

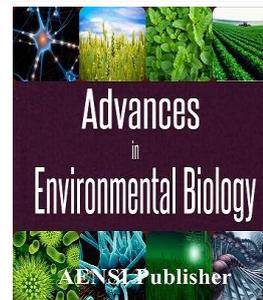


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Comparative Study of Thinking Styles, Creativity and Self-Esteem of Gifted and Normal High School Students in Zahedan

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ABSTRACT

The present study aimed to examine thinking styles, creativity and self-esteem of gifted and normal high school students in Zahedan. This is a casual-comparative study. The study population included all gifted and normal high school students studying in public schools, schools for exceptional talents, martyrs', non-profit, veterans and private schools and schools with board of trustee in Zahedan, region 1 and 2, in the academic year 2014-2015, among which 384 students were selected using the Morgan table and applying multistage random sampling. For collecting data needed for the experimental part of the current study, 3 questionnaires were used as primary means of data collection. To achieve the desired data, the Coopersmith Self-Esteem Inventory, the Abedi Creativity Test and Sternberg and Wagner's Thinking Styles Inventory (1991) were applied. To analyze the data, independent t-test and MANOVA were used through employing SPSS software version 21. The results of multivariate analysis of variance indicated a significant difference between thinking styles of two groups of gifted and normal students. According to these results, the mean scores of gifted students in judicial, legal, liberal and internal thinking styles were higher than the mean scores of the normal group. Moreover, considering executive, conservative, local and global thinking styles, the mean scores of gifted students were lower than those of the normal group. Examining the results of independent t-test demonstrated that there was a significant difference between the level of creativity and self-esteem of gifted and normal students in Zahedan. In addition, gifted students' creativity and self-esteem were higher than those of normal high school students in Zahedan.

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INTRODUCTION

Thinking is one the most significant issues in education which attracts scholars' attention. Nowadays, developing, training and evaluating thinking is considered as one of the main functions of education. Based on his theory of mental self-management, Sternberg (1997) states that an individual does not have a particular styles; however, he/she has preferences for certain styles. People may have similar capabilities with various thinking styles. This theory describes 13 thinking styles among which 5 dimensions are differentiated from the others: functions, forms, levels, scope and leanings. In short, an individual with a legislative style, in the function dimension, tends to create, invent and design things and perform activities in his/her own way. An individual with executive style tends to follow orders and perform tasks following directions. An individual with a judicial style tends to evaluate people and activities. In the forms dimension, a human being's mental self-management takes four various forms: monarchic, hierarchic, oligarchic and anarchic. An individual with a monarchic style enjoys being engaged in activities that allow complete focus on one thing at a time; however, an individual with a hierarchic style prefers to distribute attention to several tasks that are prioritized. An individual with an oligarchic style tends to work at the same time range on multiple tasks without setting priorities. Finally, an individual with an anarchic style enjoys working on activities that are flexible in relation to what, where, when, and how one works. In the levels dimension, an individual's mental self-management functions at two various levels: local and global. An individual with a global style pays more attention to the overall picture of an issue and to abstract ideas. In contrast, an individual with a local style enjoys being engaged in tasks that require

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working with concrete details and particular and main aspects of an issue. Considering the scope dimension, mental self-management has two areas including internal and external. Individuals with an internal style enjoy being engaged in tasks that allow them to work independently; however, individuals with an external style prefer being engaged in tasks that allow for collaborative ventures with other people. In the leanings dimension, mental self-management has two trends: liberal and conservative. An individual with a liberal style prefers performing activities that involve novelty and ambiguity; however, an individual with a conservative style tends to follow the existing rules and procedures in performing tasks [16].

On the other hand, one of the main issues addressed in the discussions about thinking is creativity. Creativity is one of the variables that has a great impact on the process of learning and education. Since one of the major goals of education is nurturing creative talents, paying attention to students' ability and considering its influence on the learning process and mediator variables seem essential. Some researchers including Baron [2] believe that creativity is a structure combined with emotional and cognitive components [11]. Sternberg (1992) also suggests that creativity is not a single sided concept and believes that multidimensional cognitive and emotional abilities lead to creativity. Sternberg introduces creativity as thinking about various matters in an unusual and unique manner. He also states that thinking styles, knowledge, character and the environment have great impacts on creativity [7]. Paying attention to students' educational-training issues, in every society, lead to nurture people who can take responsibility of a variety of tasks and manage and direct the society with competence; however, students are not a particular group in a society. Other words, each group of students-whether gifted, normal or disabled- should benefit from appropriate facilities. Researchers believe that in the educational and professional world, understanding and applying thinking styles and factors related to it are of great importance. Not paying attention, particularly in educational settings, may lead to nurturing failure or ignoring students' potentials. Perceiving thinking styles and variables associated with it are really significant, especially in education, since many differences in individuals performance may be due to their thinking styles rather than their abilities. Hence, if teachers be aware of their students' thinking styles, they can achieve desired and positive results through designing and directing their educational activities [10].

Results of some previously conducted studies indicated that special and separated classes and schools (i.e. schools for exceptional talents) are not suitable for students' all-round development and in non-cognitive, social and emotional development do not have desirable outcomes. In this regard, studies conducted by Zeidner and Schleier (1999), Candy (2002) and Nazari, Ejei and Azadfallah [14] can be mentioned.

Razavi [15] indicated that there was a correlation between thinking styles and creativity; such that liberal thinking style was associated with an increase in creativity and conservative thinking style was correlated with a decrease in creativity. The significance of carrying out a study to understand the relationship between creativity and students' thinking styles is crystal clear. Lobart (2004), in a study, demonstrated that thinking styles were related to creativity and creative people tended to legislative and global thinking styles. The results of Nateghian [13] conducted on thinking styles and creativity showed that legislative, judicial, global, hierarchic, liberal thinking styles can predict higher creativity scores. Dai and Feldhusen [3] indicated that there was a significant relationship between global thinking styles and academic achievement of gifted students. Moreover, Sternberg and Grigorenko (19997) demonstrated that gifted students who had legislative and judicial thinking styles had better academic achievement. Alborzi and Ostavar [1] showed that gifted students compared to normal students had higher scores in thinking styles type I. Park and Choe (2005) carried out a study among Korean students and indicated that gifted students mostly had judicial and liberal thinking styles. Alborzi and Ostavar [1] found that normal students compared to gifted students got higher scores in thinking styles type II (executive, special, monarchic and conservative). Zhang and Sternberg (2000) indicated that students who got higher scores in thinking styles type I, had a deeper perspective toward learning; however, students who got higher scores in thinking styles type II, had a more superficial perspective toward learning. Khoeini [12] demonstrated that legislative, judicial and anarchistic thinking styles were positively correlated with creativity. However, in this study, executive, monarchic and hierarchic thinking styles were not significantly associated with creativity. To explain and justify these findings, it can be said that people with hierarchic, external and anarchic thinking styles enjoy engaging themselves in performing various tasks and tend to find an appropriate solution for their problem.

Eason *et al.* [5] indicated that students studying in private schools were more creative compared to schools studying in public schools. Studies conducted by Hwany [9], Lewis (1997), Faouri [6] Gross [8] and Swiatek (2002) reported that gifted students had a higher level of self-esteem, compared to normal students. In another study, Dole [4] demonstrated that gifted students had higher levels of self-esteem and social skills.

Methods:

This is a casual-comparative study. The study population included all gifted and normal high school students studying in public schools, schools for exceptional talents, martyrs', non-profit, veterans and private schools and schools with board of trustee in Zahedan, region 1 and 2, in the academic year 2014-2015. According to the statistics gained from department of education of Sistan and Baluchestan, there were 20606

students. In this study, the sample size was 384 students using the Morgan table. To select the sample, multistage random sampling method was applied. In this regard, among Zahedan dual areas of education, 4 schools for exceptional talents and 4 public schools (including 2 schools for females and 2 schools for males) were selected randomly. Of these 384 students, 96 gifted students and 96 normal students were selected from each region.

Required data for the experimental part were collected using three questionnaires as primary means of collecting data.

Self-Esteem Inventory:

To measure students' self-esteem, the Coopersmith Self-Esteem Inventory was used. Coopersmith (1967) developed this scale through revising Rogers and Dymond's scale (1954). This scale consists of 58 items, among which 8 items, i.e. 6-20-27-31-34-41-48-55, are lie detectors. Totally, these 50 items measuring subscales of general self-esteem are divided into social self-esteem (peers), family self-esteem (parents) and academic self-esteem (school).

The items of this scale are literally written for 8-10 years old children; however, with re-writing and changing it lexically, it can be used for various age groups.

In the current study, an individual's score in the Coopersmith Self-Esteem Inventory were compared with the mean score of the group (all of those which answered the test).

High self-esteem: If an individual's score is higher than that of the group, then his/her self-esteem is high.

Low self-esteem: If an individual's score is higher than that of the group, then his/her self-esteem is low.

The Abedi Creativity Test:

In 1986, Abedi working at University of California designed this test with the help of one of his students in the course of statistics and research methods and then revised it repeatedly. This test current version was developed by faculty members of University of California in LA. It contains 60 questions among which 16 questions are related to fluidity, 22 questions are associated with initiative, 11 questions are related to flexibility and the last 11 questions are correlated with expandability. Each question has 3 choices. The first, second and third choice are scored 1, 2 and 3, respectively. These scores are collected in 4 groups. In this regard, scores related to these four components (fluidity, initiative, flexibility, and expandability) are obtained. Summing these four scores, an individual's total score of creativity is achieved.

Thinking Styles Inventory (TSI):

To evaluate thinking styles, Sternberg and Wagner's Thinking Styles Inventory (1991) was used. Considering the large number of questions and the fact that participants do not pay attention when answering this questionnaire, this inventory was performed on 25 students of the target population. Afterwards, given the results of statistical calculations, using Cronbach's alpha coefficient and applying experts and faculty members' viewpoints, questions with low reliability were eliminated and the final version was adjusted.

Final version of this questionnaire contains 36 questions and measures 9 thinking styles. Each 4 questions evaluates one of these thinking styles. Answers to each question is determined on a seven-point scale from totally disagree (1) to extremely agree (7). Since in the current study, examining the relationship of some thinking styles including monarchic, hierarchic, oligarchic and anarchic with other variables were not predicted, hence, questions related to these thinking styles were omitted. Reliability coefficient reported by Shokri *et al.* [16] for legislative, executive, judicial, global, local, internal, external, liberal and conservative was 0.78, 0.64, 0.68, 0.75, 0.59, 0.71, 0.84, 0.82 and 0.81, respectively. Questions related to each thinking style are demonstrated in the following table.

Components of Thinking Styles Inventory and their related questions

Components of thinking styles		Question number
Functions	Legislative	1-2-3-4
	Executive	5-6-7-8
	Judicial	9-10-11-12
Levels	Global	13-14-15-16
	Local	17-18-19-20
Scope	Internal	21-22-23-24
	External	25-26-27-28
Leaning	Liberal	29-30-31-32
	Conservative	33-34-35-36

Validity and Reliability:

Detailed studies were conducted examining validity and reliability of this questionnaire. To determine the validity of the questionnaire, content analysis method was used. The questionnaire was distributed among professors of faculty of Educational Sciences and faculty of Management of Sistan and Baluchestan University

and the questions included in this questionnaire was confirmed by these faculty members. In the current study, the reliability coefficient of the questionnaires were calculated using Cronbach's alpha and were separately presented in the following table.

Validity of the questionnaires

Questionnaire	Validity
Thinking Styles	0.89
Creativity	0.85
Self-esteem	0.93

Data Analysis:

Statistical analysis was conducted using mean and standard deviation and also independent t-test and MANOVA were applied to measure research variables using SPSS version 21.

Results:

First Hypothesis: There is a difference between thinking styles of gifted and normal high school students in Zahedan.

To compare the mean scores of thinking styles of these two groups, multiple methods of analysis of variance (MANOVA) was used. Initially, MANOVA significant tests were investigated. The results are indicated in the following table.

Results of MANOVA significant tests on the scores of thinking styles of these two groups

	Amount	Hypothesis DF	df	F	Level of Significance
Pillai's Effect	.284	12.000	371.000	12.279 ^a	.000
Wilks's Lambda	.716	12.000	371.000	12.279 ^a	.000
Hotelling Effect	.397	12.000	371.000	12.279 ^a	.000
Roy's Greatest Root	.397	12.000	371.000	12.279 ^a	.000

As indicated in this table, there is a significant difference between gifted and normal students in at least one of the variables of thinking styles. The results of analysis of variance for each variable is presented in the following table.

Results of multivariate analysis of variance of gifted and normal students' thinking styles

Thinking styles	Students	Mean	SD	F	Df	P
Executive	Normal	28.355	.424	93.057	1	.000
	Gifted	22.403	.449			
Judicial	Normal	22.842	.338	20.309	1	.000
	Gifted	25.061	.358			
Legislative	Normal	14.345	.308	51.959	1	.000
	Gifted	17.575	.326			
Global	Normal	21.124	.382	92.201	1	.000
	Gifted	17.145	.413			
Local	Normal	24.612	.345	12.486	1	.000
	Gifted	22.829	.366			
Liberal	Normal	14.345	.329	65.084	1	.000
	Gifted	18.210	.348			
Conservative	Normal	28.35	.387	81.577	1	.000
	Gifted	23.62	.410			
Hierarchic	Normal	22.718	.399	.051	1	.821
	Gifted	22.842	.377			
Monarchic	Normal	19.028	.377	.953	1	.752
	Gifted	18.374	.356			
Oligarchic	Normal	24.530	.367	.62	1	.840
	Gifted	24.389	.347			
Anarchic	Normal	22.685	.382	.001	1	.978
	Gifted	22.700	.361			
Internal	Normal	23.042	.472	10.155	1	.002
	Gifted	25.167	.472			
External	Normal	21.849	.452	.652	1	.712
	Gifted	21.281	.452			

Results of multivariate analysis of variance indicate that there is a difference between gifted and normal students' thinking styles. According to these results, there is a significant difference between these two groups considering various thinking styles (legislative, executive, judicial, global, local, liberal, conservative and internal). This means that, based on the table, gifted students' mean scores of legislative, judicial, liberal and

internal thinking styles are higher than those of normal students. Moreover, gifted students' mean scored of executive, conservative, local and global thinking styles are lower than those of normal students and these differences are significant at the 99% confidence level.

Second Hypothesis: There is a difference between creativity of gifted and normal high school students in Zahedan.

Independent t-test examining creativity among gifted and normal students in Zahedan

Students	N	Mean	SD	T	Df	Sig
Normal	192	133.46	23.61	21.08	382	0.000
Gifted	192	120	20.92			

Findings indicate that the mean score of normal students' creativity is 133.46 and the mean score of gifted students' creativity is 120. Since calculated t (21.08) with degrees of freedom of 382 is significant at the 99% confidence level, it can be concluded that there is a significant difference between gifted and normal high school students' creativity in Zahedan.

Third Hypothesis: There is a difference between self-esteem of gifted and normal high school students in Zahedan.

Independent t-test examining self-esteem among gifted and normal students in Zahedan

Students	N	Mean	SD	T	Df	Sig
Normal	192	36.63	5.23	7.38	382	0.00
Gifted	192	25.80	6.09			

Investigating the results demonstrated in the above table shows that the mean score of normal students' self-esteem is 36.63 and the mean score of gifted students' self-esteem is 25.80. Since calculated t (7.38) with degrees of freedom of 382 is significant at the 99% confidence level, it can be concluded that there is a significant difference between gifted and normal high school students' self-esteem in Zahedan.

Discussion and Conclusion:

Results of multivariate analysis of variance indicated that there was a difference between gifted and normal students' thinking styles. According to these results, gifted students' mean scores of legislative, judicial, liberal and internal thinking styles were higher than those of normal students. Moreover, gifted students' mean scores of executive, conservative, local and global thinking styles were lower than those of normal students. These results are in line with the results of Sternberg and Grigorenko (1997) and Zhang and Sternberg (2000). Sternberg and Grigorenko (1997) indicated that gifted students who had legislative and judicial thinking styles had better academic achievement. To explain these results, it can be stated that thinking styles type I are those thinking styles that lead to creativity. They demand a higher level of cognitive complexity and performing them requires complex data processing. People with this kind of thinking style are interested in challenging the norms and they are willing to accept risks. Students with legislative thinking style tend to present their own methods of performing tasks and establish rules and regulations and are interested in writing creative articles, designing innovative projects and creating a new educational/professional system. Students with executive thinking styles tend to follow rules and fill the existing gaps. They are not eager to create their own structures. Since gifted students apply reasoning processes to explain and interpret their actions, they choose the greatest and the most complex issues among other difficulties and issues and enjoy solving these issues.

Zhang and Sternberg (2000) indicated that students who got higher scores in thinking styles type I, had a deeper perspective toward learning; however, students who got higher scores in thinking styles type II, had a more superficial perspective toward learning.

To explain these findings, it can be stated that thinking styles type II are those thinking styles that lead an individual or individuals to follow norms and contain lower levels of cognitive complexity and they require simple information processing. People with this thinking style are interested in preserving norms and are considered power-driven. When it is necessary to reproduce the instructed knowledge, people with this thinking style need specific rules and methods to perform the task which is possible through using simple information processing. These individuals always apply thinking styles type II. Normal students are more likely to use these thinking styles. They like to follow school rules and avoid ambiguous situations, preferring familiar life and work conditions. They mainly deal with concrete matters which require further details. Thus, it can be concluded that gifted students, compared to normal students, apply more thinking styles type I.

Second Hypothesis: There is a difference between creativity of gifted and normal high school students in Zahedan.

The obtained results indicated that there was a significant difference between creativity of gifted and normal high school students in Zahedan. Gifted students' creativity was higher than that of normal high school students in Zahedan. To explain the probability of higher levels of creativity among gifted students, compared to

normal students, similar studies, with the results of which one can compare these results, were not found. Eason *et al.* [5] indicated that students studying in private schools were more creative, compared to schools studying in public schools. Teachers' better understanding of creativity can be the main reason of these students' higher levels of creativity.

Third Hypothesis: There is a difference between self-esteem of gifted and normal high school students in Zahedan.

The obtained results indicated that there was a significant difference between self-esteem of gifted and normal high school students in Zahedan. Gifted students' self-esteem was higher than that of normal high school students in Zahedan. These results are consistent with the results of Hwany [9], Lewis (1997), Faouri [6], Gross [8] and Swiatek (2002) which reported that gifted students' self-esteem was higher than that of normal students. Moreover, this finding is in line with the result of Dole [4] concluding that gifted students had more self-esteem and social skills.

When self-esteem, as Rogers expressed, be defined as a continuous evaluation and comparison of ones' value, judging himself/herself, then, it seems that gifted students give higher scores to themselves. Due to their success in various fields especially considering their academic achievement, compared to normal students, they pay more attention to their positive points. Hence, they have more self-esteem compared to normal students. Gifted students' higher self-esteem demonstrates an attitude of acceptance and adoption of one's abilities, importance and values.

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