Differences in Thinking Styles among Low-, Average-, and High-Achieving College Students

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Abstract

The purpose of the present study was to examine the differences in thinking styles among low-, average-, and high-achieving United Arab Emirates college students. Thinking Styles Inventory was used to assess students' thinking styles. Results indicated that low-achieving students scored significantly lower on Executive, Hierarchical, Anarchic, Local, Conservative, and Internal styles. Low-achieving students scored significantly higher on Legislative, Oligarchic, and Liberal styles. A discriminant analysis revealed that Executive and Conservative styles were the most discriminating factors that separated low-achieving students from their high-achieving peers.

Keywords: Thinking styles, academic achievement, college students.

1. Introduction

The relationship between thinking styles and academic achievement has received a great attention over the last two decades (Albaili, 2006, Sternberg, 1997, Sternberg & Wagner, 1992). Research has shown that certain thinking styles could be used as notable predictors of students' academic achievement and performance. Thinking styles are defined as our preferred ways of using the abilities that we have. In managing our activities, we choose styles with which we feel comfortable (Sternberg, 1988, 1997). Sternberg contended that styles are thought to be distinct from abilities, and involve preferences, not necessarily conscious, in the use of whatever abilities one has. Styles are not connected solely with ability, but rather, preferred ways of expressing or using one or more abilities (Armstrong, 2000; Cano-Garcia & Hughes, 2000; Grigorenko & Sternberg, 1997; Sternberg, 1997; Zhang, 2000; Zhang & Sternberg, 1998; 2000).

Sternberg (1988, 1997) proposed the theory of mental self-government representing stylistic aspects of intellectual functioning. The basic assumption of the theory is that people, like societies, govern themselves and their mental processes and establish systems and organizations for this governance. In the theory, Sternberg (1988, 1997) provided categories and characterizations of how people organize, direct, and manage their own thinking activities, and he proposed 13 thinking styles, which fall under five dimensions aspects of mental self-governance. These 13 styles are briefly described in the following sections:

Functions: Government systems typically have different branches serving various functions; presumably, people also have different styles for focusing on different functions or tasks. There are three functions of people's mental self-government: legislative, executive, and judicial. People who have a Legislative style prefer tasks that require using creative strategies and generating new approaches and solutions. People who have an Executive style are more concerned with the proper implementation of tasks within a set of guidelines, and those having a Judicial style are concerned with evaluating the work process and products of other people's activities.

Levels: In most countries, governance operates at different levels: national, regional, provincial, municipal, and so on. Similarly, in people's mental self-government, in which individuals may vary in terms of their concern for detail, two levels of governance are defined: local and global. People with a Local style prefer activities that require them to attend to very specific and concrete details, whereas those with a Global style prefer dealing with problems that are general in nature and that require abstract thinking.

Leanings: In governance, political orientations range from the most conservative to the most liberal. These two major leanings, conservative and liberal, are also identified in mental self-government. People with a Liberal style prefer tasks that require them to go beyond existing rules and structures and tasks that are aimed at effecting substantial change. Those with a Conservative style prefer familiar tasks that require the application of and adherence to existing rules and structures.

Forms: According to Sternberg, just as there are different forms of government, there are various ways in which individuals govern themselves: monarchic, hierarchic, oligarchic, and anarchic. People with a Monarchic style prefer engaging in activities that require them to focus on only one thing at a time. Those with a Hierarchic style prefer distributing their attention and energies over several tasks that are prioritized. Those with an Oligarchic style prefer working toward several objectives all at the same time without prioritizing the tasks. Finally, individuals with an Anarchic style prefer working on tasks that require no system at all, and, thus, allow for greater flexibility.

Scope: Governments typically have both domestic and foreign affairs, which are comparable to the internal and external approaches of mental self-government. Individuals with an Internal style prefer tasks that require working independently of other people. In contrast, those with an External style prefer activities that allow for interaction with others.

According to the theory of mental self-government, people vary in their relative preferences for these styles and may use more than one style as well as flexibly switch from one to another as they adapt to changing task requirements. The stylistic preferences are also viewed as being socialized and as functions of one's interactions within the sociocultural environment (Sternberg, 1988, 1997).

There is a considerable cross-cultural research documenting that certain thinking styles of school and college students were associated with various measures of academic performance in many cultural groups. For example, Stemberg and Grigorenko (1993) examined the relationship between thinking styles and academic achievement of American gifted children and found that whereas the Judicial and Legislative thinking styles correlated positively to students' success in a variety of academic tasks, the Executive thinking style tended to correlate negatively to success in these tasks. On the other hand, Zhang (2002), whose research participants were U.S. university students found that the Conservative style positively predicted students' grade point averages, whereas the Global and Liberal styles negatively did so. Similarly, Zhang (2001), and Zhang and Stemberg, (1998), with Hong Kong students, found that the Conservative, Executive, Hierarchical, and Internal styles were positively related to academic achievement. Legislative, Liberal, and External styles tended to contribute negatively to academic achievement. Furthermore, the investigation of the relationships of thinking styles to academic achievement has also been conducted among university students in Spain (Cano-Garcia & Hughes, 2000). Findings from this study also supported those obtained in Hong Kong. That is, the higher academic achievers tended to be those who preferred to adhere to existing rules and procedures (Executive style), who preferred to work individually (Internal style), and who preferred not to create, formulate, and plan for problem solutions (Legislative style in a negative sense). In another study that involved Filipino university students, Bernardo, Zhang and Callueng (2002) obtained results that were consistent with those obtained in the studies of Hong Kong students. That is, in general, thinking styles that require conformity, respect for authority, and a sense of order were positively correlated with academic achievement. The Judicial style was positively related to academic achievement among Filipino students. More recently, Zhang (2004), with Hong Kong students, found that the Hierarchical, Judicial, and Monarchic styles were significantly contributed to the prediction of students' academic achievement.

To summarize, all existing cross-cultural studies have indicated that thinking styles significantly contribute to academic achievement. Furthermore, there is much similarity in the specific ways in which thinking styles predict academic achievement across the different cultural groups. With the exception of the studies of U.S. gifted children and the mainland Chinese university students, the studies of all the other cultures indicated that the Executive, Conservative, and Hierarchical styles correlated positively with academic achievement. However, it is unknown whether thinking styles of the Arab students would be related to academic achievement, as was found in the Asian and American studies. For the reason that different countries value different types of student behavior and achievement, stress diverse modes of assessment, and encourage different approaches to succeeding in school, differences in the degree to which thinking styles relate to academic success would be anticipated among United Arab Emirates college students.

The purpose of the present investigation was to examine the differences in thinking styles among low-, average-, and high-achieving UAE college students. It was hypothesized that would be significant differences in thinking styles among the low-, average-, and high-achieving groups. Moreover, it was predicted that certain thinking styles would be discriminating variables that separate low-achieving students from their high-achieving counterparts.

2. Methods

2.1 Participants

A total of 228 undergraduate students at United Arab Emirates University participated in this present investigation. Participants were classified into three achieving groups based on their grade point average (GPA) scores: (1) low-achieving group: students on academic probation with GPA scores below 2.00 (n= 63); (2) average-achieving group: students with GAP scores in the range of 2.00 to 2.99 (n= 98); and (3) high-achieving group: students with GAP scores in the range of 3.00 to 4.00 (n= 67). The GPA was used as an index of college academic achievement.

2.2 Instrument

The Arabic version of the Thinking Styles Inventory TSI-A was used to assess students' thinking styles (Albaili, 2006). The TSI, which was originally developed by Sternberg and Wagner (1992), is a self-report inventory with 65 items divided into 13 scales, each containing 5 items that correspond to one of the 13 thinking styles described in Table I. For each item, participants are asked how well the statement describes them, responding to the question on a 7-point Likert-type scale in which 1 indicates that the statement does not describe them at all, and 7 indicates that the statement describes them very well. Examples of items from the inventory are: (1) "I like tasks that allow me to do things my own way" (Legislative), (2) "I like situations in which it is clear what role I must play or in what way I should participate" (Executive), and (3) "I like to evaluate and compare different points of view on issues that interest me" (Judicial). Albaili (2006) reported acceptable reliability and validity estimates for UAE sample.

2.3 Procedures

After informed consent had been obtained, participants were given the TSI-A during the Fall Semester. The participants received written instructions that specified the purpose of the study and explained the procedures to be followed in responding to the items. They were told that there was no right or wrong response, but, rather statements that reflect their preferred ways of using the abilities. In addition, participants were asked to report their GPA scores.

2.4 Analysis

Analysis of variance (ANOVA) procedure was performed with three achieving groups (low, average, high)) as the independent variable and the scores on the TSI-A styles as the dependent variables. Post hoc analysis using the Scheffe method was also performed to examine the pairwise differences. Furthermore, a stepwise discriminant analysis was used to determine which of the TSI-A styles, as the independent variables, best separated low-achieving students from their high-achieving peers.

3. Results

Analysis of variance procedures followed by Scheffe method were performed to compare low-, average-, and high-achieving students in terms of their scores on the TSI-A styles. Means and standard deviations for each TSI-A Styles for three groups plus F ratios are presented in Table 1. Results indicated that low-achieving students scored significantly lower than average- and high achieving students on Executive, Hierarchical, Anarchic, Local, Conservative, and Internal styles. On the other hand, the low-achieving students scored significantly higher than average- and high achieving students on Legislative, Oligarchic, and Liberal styles. However, no significant differences were observed between average- and high-achieving groups on any of the styles.

Table 1: Means and Standard Deviations and F Ratios for Scores on TSI-A Styles of Low-, Average, and High-Achieving Groups

Style	Low (n= 63)		Average (n= 98)		High (n= 67)		
	M	SD	M	SD	M	SD	F (2, 225)
Legislative	26.93	5.64	24.53	5.49	23.09	5.55	7.96***
Executive	22.68	5.80	25.32	5.04	27.30	4.72	12.98***
Judicial	23.37	4.92	24.89	4.87	25.15	4.61	2.67
Hierarchical	23.60	5.47	25.90	4.49	26.98	5.87	7.18***
Monarchic	25.81	5.16	24.62	4.01	24.25	4.23	2.23
Oligarchic	26.11	6.11	24.85	4.68	23.16	5.32	5.09***
Anarchic	23.25	5.16	24.90	4.30	25.84	5.29	4.71**
Global	24.41	5.05	23.24	4.73	22.48	4.13	2.84
Local	23.35	5.18	24.14	4.79	25.72	4.70	4.04*
Internal	22.79	6.61	23.52	4.91	25.72	5.61	4.92**
External	27.14	5.56	26.39	5.43	25.60	5.43	1.30
Liberal	26.87	6.17	24.60	5.21	23.51	4.53	6.80***
Conservative	21.92	6.45	24.63	5.00	26.24	7.13	8.31***

* $p < .05$.   ** $p < .01$ *** $p < .001$

Considering the significant differences observed between the low-achieving students and their high-achieving counterparts on 9 thinking styles, a stepwise discriminant analysis revealed that Executive and Conservative styles were the most discriminating factors that separated low-achieving students from their high-achieving peers. The results of the stepwise discriminant analysis and the discriminant function are presented in Table 2.

Table 2: Summary of Stepwise Discriminant Analysis for the TSI-A Styles

Step	Style	Wilk's Lambda	p
1	Executive	.89	.0001
2	Conservative	.82	.0001

Function	Eigenvalue	Wilk's Lambda	Chi-square	df	p
1	.41	.71	79.23	10	.0001

4. Discussion

The present study examined the differences among differences in thinking styles among low-, average-, and high-achieving college students. Analysis indicated that low-achieving students scored significantly lower than average- and high achieving students on Executive, Hierarchical, Anarchic, Local, Conservative, and Internal styles. On the other hand, the low-achieving students scored significantly higher than average- and high achieving students on Legislative, Oligarchic, and Liberal styles. These results are similar to those reported by Bernardo et al. (2002), Can-Garcia and Haghes (2000), Zhang (2002), and Zhang (2001), who observed significant correlations between Executive, Hierarchical, Anarchic, Local, Conservative, and Internal styles and academic achievement among Filipino, Spain and Hon Kong students. However, the results didn't concur with Stemberg and Grigorenko's (1993) study, who found that the Judicial and Legislative styles correlated positively to a student's success in a variety of academic tasks, whereas the Executive style tended to correlate negatively to success in these tasks. These results would lend support to the notion that students who adapted thinking styles that require respect for authority (Executive), conformity (Conservative), preference for working individually (Internal style) and sense of order (Hierarchical) tended to be more successful in learning and achievement as determined by their academic achievement scores, where are students who tended to adapt thinking styles that are creativity generating (Legislative, Oligarchic, and Liberal styles) tended to be less successful in their academic achievement.

The subsequent stepwise discriminant analysis indicated that the Executive style was the most powerful factor that separated low-achieving students from their high-achieving peers. This result is similar to those reported by Bernardo et al. (2002), who found the Executive style was positively correlated with GPA within the Philippine educational context. This result would suggest that high-achieving students appeared to be more apt to work on academic tasks with clear instructions and choose academic tasks that allow them to maintain the existing rules and procedures in performing such tasks than the low-achieving students.

In conclusion, the various findings of this investigation suggest a plausible link between the thinking styles and academic achievement in the United Arab Emirates culture, where students were exposed to different educational practices, and different cultural context. Additional research is certainly needed to probe college academic achievement and to identify the contextual and environmental factors that influence the development and management of students' thinking styles. Further research should also be needed to perform cross-cultural comparisons regarding the nature of thinking styles and clarify the socio-cultural developmental processes that shape how different thinking styles become interrelated.

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