, both within the classroom and by visiting galleries and exhibitions. As children develop an awareness of their visual, spatial and tactile environment they learn to appreciate the interplay between art and the environment, enhancing their own response to creative experience. Education in the visual arts can also contribute to children's self-esteem and sense of personal empathy.

What constitutes art is often a contested issue, as Nigel Warburton argued in "The Art Question" (2002). He took the view that art was not definable, and found Collingwood's definition of art as expression of emotion, and Bell's definition as 'significant form' too limiting. Art is one of the things that sets human beings apart from other animals (Neill and Ridley, 1995) and reflected the human urge to represent the world in various forms. The ancient Greeks were fascinated by questions of artistic representations, the relation of art to the emotions, the educational value of the arts, and the nature of the creative process.

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