The Social Sciences 11 (9): 2241-2249, 2016
ISSN: 1818-5800

Relationship Between Types of Thinking Styles and Academic Adjustment with Academic Achievement among High School Students

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Abstract: The aim of this study was to investigate the relationship between thinking styles and academic adjustment with academic achievement among girls and boys high school students in Kashan City and its suburbs. The study population included all students in second and third year of secondary school and there was a statistical sample of 367 people who were selected by cluster sampling method. In this study, we used Sternberg Wagner Thinking Styles questionnaires, Sinha and Singh training adaptations questionnaire and students' total average for academic achievement. Research data were analyzed using descriptive statistics, Pearson correlation coefficient, two-way ANOVA and the results showed that students who have executive, judgmental, monarchic and hierarchical thinking styles are more compatible and students who have holistic and lawlessness thinking styles are incompatible. The relationship between academic achievement and legislative, executive, judicial, monarchic, hierarchical, conservative thinking styles is positive and this relationship with lawless thinking styles is negative. There is a relationship between academic adjustment and academic achievement. When the student's compatibility increases, he would have higher academic achievement. With regard to gender, girls are more legislator and outward-oriented than boys. Female students compared to male students are more compatible. Boys in technical and vocational fields and a girls in the field of humanities are less compatible than other fields of study. Boys in the field of mathematical physics and girls in the field of natural sciences compared to other fields of study have more academic achievement.

Key words: Thinking styles, academic adjustment, academic achievement, gender, Iran

INTRODUCTION

Identification and study of factors affecting academic achievement, as an indicator of a school's learning, constitute the main focus of research in Educational Psychology. The most important of these factors is thinking styles (Popescu, 2010; Zarei and Sardari, 2013).

The term "style" is an English word. The so-called "style" in psychology, in general, is referred to the dominant pattern or habit of doing things. The word "thinking" means ponder, imagination, suppose and reflecting. The literal meaning of the term "thinking style" is way of thinking, the thinking model and the like (Atkinson, 1998). Thinking Styles Sternberg's model includes three functions, four forms, two levels, two scopes and two leanings. Three important functions: legislative, executive, judicial, four forms: monirchic, hierarchic, oligarchic and anarchic. Two levels: global and local. Two scope: internal and external and two leanings: conservative and liberal (Zarei and Sardari, 2013). A person with legal style enjoys doing things that require creativity. A person with legal style enjoys doing things that require creativity. A person with executive style more interested in tasks that involve explicit training. Finally, a person with judicial style focuses more attention on assessing the efficiency of other activities. A person with monarchic styles enjoys performing duties that allows him to focus solely on one task at any time completely while a person with a hierarchical style prefers to distribute his attention between a few duties and a person with oligarchic style tends to work on multiple tasks at the same time, without any preferences. Finally, a person with anarchic style enjoy doing his duties with full control over what, where, when and how to do it. A person with global style pay attention to the overall picture of a subject and focuses on subjective opinions. In contrast, a person with local style enjoy doing duties that allows him work on specific aspects of a topic and have objective details. Unlike a person with external style, a person with internal style prefer the duties that give him the opportunity to interact with others. A person with liberal style enjoy doing novel and fresh duties while a person with conservative style tend to observe the rles and practices that exist in his duties (Zhang and Sternberg, 2006). Sternberg believed that thinking styles are somewhat emanate from society. He posed seven social factors that might affect the thinking styles. These seven factors

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include: culture, gender, age, parental style, religious upbringing, education and employment. The assumption underlying hypothesis is that from the beginning we feel that certain ways of interaction with others is more rewarding than others. So we attract to these methods (Zhang and Sternberg, 2009). The purpose of education in each community is prosperity and progress of students. Undoubtedly, academic adjustment is one of the important issues that students' progress depends on it (Milanifar, 2007). According Dehkhoda Dictionary, compatibility means success in work and good manners, and on the other hand, its opposite meaning are bad behavior, ill-treatment and lack of compatibility. Compatibility has different aspects. Sinha and Singh have been divided the compatibility into three types: academic adjustment, social adjustment and emotional adjustment. Baker and Siryk argue that academic adjustment is a multidimensional concept and is the ability to respond successfully to the diverse demands of educational environment. Scott Farghadani believes that academic adjustment can be broken down into components that its main components are: satisfaction with school and attend it, competition, academic achievement, judging teacher in the school compatibility and how to interact with school officials and so on. Academic achievement can demonstrate student's academic position that may indicate a score for a course or average scores in prior periods. Doing homework and student achievement in academic courses or his success in learning be called academic achievement. Therefore, the aim of this study was to investigate the relationship between thinking styles and academic adjustment and academic achievement, because it seems that these two variables together can appropriately predict academic achievement. The importance of research would become clear when the thinking styles and academic adjustment which are associated with high educational achievement can be identified and help students order to employ the desirable thinking styles. Some students appear weaker or stronger compared to the last course in which they have academic achievement and the main question that comes to mind is here. Why? What is the reason for the change or lack of change? Is it a coincidence? Do students working less or more? Or something else? To answer this question, this study has highlighted the thinking style of students. Considering the thinking style is compatible or incompatible with academic environment, they can be stronger or weaker at different stages of education.

Zarei *et al.* (2012) investigate the relationship between thinking styles and academic adjustment of nursing students. The results showed that executive, judicial, hierarchical, liberal and external have a positive correlation with academic adjustment and importantly, there is a negative correlation between academic adjustment and anarchic thinking style. In another study, Moradi examined the thinking styles and academic achievement in secondary school students with regard to gender, it became clear that there is a positive relationship between legislative, executive, local, liberal, internal, external thinking style and academic achievement. There is a significant relationship between legislative, executive, global, local, oligarchic, external, internal thinking styles and male gender and there is a significant positive relationship between judicial, liberal, hierarchical, anarchic, external thinking styles and female gender, but there was no relationship between styles and gender. A study aimed to investigate relationship between thinking styles and approaches to learning and academic achievement of male and female undergraduate students was conducted. The results showed that there is a significant difference between the genders in terms of global, internal, anarchic, hierarchical and legislative thinking style. Nazarifard and coauthors examined the relationship between thinking styles and academic achievement. The findings showed that students at the Faculty of Psychology and Educational Sciences in executive thinking style and students at the Faculty of Engineering in legislative thinking style scored higher points and there was no difference in judicial thinking style. The executive thinking style among college students in engineering and legislative thinking among students of Faculty of Psychology and Educational Sciences have the most power to predict academic achievement and there was a significant difference in terms of executive and judicial thinking styles between mle and female students at the Faculty of Engineering and in terms of legislative thinking, male students at the faculty of psychology and educational science were higher than girls.

In a study by Zhang (2004) in Hong Kong, the second year high school students after controlling for age, gender, grade level and the ability to determine their academic achievement in 16 curriculum material, responded to the thinking styles questionnaire. The results showed that the use of hierarchical thinking style predicts better academic achievement in the social sciences and literature, while judicial thinking style would follow better developments in the natural sciences. The monarchic thinking style significantly predict the academic achievement in design and technology. The results of this study indicates that the thinking styles should be taken into account in school settings and students must be taught thinking styles that are associated with creativity.

MATERIALS AND METHODS

Research hypothesis

The main hypotheses:

- There is a relationship between thinking styles and academic adjustment of high school students
- There is a relationship between thinking styles and academic achievement of high school students
- There is a relationship between academic adjustment and academic achievement of high school students

Secondary hypotheses:

- With regard to gender, thinking styles vary in different fields of study
- With regard to gender, educational adjustment varies in different in different fields of study
- With regard to gender, educational attainment varies in different fields of study

Considering that the aim of study was to explore the relationship between thinking styles and academic adjustment and academic achievement, the research methodology is correlation

Statistical population, sampling method and sample size: The study population included all high school students in Kashan city and its Suburbs who were studying in second and third grade in five disciplines (mathematics, science, humanities, vocational and work and knowledge) in the academic year 2013-2014. Multi-stage cluster sampling method was used for sampling. Initially, the list of high schools and vocational schools for boys and girls was prepared. Then, 10 high schools and vocational schools were randomly selected and a number of classes in each high school and vocational school were randomly selected. The sample size in this study, according to Morgan table was 367 persons (180 girls and 187 boys) who were studying in mathematics (16 girls, 36 boys); experimental science (63 girls, 34 boys), humanities (49 girls, 31 boys), technical and vocational (26 girls, 47 boys) work and knowledge (26 girls, 39 boys).

Data collection tools: Strenberg Thinking Styles inventory (TSL-R2): The scale consisted of 65 and 13 type styles: legislative, executive, judicial, monarchy, hierarchy, oligarchy, anarchy, global, local, internal, external, conservative and liberal with 65 items (each subscale with 5 items). These thirteen style called subscale. These scale is designed in the form of 7-options Likert scale: not at all (1 point), very low (2 points), low (3 points), somewhat (4 points), high (5 points), very high (6 points), absolutely (7 points) and participants must choose one of these options. Range of scores of total scale is amongst 65-845 and range of scores of each subscale is amongst 5 and 35 scores. Reliability was calculated through Cronbach's alpha in the study of Zhang (2004) and Zarei *et al.* (2012) for each subscale. The average coefficient obtained from Zhang and Li Fang is 0.69 and the average coefficients obtained from Zarei is 0.64. The present study aimed to calculate the reliability coefficient and Cronbach's alpha coefficient was 79.5. Sternberg and Wagner have reported validity of the questionnaire in this way: the five identified factors that explain variance to the amount of 0.77. The first factor: the load factor of executive, conservative, liberal and legislative thinking style were equal to 0.58, 0.87, 0.81 and 0.078, respectively. So two executive-conservative and liberal-legislative thinking styles were distinguished. The second factor: the load factor of judicial and oligarchic thinking styles are equal to 0.70 and 0.70, respectively. The third factor: the load factor of external style is 0.72 and internal style is 0.82. The fourth factor: the load factor of local style is 0.92 and global style is 0.82. The fifth factor: The load factor of hierarchical style is 0.86. In total, TSI-R2 can be used as a valid and reliable instrument to measure students' thinking styles in different cultures (Fan *et al*., 2010)

Sinha and Singh adjustment Inventory for high school student: The questionnaire included 20 questions that should be answered by "yes or no". High scores indicate the curriculum status and poor education and low scores indicate an interest in education and school (Zarei and Sardari, 2013). Fouladchang has reported reliability coefficient for the total scale using retest method with an interval of two weeks on 30 high school students which was equal to 0.89 and reliability coefficient based on the Kuder-Richardson method was equal to 0.82. Sinha and Singh reported the validity in the norm of this scale through internal consistency with grading the data related to 60 students that was equal to 51%. The results of these calculations showed that the distribution for the reliability and validity of the normal distribution is no different. reported that the validity of this scale is desirable through factor analysis. Since the validity is authenticated by several researchers (Zarei and Sardari, 2013), the validity of this scale is obvious in this research. Academic achievement to measure the academic achievement of students, total Average in academic year 2013-2014 considered as criteria for academic achievement.

RESULTS

The first main hypothesis: there is a relationship between the types of thinking styles and academic adjustment. As can be seen in Table 1, there is a

significant relationship between academic adjustment and executive thinking style at a significance level of 0.95 and there is a significant relationship between judicial, monarchic, hierarchic, anarchic, local thinking styles and academic adjustment at a significance level of 0.99. In other words, there is a significant relationship between thinking styles and academic adjustment. This relationship in executive, judicial, monarchic and hierarchic is negative and in anarchic and local thinking styles is positive. As a result, students who have anarchic and local thinking styles are have fewer compatibility. According to Table 1, there isn't any relationship between the legislative, oligarchic, global, internal, external, conservative, liberal thinking styles and academic adjustment.

Table 1: Correlation coefficient between variables of thinking styles and academic adjustment and academic achievement

Styles	Academic adjustment	Academic achievement
Legislative	075/0-	**135/0
Executive	*119/0-	**212/0
Judicial	**168/0-	**124/0
Monarchic	**143/0-	*113/0
Hierarchic	**236/0-	**183/0
Oligarchic	026/0	015/0
Anarchic	**178/0	**229/0-
Global	027/0-	004/0
Local	**145/0	099/0-
Internal	072/0-	070/0
External	090/0	048/0
Conservative	069/0-	*112/0
Liberal	031/0	074/0-

Second main hypothesis: There is a relationship between the types of thinking styles and academic achievement. As can be seen in Table 1, there is a significant relationship between academic achievement and legislative, executive, judicial, monarchic, hierarchic, anarchic thinking style at a significance level of 0.01 and there is a significant relationship between conservative thinking styles and academic achievement at a significance level of 0.05. In other words, there is a significant relationship between thinking styles. This

Table 2: Two-way ANOVA analysis on a variety of thinking styles based on gender and field of study

Sig.	F	Mean square	df	Sum of squares	Indicator item	Legislative
*01/0	75/5	73/5	1	73/5	Gender	
43/0	95/0	94/0	4	78/3	Field of Study	
09/0	99/1	99/1	4	95/7	Gender * Field of Study	
86/0	02/0	02/0	1	02/0	Gender	Executive
**00/0	28/7	92/6	4	71/27	Field of Study	
78/0	43/0	41/0	4	65/1	Gender * Field of Study	
84/0	03/0	04/0	1	04/0	Gender	Judicial
**001/0	88/4	48/5	4	92/21	Field of Study	
49/0	84/0	95/0	4	80/3	Gender * Field of Study	
93/0	007/0	007/0	1	007/0	Gender	Monarchic
06/0	26/2	38/2	4	54/9	Field of Study	
70/0	54/0	57/0	4	31/2	Gender * Field of Study	
25/0	31/1	51/1	1	51/1	Gender	Hierarchic
**000/0	42/5	22/6	4	91/24	Field of Study	
47/0	88/0	02/1	4	08/4	Gender * Field of Study	
39/0	73/0	187/0	1	87/0	Gender	Oligarchic
**007/0	55/3	419/4	4	76/16	Field of Study	
61/0	67/0	479/0	4	17/3	Gender * Field of Study	
17/0	87/1	16/2	1	16/2	Gender	Anarchic
**007/0	55/3	11/4	4	44/16	Field of Study	
12/0	84/1	12/2	4	50/8	Gender * Field of Study	
34/0	89/0	97/0	1	97/0	Gender	Local
52/0	80/0	87/0	4	51/3	Field of Study	
*014/0	15/3	42/3	4	71/13	Gender * Field of Study	
14/0	16/2	17/2	1	17/2	Gender	Global
36/0	09/1	09/1	4	38/4	Field of Study	
*14/0	16/3	17/3	4	71/12	Gender * Field of Study	
*004/0	44/8	21/9	1	21/9	Gender	External
**000/0	46/8	23/9	4	95/36	Field of Study	
**000/0	18/5	65/5	4	61/22	Gender * Field of Study	
68/0	16/0	22/0	1	22/0	Gender	Internal
88/0	29/0	40/0	4	60/1	Field of Study	
22/0	43/1	95/1	4	81/7	Gender * Field of Study	
45/0	57/0	68/0	1	68/0	Gender	Conservative
13/0	75/1	11/2	4	45/8	Field of Study	
64/0	62/0	75/0	4	02/3	Gender * Field of Study	
42/0	63/0	73/0	1	73/0	Gender	Liberal
*02/0	78/2	20/3	4	82/12	Field of Study	
52/0	80/0	92/0	4	70/3	Gender * Field of Study	

Table 3: Mean and standard deviation of male group with different academic fields

	Male field of study									
	Mathematical physics		Experimental science		Humanities		Technical and vocational		Work and knowledge	
Indicators/variable	M	SD	M	SD	M	SD	M	SD	M	SD
Academic adjustment	777/6	869/2	352/7	922/2	612/7	777/2	766/8	987/2	435/9	712/2

Table 4: Mean and standard deviation of female group with different academic fields

	Male field of study									
	Mathematical physics		Experimental science		Humanities		Technical and vocational		Work and knowledge	
Indicators/variable	M	SD	M	SD	M	SD	M	SD	M	SD
Academic adjustment	062/5	670/2	238/6	631/2	816/7	905/2	038/5	181/2	730/5	182/2

Table 5. Two-way ANOVA regarding the academic adjustment of students in separate academic disciplines

Items	Indicators	Sum of squares	Mean square	df	F	Sig.
Gender	Academic adjustment	255/324	1	255/324	337/43	001/0
Field of Study	Academic adjustment	038/115	4	759/28	844/3	005/0
Gender×Field of Study	Academic adjustment	734/204	4	184/51	841/6	001/0

relationship in legislative, executive, judicial, monarchic and hierarchic is positive and in anarchic thinking styles is negative. There isn't any relationship between oligarchic, global, local, internal, external, conservative, liberal thinking styles. The third hypothesis: There is a relationship between academic adjustment and academic achievement of high school students.

The correlation was equal to -0.419 at a significance level of 0.99 and one can conclude that there is a significant negative relationship between academic adjustment and academic achievement. First secondary hypothesis: With regard to gender, thinking styles vary in different fields of study. Table 2 indicates a two-way ANOVA and represents the main and interactive effects and their significance levels.

According to research data and findings from Scheffe's test, there are differences in legislative and external thinking styles between boys and girls. Girls are more legislative than boys. The results also show that there are significant differences between the two fields in executive, judicial, hierarchic, oligarchic, anarchic, external and conservative thinking styles. In judicial thinking style, the student of experimental science, humanities and technical and vocational are more legislative than the work and knowledge. In hierarchic thinking style, the students of experimental science, mathematics and physics and technical and vocational are more hierarchic than the work and knowledge. In oligarchic thinking style, technical and vocational students are more oligarchic than the work and knowledge students. In anarchic thinking styles, the work and knowledge students are more anarchic than the experimental science students. In external thinking styles, technical and vocational students and mathematical physics are more external than the work and knowledge students. In conservative thinking styles, technical and vocational students are more conservative than from the humanities.

The second secondary hypothesis: With regard to gender, academic adjustment varies in different in different fields of study (Table 3 and 4). To test this hypothesis, two-variable analysis of variance was used. Table 5 represents the main and interactive effects analysis of variance and indicates their significant levels. As you can see, gender with a significance level of 0.001 and field of study with a significance level of 0.005 is significant in the scores for on academic adjustment. In addition, the interactive effects of two independent variables of gender and field of study is significant at 0.001.

According to Table 3, it can be said that the work and knowledge students with an average of 9.43 in male group have less academic adjustment compared to other academic disciplines. The humanities students with an average of 7.81 in female group have less academic adjustment compared to other academic disciplines. In general, the female group are more compatible. The third secondary hypothesis: With regard to gender, educational attainment varies in different fields of study.

Table 6 represent the main and interactive effects analysis of variance and indicates their significant levels. As you can see, As you can see, gender with a significance level of 0.001 and field of study with a significance level of 0.005 is significant in the scores for

Table 6: Mean and standard deviation of male group with different academic fields

	Male field of study									
	Mathematical physics		Experimental science		Humanities		Technical and vocational		Work and knowledge	
Indicators/variable	M	SD	M	SD	M	SD	M	SD	M	SD
Male	513/17	649/1	288/17	957/1	546/16	369/1	987/14	396/1	722/13	593/1
Female	842/17	447/1	183/18	313/1	116/17	936/1	468/17	118/1	025/15	149/2

Table 7: Two-way ANOVA regarding the academic achievement of students in separate academic disciplines

Items	Indicator	Sum of squares	Mean Square	df	F	Sig.
Gender	Academic adjustment	713/99	1	713/99	299/38	001/0
Field of Study	Academic adjustment	029/488	4	007/122	862/46	001/0
Gender×Field of Study	Academic adjustment	264/45	4	316/11	346/4	002/0

on academic adjustment. In addition, the interactive effects of two independent variables of gender and field of study is significant at 0.001. In addition, the interactive effects of two independent variables of gender and field of study is significant at 0.001.

According to Table 7, it can be said that the mathematical physics field with an average of 17.514 in male group have more academic achievement compared to other academic disciplines. The experimental science field with an average of 18.184 in female group have more academic achievement compared to other academic disciplines.

DISCUSSION

The first main hypothesis: there is a relationship between students' thinking styles and academic adjustment. The results of the correlation between the variables of thinking styles and academic adjustment shows that this relationship in executive, judicial, monarchic, hierarchic thinking styles is negative and in anarchic and local thinking styles is positive. There is little research literature on the relationship between thinking style and academic adjustment. However, in a number of studies that have been done in this regard the relationship between some of the thinking styles and academic adjustment had been confirmed. For example, Zarei *et al*. (2012) examined the relationship between thinking styles and academic adjustment in nursing students of Islamic Azad University of Khoy who were 86 female students and showed that there is a significant positive relationship between executive, judicial, hierarchic, liberal, external thinking style and academic adjustment. The remarkable thing in this study was that there is a negative correlation between academic adjustment and anarchic thinking style. By comparing the results of this study and the study of Zarei, we could recognize that certain thinking styles in this study are consistent with the study of Zarei. In both studies, people who have executive, judicial and hierarchic thinking style were more compatible and people who have anarchic thinking style are less compatible and the both studies are countercurrent in monarchic, liberal, external and local thinking styles. However, according to Fan *et al*. (2010) the share of thinking styles in academic achievement and academic adjustment varies as a function of culture and gender. Research shows that some thinking styles causes psychological well-being compared to other styles. Emotional and social aspects of compatibility as psychological aspects of this concept could partly explain its association with some of the thinking styles. Considering the correlation between executive, judicial and hierarchic thinking styles and academic adjustment and no correlation between legislative thinking styles and academic adjustment, it can be said that perhaps the reason for this is that creative and legislative thinking could not grow because of teacher's behavior and education system. Keyvanfar believes that we only learned to teach and students also learned to accept whatever be taught.

Second main hypothesis: There is a relationship between the types of thinking styles and academic achievement. The results of the correlation between thinking styles and academic achievement shows that there is a significant relationship between academic achievement and some of thinking styles. This relationship in legislative, executive, judicial, monarchic, hierarchic, conservative thinking styles is and in anarchic thinking styles is negative. Research on thinking styles and academic achievement has been done in high school and university levels in many cultures, including Iran. In a study entitled "The relationship between thinking styles and academic achievement", showed that conservative thinking style positively and liberal thinking styles negatively could predict students' academic performance. The result of Judy Wang showed that legislative thinking

style has a positive correlation with academic achievement. The findings of the study on conservative and executive thinking styles is in line with the studies of research Zank and Judy Wong and they are antithetic in liberal thinking style. In another study, Moradi examined the thinking styles and academic achievement in secondary school students with regard to gender, it became clear that there is a positive relationship between legislative, executive, local, liberal, internal, external thinking style and academic achievement. Farokhi and Saif (2005) found in his study thinking styles and learning strategies jointly are effective in reading comprehension and legislative thinking style was most effective in the experimental group. The results of Farokhi and Saif are consistent with the research findings of this study. In general, thinking styles that require conformity, respect for authority and feeling positively associated with academic achievement just like the judicial thinking style. Understanding the relationship between thinking styles and academic achievement is very important for teachers and educational authorities in order to implement proper educational planning. With a glimpse into the topic of thinking styles, you can get these styles lay a major role in the development and future educational and career success of learners. If we hope to progress students, we must consider their thinking styles.

The third hypothesis: There is a relationship between academic adjustment and academic achievement. The results of the correlations between variables of educational adjustment and academic achievement shows that there is a significant negative relationship between academic adjustment and academic achievement. In this study, earn a high score indicates low educational compatibility. Therefore, according to findings, it can be inferred that the greater the extent of inconsistency, the lower the level of education. This finding is consistent with results of previous studies. Chen *et al.* (2003) carried out a study on a wide sample of 9, 13 and 16 year old Chinese children and the results showed that there is a relationship between academic achievement and academic adjustment. In another study that was conducted by Founouni in one of the school of Tehran, the results showed a significant relationship between total adjustment and academic achievement. The results also showed that academic adjustment (education) compared with social adjustment, emotional adjustment and total compatibility is the best predictors of academic achievement. In explanation for the relationship between adaptation and academic achievement, it can be pointed out the influence of friends and peers and the possible reasons for predicting academic achievement are the quality of relationships between students and teachers and using assertive behavior rather than aggressive behavior. In addition, the quality of the relationship between teacher and student has a considerable role in students' academic adjustment. So that the quality of this relationship can lead to academic adjustment and academic achievement. Therefore, educational programs that draw on students' academic progress, can focus on one of their goals to increase student academic adjustment.

First secondary hypothesis: With regard to gender, thinking styles vary in different fields of study. According to the findings, there is a difference between some of the thinking styles according to fields of study and gender. In executive thinking style, the boy of experimental science are more executive compared to other fields and in anarchic thinking style, they are less anarchic and lawless compared to other fields. In external style, the girls of technical and vocational field are more external and in anarchic thinking style, the girls of mathematical physics fields has the lowest lawlessness. With regard to gender, there are differences in legislative thinking style and external thinking style in girls and boys. Girls are more legislative and more external than boys. with regard to academic disciplines, the results of the study show that in executive thinking style, mathematical physics and experimental science are more executive than the work and knowledge; in judicial thinking style, experimental science, humanities and technical and vocational are more judicial than the work and knowledge; in hierarchic thinking style, experimental science, mathematical physics and technical and vocational are more hierarchic than the work and knowledge; in oligarchic thinking style, technical and vocational are more oligarchic than the work and knowledge; in anarchic thinking style, the work and knowledge is more anarchic than experimental science; in external thinking style, technical and vocational and mathematical physics are more external than the work and knowledge; in conservative thinking style, technical and vocational are more conservative than humanities. Most of the studies on this issue have stressed that the type of courses and fields could affect the thinking styles. Solgui compared the thinking styles of male and female students and found that there is a significant difference between legislative, judicial, liberal, oligarchic, internal and external thinking style. This meas that female students use legislative, judicial, judicial, oligarchic, external and male students use liberal and internal thinking style. The research in legislative and external thinking style are

consistent with Solgui. Emamipoor and Saif in line with previous studies showed that there is a difference between thinking styles of boys and girls. But in their study unlike previous studies, female students had better condition than male students and the girls used legislative, executive, judicial, monarchic, hierarchic, anarchic, global, local, external, internal and liberal thinking styles more than boys. These findings indicate that social influences on thinking styles.

Traditionally, legislative style is more acceptable in men than women. It is assumed that men and women do obey the law. This thinking is changing (Zarei and Sardari, 2013) that according to the findings of this study, girls are more legislative than boys and this is in line with research of Emamipoor and Saif. Despite the contradictory and conflicting results, gender clearly plays an important role in students with intellectual styles (Zhang and Sternberg, 2009). The results of Judy Wang (1999, Zarei and Sardari, 2013) in a study entitled "Interactive study of thinking styles of students and teachers in educational affairs" has shown that there is a significant difference between legislative, global, liberal, local and conservative thinking styles of male and female teachers (gender). So that, female teachers have legislative, local and conservative thinking styles and on the other hand, male teachers have liberal and global thinking styles. Discrepancies between the results of some previous studies in this field can be attributed to cultural differences and also influence the perceptions of students from these concepts at the time of responding the questionnaire. Because according to studies, culture can determine the type of thinking style.

The second secondary hypothesis: With regard to gender, educational adjustment varies in different in different fields of study. According to the results, female students compared with male students are more compatible in terms of education. The relationship between these two variables is consistent with some previous studies (Rotenberg *et al*., 2008). To explain these findings it must be said, the relationship between gender and academic adjustment male and female students should be looked at gender differences in the two groups. Students are facing with new and different personal and interpersonal challenges at school. These challenges require the need to build new relationships and through this mechanism, students identify relationships outside the family and parents.

The results also show that the male group in the work and knowledge and the female group in the humanities compared to other fields of study have less academic adjustment. Background studies between the differences between academic adjustments in various fields of study are very limited. Therefore, we can't pointed out to a specific study to interpret these findings. According to Isfahani Asl, Attari Mehrab Zadeh, there are significant relationship between academic performance and personal and social adjustment of students different fields of study in five key priorities. Given that the male group in the work and knowledge and the female group in the humanities compared to other fields of study have less academic adjustment, it can be said that the reason for this may be partly because of society's attitude towards different fields of study. In the views of parents, teachers and society, mathematical physics and experimental science have higher value, they have more expectations than students who are in this field of study. Therefore, they may be adapted in order to meet the expectations.

Third secondary hypothesis: With regard to gender, educational attainment varies in different fields of study. According to the results of two-way ANOVA, there is a significant difference between the academic achievement of people with regard to education and gender. The findings show that the male group in mathematical physics and the female group in experimental science have more academic achievement.

History of national and international studies conducted in this field is very limited. To interpret these findings cannot therefore refer to a specific study. An aspect of progress in education, academic achievement from which the concept of student achievement in passing a school grade can be understood. In justifying the findings of this study, it must be said that teacher's high self-efficacy has direct associations with academic achievement of students in different academic fields. The teachers are skilled in organizing teaching, questioning, explaining, appropriate feedback to students in difficult conditions, keeping students on doing homework and put students on the path to academic achievement. Probably, this dynamics of learning is more in mathematihcal physics compared with vocational disciplines and work and knowledge; in experimental sciences compared to humanities, vocational and work and knowledge; in humanities compared to vocational and work and knowledge and in vocational compared to work and knowledge.

The results regarding the academic achievement of girls and boys in this study showed that the academic achievement of female students is more than academic achievement of male students. The relationship between gender and academic achievement has been approved by the majority of previous studies (Tabatabaei and Moghaddam, 2007; Warren, 2000). The effect of gender on academic achievement can be attributed to environmental and cultural factors. Bender and Garner examined the relationship between academic habits, motivation, gender and academic achievement on 342 freshman and showed that female students have higher academic achievement

than male students. In order to justify these findings, we can say that factors such as employment problems and low incomes for educated people, is one of the most important factors for the low rate of academic achievement in boys. The willingness of young people to marry an educated girl, facilities and entertainment opportunities outside of school and homes for boys, economic problems and the impossibility of living with one's job, intimate relationship with teachers for girls.

CONCLUSION

Before 1970, individual differences in academic achievement often were considered synonymous with differences in cognitive abilities. But today it is widely accepted that educational performance does not depend only on learning ability and talent; but thinking styles play an important role in this regard. The styles is part of the concept of individual differences in learning and academic achievement. The common feature of all styles is that they are not able to use his abilities and preferred ways of processing information. In general, the results performed regarding the styles suggest that thinking styles associated with individual variables and environmental variables. These variables are more likely to act as a mediator between style and performance of individuals. In this study, thinking styles have moderate correlation with academic achievement but there is a moderate correlation between the variables of academic adjustment and academic achievement.

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