



Comparative Study of the Stories of Gifted and Creative Children in C.A.T Test

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Abstract: The aim of this study is to comparatively study the stories of gifted children and creative children in Children's Apperception Test (C.A.T). The method of the research is descriptive. The statistical society of the research includes all gifted and creative students of primary schools in Tehran city in 2010-11 years. 60 students (30 gifted students and 30 creative students) contributed in the study to be selected for available sampling. The Instrumentations of data collection was Wechsler Intelligence Scale for Children-Revised (WISC-R), Torrance Tests of Creative Thinking-Figural [TTCT] and Children's Apperception Test (C.A.T). The data was analyzed by descriptive and inferential statistics(chi-square test, t-test for independent samples, Fisher exact test) and content analysis. Results indicated a statistically significant difference between gifted and creative students in hero age of second, fourth, fifth and seventh cards; hero job of fifth card; hero interests of seventh card, process of mental of third and sixth cards and sentences number of fifth card. There was not a significant difference in other data. According to these results, creative students with average IQ have the verbal performance similar to the students with high IQ. The researchers suggest the educational system to recognize creativity in addition to IQ, as an independent factor in identifying gifted students and providing them with the special services of the gifted . [Leila hamivand, Janet Hashemi Azar, Gholamreza Sarami . **Comparative Study of the Stories of Gifted and Creative Children in C.A.T Test** . *Am Sci* 2021;17(5):66-73]. ISSN 1545-1003 (print); ISSN 2375-7264 (online). <http://www.jofamericanscience.org>. 8. doi:[10.7537/marsjas170521.08](https://doi.org/10.7537/marsjas170521.08).

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1. Introduction

Giftedness and creativity are two important concepts in the field of exceptional children. There are lots of definitions of giftedness and creativity in the related literature. During the development of our knowledge about the nature of giftedness and since the Terman's pioneering studies on the characteristics of gifted children to our current time, our understanding of the nature of giftedness have changed significantly (Sivevska, 2008). According to National Association for Gifted Children (2008), current federal definition of the giftedness is that "gifted students are those who "give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services or activities not ordinarily provided by the school in order to fully develop those capabilities". Rezulli (2002) believes that giftedness is defined as the relationship between higher than average capabilities, high levels of task commitment, and high levels of creativity.

Almost in all serious definitions of the giftedness, there is an emphasis on high creativity in gifted persons (Torrance, 1986, quoted from Kaufman, 2007). Torrance (2007) states that the creativity in

Creative Thinking Test refers to 4 mental abilities: fluidity, originality, extension, and flexibility.

Sternburg (2006) believes that giftedness and creativity are two unique and separate abilities. According to him, high analytical skill may hinder creative talent because these skills are more reinforces. Indeed, the relationship between the intelligence and creativity is a complex and ambiguous and it can be claimed that there is a weak relationship between these two categories. There is no definition that can connect the characteristics of educational gifted students to the characteristics of creative students (Taylor, 2003). Educational gifted students are known for their characteristics like convergent thinking, conformity, order, high IQ, and low tolerance for ambiguity. This is while the creative students have divergent thinking and less conformity. They have an inflexible mind so they easily tolerate the ambiguity and they are straight and explicit in explaining the information (Donnel, 2004).

Getzels and Jackson (quoting Gallagher, 1984) believe that there is a clear difference in the abilities of storytelling between creative students and the students with high IQ. They showed a picture to the students and asked them to make a story about what they see. The child with high IQ makes a story with a

stereotyped and confidential theme while highly-creative students are not bound to social limitations so they freely make unusual stories.

Creative students are omitted from the educational system for some of their traits. The barrier against identification of creative students is that they are considered disturber of the class due to some personality traits like nonconformity and divergent thinking. For the same reason, teachers think that such students are hard to be administered in the class (Hlasny, 2008). Ai (1999; quoted by Youn, 2005) states that what the school considers as the educational development cannot make the students' creativity being growth. According to him, growing the creativity is not the objective of the school since the schools rely on exercises and skills like memory and calculation. The researchers found that most students lose their creativity due to the lack of supporting environments or being prevented from creativity expressions in most of current educational conditions (Wang, Peck & Yuan, 2008).

Standardized intelligence tests and nomination by the teachers are still the most current ways of identification and screening of the gifted in the school system (Miller, 2009). But the identification of intelligence and giftedness has changed during the years (Virgolim, 2005). General intelligence tests like Wechsler tests are highly correlated to the educational progress in schools and the individual's progresses in after-school terms. But these tests never assess the main element of the intelligence, i.e. intellectual creativity and innovation (Atkinson, 2005).

One of the critics expressed against the intelligent tests is that they all emphasize on convergent, scientific, analytic, and logic ways of thinking. Thus any child who has a divergent, artistic, and imaginative way of thinking cannot be benefitted from intelligent tests. Indeed such persons have cognitive abilities beyond being measured by intelligent tests (Marnat, 2003).

According to Lubert, et al (2010), creative talent is usually measured by divergent thinking tasks like Torrance Creative Thinking Test that includes 4 elements: a) fluidity (number of the ideas); b) originality (generating unusual ideas); c) extension (extending the ideas); d) flexibility (generating ideas in different ways).

Traditional tests of identifying gifted students fail to identify creativity (Mann, 2009). Unfortunately, educational system generally emphasizes on test results more the real process of learning. Indeed success or failure in any test highly depends on memorization (Sarsani, 2008). Educators have realized the importance of creativity, visualization and divergent thinking in the class (Epstein, 2008). Thus some educational systems around the world claim to try such

a characteristic. But the history show that the students with special advantages are not necessarily among the best students (Wang, 2008). A student who has not an IQ of 120 is omitted from identification process of some gifted programs. Although such a student is not educationally better than the other students, but his/her real performance is better than the other student with high IQ (Hlasny, 2008). In a research, Crème (2003) asked the students to write a story or a piece of poetry or create a narration. He found some differences among the students. Some students had more courage to write than the other students, regardless of assessment methods. They did not fear expressing their ignorance or lack of knowledge. Moreover, they did not fear playing with the words, visualization, and refusing the instruction. They reversed some of writing rules because some of these rules are frightening and can hinder the students from developing their own sense of will. Nonetheless, gifted students usually follow these rules.

Creative students are full of original and unusual ideas. They are able to tell a story using visualization along with their sense of humor (Donnel, 2004). Although creative child may gain less IQ than the gifted child in standardized tests, but in creative and original writing he/she has more skills (Hlasny, 2008). Freiman found that when the students want to be creative, they get anxious and take lesser risk, so they offer safer answers, and this reaction prevents creative thinking. According to Coren (1987, quoted by Olmia, 2010), it seems that giftedness is the ability of generating and producing, but the students with high IQ seek not to use their knowledge but they attempt to show themselves as a winner. According to Safayi Rad (2010) there are some creative persons who do not have a high IQ, and some gifted persons who own a high IQ but gain high scores in creativity tests. Regarding the reports about gifted and creative students, the researcher intends to study these problems: does the storytelling of gifted and creative students differ in Children's Apperception Test (C.A.T)? Do the gifted and creative children differ in expressing different themes, characteristics of the main hero, original or stereotyped verbal abilities, number of used words and sentences, and the time needed for telling their stories?

2.Methodology, statistical society, sample, and selection method

The method of this research is descriptive. The statistical society includes all gifted and creative primary students of Tehran city in 2010-2011.

Sample of the research includes 60 female and male students, among which there are 30 gifted and 30 creative primary students of Tehran (this amount was selected as the sample due to the difficulty in

administering the tests and researcher's limitations). Sampling method was available sampling.

2.1. Data collecting instruments

2.1.1. Wechsler Intelligence Scale for Children (summarized form)

Revised intelligence scale for children includes a set of intelligence composite tests that is administered individually. The scale provides 3 different scores for IQ. In order to saving the time in measuring the IQ, some different short forms have been written. In these short forms, some selected subsets are conducted or some easy items are deleted in order to shorten the time of the test. One current short forms of the test is to conduct subtests of vocabularies and designing cubes. Average time of the test is 20 minutes. Correlation between the test and complete scale of IQ is usually %90. In two-thirds cases, calculated IQs will be different around 7 scores with the real IQs, and in one-thirds of the cases, the calculated error will be 8 score or more. Vocabularies and cube-designing are conceptually good and suitable tests because both are good indexes of g factor and they are largely reliable and include subtests of both verbal and scientific scales (Marnat, 2003).

2.1.2. Torrance Creativity Test (non-verbal)

This test requires graphic or visual responses. The first page of the test booklet has been designed in way that makes any necessary process of the creative behavior easy to readers. This design includes some seemingly unrelated combinations that encourage imaginative activity and the interests of the children. This test can be administered both individually and in group (Sharifi and Davari, 2009).

2.1.3. Children's Apperception Test (C.A.T)

Children's Apperception Test (C.A.T) is an individually administered projective personality test appropriate for children aged three to 10 years. A series of pictures are presented and children are asked to describe the situations and make up stories about the people or animals in the pictures. The test includes just 10 cards. The reason of using 10 cards is that the children have shorter attention span and so lesser cards have to be administered on them. Moreover, it is believed that the children replicate the pictures of animals easier than the pictures of human. The responses of the subjects to C.A.T include meaningful and complex verbal themes. The quantitative analysis of these themes is difficult due to the complexity of the themes. Thus the interpretations usually depend on the qualitative analysis of the contents of the stories. This issue causes the most methods of determining the validity of the test encounter serious problems. But adopting some quantitative solutions of scoring and grading scales can help determining the validity of the

scoring by different administrators with a relatively successful manner. The validity of scorers in different scoring systems has been generally good (between 37-90 percent) where in most cases, a high coefficient change rate has been reported. In studies on determining the criterion validity of the test, there has been a parallel between positive and negative results. In interpreting the test, some characteristics like main subject or theme of the story, main hero, and main needs and drives of the hero are measured (Groth-Marnat, 2003).

2.2. Data collection method

To collect the data, with permission from Tehran Education Office, the researchers administered Wechsler Intelligent Tests and Torrance Nonverbal Creativity Test. In this regard, we referred to 3 girls and 3 boys' primary schools in zone 3 of Tehran city. The tests were administered on 244 girl and boy primary students. Then the students with operational definition of giftedness and creativity were selected as the sample group. Gifted students were those who gained an IQ of 120 or more, and creative students were those whose raw score in Torrance test was %75 higher than the normal students. After identifying the students as gifted group and creative group of students, they were administered C.A.T individually according to following instruction:

"This is storytelling test. I have some pictures to show you. I ask you to tell a story about each of them. Say what has happened before, and what is happening now in it. Say what the persons of the picture think about, and how they feel and what will happen in the end of the story. Tell any story you want. Do you get it? Ok. This is the first picture. You will have as much time as you need to create your story. I wait your good stories".

The time was calculated since presenting the first card to the end of the tenth one, and all responses of the subjects were recorded. Then the told stories were analyzed and discussed and concluded in terms of descriptive statistical methods and content analysis method.

3. Statistical analysis method

Statistical analysis method included determining the frequency and percentage and qualitative method of content analysis, Chi-square test, Fischer Test, and independent t.

Content analysis criteria included 6 items: main theme of the story, characteristics of the main hero of the story, Thinking process, number of sentences in each story, number of words in each story, and time duration of telling each story. Main theme of the story included 3 codes: 0 (ordinary theme), 1 (a theme different from the main theme), and 2 (a theme added to the main theme). Characteristics of the main

hero of the stories included characteristics like the age, gender, occupation, interests, and abilities of the hero which were assigned the codes of 41, 12, 3, 6, and 59 respectively. Thinking process included code 0 for being stereotyped and code 1 for originality and innovation of the stories.

4. Research Findings

Due to the numerous size of the tables and statistical calculations of the research, here we suffice to mention the most important findings of the research.

Table 2. Two-sided Chi2 test among gifted and creative students on the hero's age of the second card

Age Group	Child	Teen	Y Young	Middle-aged	Unknown	Chi2	Degree of Freedom	Chi2 probability	Fischer value	Fischer probability
Creative	25	0	22	2	1	80.8	4	0.06	8.07	0.04
Gifted	18	1	26	0	5					

According to table 1, since more than %20 of the table cells had an expected frequency less than 5, we used Fischer real test to obtain the least significant difference. The obtained results show that even the least significant difference cannot be found in data.

According to table 2, since more than %20 of the table cells had an expected frequency less than 5, we used Fischer real test to obtain the least significant difference. The obtained results showed the least significant difference in the data.

Table 3. Two-sided Chi2 test among gifted and creative students on the hero's gender of the fourth card

Gender Group	Boy	Girl	Unspecified	Chi2	Degree of Freedom	Chi2 probability	Fischer value	Fischer probability
Creative	3	18	9	1.90	2	0.59	1.90	0.67
Gifted	3	15	12					

According to table 3, since more than %20 of the table cells had an expected frequency less than 5, we used Fischer real test to obtain the least significant difference. The obtained results show that even the least significant difference cannot be found in data.

Table 4. Two-sided Chi2 test among gifted and creative students on the hero's occupation of the fifth card

Occupation Group	Housekeeper	Student	Painter	Doctor	Engineer	Unknown	Chi2	Degree of Freedom	Chi2 probability	Fischer value	Fischer probability
Creative	2	2	1	0	1	24	7.47	5	0.18	6.52	0.05
Gifted	0	0	0	1	0	29					

According to table 4, since more than %20 of the table cells had an expected frequency less than 5, we used Fischer real test to obtain the least significant difference. The obtained results showed the least significant difference in the data.

Table 5. Two-sided Chi2 test among gifted and creative students on the hero's ability of the fifth card

Ability Group	Escaping from dangers	Protecting the house	Supplying the food	Independence	Responsibility	Protecting the animals	Caring the children	Storytelling	Making home furniture	Having a baby	Defending his own rights	Learning	Painting	Unknown	Chi2	Degree of Freedom	Chi2 probability	Fischer value	Fischer probability
Creative														18	13.6	13	0.4	12.57	0.24
Gifted														22					

According to table 5, since more than %20 of the table cells had an expected frequency less than 5, we used Fischer real test to obtain the least significant difference. The obtained results show that even the least significant difference cannot be found in data.

Table 6. Two-sided Chi2 test among gifted and creative students on the thinking process of the third card

Thinking process Group	Stereotyped	Original	Chi2	Degree of Freedom	Chi2 probability
Creative	19	11	41.10	1	0.001
Gifted	29	1			

According to table 6, since %0.0 of the data had an expected frequency less than 5, we used Chi2 test to obtain the least significant difference. The obtained results showed the least significant difference in the data.

Table 7. Independent t- test among gifted and creative students on factor of number of sentences of the fifth card

Statistical indexes	Number	Mean	Standard Deviation	Standard Error	t-value	Degree of Freedom	t- probability
Group							
Creative	30	6.50	13.07	0.49	1.78	55	0.08
Gifted	30	5.37	12.90	0.40			

According to table 7, since the calculated t-value ($t=1.78$) with 55 degree of freedom is higher than the t-value of the table ($t=1.67$), there is a significant difference between the mean of the number of story sentences of gifted group and creative group of the students with the 95% confidence level.

Table 8. Independent t- test among gifted and creative students on factor of time duration of telling each story

Statistical indexes Group	Number	Mean	Standard Deviation	Standard Error	t-value	Degree of Freedom	t-probability
Creative	30	560.27	285.89	52.19	1.12	41	0.26
Gifted	30	495.40	133.63	24.39			

According to table 8, since the calculated t-value ($t=1.12$) with 41 degree of freedom is lower than the t-value of the table ($t=1.67$), there is not a significant difference between the mean of the spent time of each story for gifted group and creative group of the students with the 95% confidence level.

5. Discussion and conclusion

According to the obtained results of the research, the data on the stories of creative children in the hero's age of the second, fourth, and seventh card, the hero's occupation of the fifth card, hero's interests of the seventh card, thinking process of the third and sixth card, and the number of sentences of the fifth card shows a significant difference with the gifted group, but in other data no least significant difference was observed. Based on these results, the creative students with an average IQ have the verbal performance similar to the students with high IQ.

Creative group stated more different themes than the gifted group in 6 cards (1, 3, 4, 5, 6 and 10) and the gifted group narrated more different themes in just two cards (8 and 9). In two remaining cards (2 and 7) the frequency of the different themes in both groups is equal. In 8 cards (1, 2, 3, 4, 5, 6, 7 and 10) the ordinary theme that was proposed by the creative group is less than the ordinary theme of the gifted group. These findings is accords with Donnell's description (2004) in which he says that creative children are full of original and unusual ideas and they have a sense of humor with the ability to tell a story using visualization. Hlasny(2008) states that although the creative child may acquire less IQ score in standardized tests in comparison to gifted children, but he/ she will show more skills in creative writing. Moreover, the results of this research confirm the descriptions of the characteristics of creativity and creative children presented by Sternburg (2006) and Gallagher (1984). According to Gallagher, creative children think fluidly and develop a chain of imaginations. They have a flexible thinking and in comparison to the gifted, they think divergently.

According to the results of the research, no significant difference was observed in the hero's gender of the two groups. Both gifted and created groups had

the same performance in encountering the gender of hero of the story and there was no significant difference in the description provided by both groups.

Generally it can be concluded that the creative children acted as the gifted children despite their lower IQ level. This finding is consistent with Kim's study (2008). Kim found that creative students resist against the conformity and prefer to be independent. Besides, the findings of this research are consistent with Donnell's description (2004). Donnell states that creative students are good respondents and they can analyze new situations. They have a flexible mind so that they can tolerate the ambiguity and be explicit in offering the information. According to Whitmore (1980, quoted by Kim, 2008), gifted children are sensitive against the negative social feedbacks. Data of this research show that the gifted group has used occupations like doctor, king, and governor in his stories more than the creative group. The findings of the research are consistent with Freiman research (2007) as well. Freiman found that when the students want to be creative, they get anxious and take lesser risk, so they offer safer answers, and this reaction prevents creative thinking. In consistency with the results of this research, in his book entitled Teaching Gifted Child, Gallagher (1984) counts the characteristics of gifted children. He states that gifted children have a high level of educational achievement, higher level of social opportunities, and more social popularity. Their personal adjustment is suitable and the trait of independence is high. According to Coren (1987, quoted by Olmia, 2010), it seems that giftedness is the ability of generating and producing, but the students with high IQ seek not to use their knowledge but they attempt to show themselves as a winner. This claim is consistent with the results of this research on the hero's interests of the stories narrated by gifted group. Lem's research (1996, quoted by Scott, 1999) showed that the teachers' perception of an ideal student is not compatible with the pattern of creative child. Graded traits of a given ideal student are honesty, self-regulating, responsibility, and politeness; hence the gifted students try to show these traits in their stories so that they can attract the attentions of the teachers and others to their stories; while the creative students

showed less frequency of such traits in their stories. On the number of the used words in each story, the data showed no significant statistical differences between the two groups, so one can conclude that the performance of the creative group in the number of used words has been similar to gifted group. Moreover, on the number of the used sentences, the data showed no significant between the two groups. According to table 8, there is not any significant difference between the spent times for each story in the two groups.

This research has been limited to the students of primary schools of Tehran city. The research has been limited to Wechsler Intelligence Scale for Children (summarized form) to determine IQs of the students and it has been limited to Torrance Nonverbal Creativity Test to determine the creativity scores of the students.

Since the creative students with average IQ have had a performance similar to students with high IQ (120 or more) the researchers suggest that the educational system uses creativity as an independent concept along with the IQ score to identify gifted students and providing them with special services. Since many teachers are not familiar with the traits of creative students and at the most occasions, creative students not only are not identified as gifted, but they are labeled as abnormal students, we suggest that the teachers need training courses to increase their knowledge about the creativity, creative students, and the way of nurturing their creativity, especially their verbal creativity in primary schools.

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