



Field Dependence- Independence, Cognitive Styles, English Reading Comprehension Skill, English Language Learning, and Educational Achievement

Maryam Yaghoubi*¹, Azam Inanloo¹ and AliAkbar Hamed²

1. PhD Student in Educational Administration, Islamic Azad University, Rudehen Branch, Rudehen, Iran.

2. Department of Educational Management, Islamic Azad University, Tehran, IRAN

* Corresponding author's Email: m.yaghobi@yahoo.com

ORIGINAL ARTICLE
Received 18 Dec. 2013
Accepted 11 Feb. 2014

ABSTRACT: The current research is intended to examine on relationship among Field dependence- Independence (FDI) cognitive styles and English text comprehension skill, English language learning, an educational achievement. Accordingly, 305 female and male students from third grade high school classes were chosen by means of multi- stage random technique among the students from schools in Region 2 in Sari City, Iran and they responded to questions in Group Embedded Figure Test (GEFT). Their scores during first semester of academic year 2010-11 were extracted in the field of reading comprehension for English exam, total score of this test and their GPA in all lessons from exam sheets and classrooms score lists. Data analysis done by regression analysis indicates that FDI cognitive style interprets 8.8, 9.2, and 11.6% variances for dependent variables (scores of reading comprehension, English learning, and GPA) respectively. In other words, the more independent the cognitive style is, the higher English text comprehension, English language learning and educational achievement will be.

Key words: Learning, Cognitive Styles, Reading Comprehension, Educational Achievement

INTRODUCTION

At the end of 18th century, there was relatively great attention paid to child and learner in educational system and the influential comments made by real thinkers like Comenius and naturalist like Rousseau reduced from the great attention which was paid to textbook subjects and contents as the main element in education and training to the great extent and the ground was gradually prepared that authenticity of educational content to be replaced by authenticity of child or learner.

Results of studies have shown that adaptation of educational materials for meeting of different learning requirement to students might be useful and this necessitates us identifying their learning styles and knowing what kind of materials will be required for any style (Kolb and Goldman, 1973).

Some learners may need to help in order to learn so that it is better for them to consider some important points during reading of a text and ignore less important details. Some of them may be afraid of disorganized situation of learning and they may need to clear and step- by- step- guidance. Although it is possible to train learning effective strategies and styles to different students, anyway teacher should adapt his/ her educational and communicative techniques to his/ her students' learning styles. This may be considered as a highly expectation from teacher to provide the situation for each of students according to their favor and at the same time to supply any support regarding their specific learning style while teacher may provide right of selection for his/ her learners (Woolfolk, 2005).

Field Dependence- Independence (FDI) cognitive style is considered as a personality stable characteristic and predictor that includes the limits of individual

difference in many cognitive fields such as interpersonal and social relations, learning, and concepts acquisition (Kurd NoGhabi, 1999). In FDI styles regarding learning, Chapelle and Green (1992) purpose analytic style (Field- Independence) in which student's competence is reflected in analysis of verbal materials, identifying elements, and the review on the relationship between these components. On the other hand holistic (wholly) students (Field- Dependence) may perceive situations as totalities. Thus, it is more likely that these student use communicative interaction which maximize the relevant qualitative changes inside data and this point may allow them to pay attention to those situations in order to employ language to express concepts (Wintergest et al., 2001). Since many students encounter the problem in adaptation to their own cognitive system to study foreign language, it is likely that learning styles are preferred to acquisition of a foreign language. In other words, students' competence in learning a foreign language is balanced with their learning styles.

In seems that learning specific situation that is developed in classes of foreign languages will be more appropriate for some students than others. Alternately, like personality features such as avoidance from ambiguity, some learning styles may contribute to some students or hinder their way (Ehrman, 1996; Oxford and Ehrman, 1995). Ehrman (1996) expresses, that the existing discordance between students' learning styles and educational curricula or styles lead to some issues and problems for students. For instance, to present small group activities to students which are prevalent in foreign language classrooms, it is important to know what the impact of working

priority is separately or in group on achievement. Therefore, study on role of learning styles in foreign language achievement may be useful to contribute many students to improve habits of study foreign languages and their final performance.

With respect to aforesaid issues and since English language is considered as a foreign language in many countries including Iran and in order to acquire the latest information and scientific and non- scientific subjects it is very crucial and important to have English reading comprehension skill and moreover several noticeable individual differences are observed in rate of English language skills among students and at the same time students have different learning styles and these styles will affect on their educational achievement so it is necessary for the respected teachers to be aware of their quality and types in order to contribute their students in optimal time consumption and existing educational facilities. Furthermore, several remarkable differences are seen in efficiency of English different learning skills especially English reading comprehension skill in students; namely, some students may learn it easily and at higher level while some others have lower efficiency with great deal of difficulty. Thus, if this hypothesis is verified that cognitive styles are effective on achievement of learners then knowledge of cognitive styles by students and their awareness of these learning styles along with English language different skills may resolve many educational problems and they could be useful in design of effective curricula. With respect to what was said, this survey is intended to examine the relationship among Field Dependence- Independence (FDI) cognitive styles, English reading comprehension skill, and English learning and educational achievement.

MATERIAL AND METHODS

Since the relationship among two independent and dependent variables is investigated in this research so a research design of correlation type is employed. One of the common and frequent methods for display of the relationship among variables is using correlation models (Homan, 1997).

In this study, the statistical population includes all high school third grade students, who have studied in high schools of Region 2 in Sari City (Iran) at academic year 2010-11. The characteristics of population members are given in Table 1.

Research sample space includes 305 participants. To determine sample size, Morgan- Krejcie sample size table formula has been used. Multi- stage cluster sampling was done and the sampled members were chosen randomly.

To measure FDI cognitive styles in this study, Group Embedded Figure Test (GEFT) was adopted. This

test was prepared by Witkin et al. (1971) to measure the rate of field dependence- independence in teenagers and adults. Reliability of this test has been calculated by Altman et al as 0.82 for males and 0.79 for females; at the same time, the validity coefficient value was derived as 0.82 for males and 0.63 for females (Bosacki et al., 1997). In the latest study on cognitive styles conducted by Faramarzi in Tehran Tarbiat Moalem University, the reliability coefficient of this test was implemented on 30 academic students and it was computed by Kuder- Richardson formula (KR-20) as 0.60. This test comprises of three parts:

The first part has 7 images and second and third parts have 9 images. First part is only used for exercise and no score belongs to it so it is implemented only for the sake of familiarity with how to complete test. But second and third parts are the main body of test with more complex forms and it is more difficult to give answer to them than first part. One score is allocated to any right answer. Consequently, dispersion of scores ranged from zero to 18. Score zero indicates the field perfect dependence cognitive style while score 18 shows field independence of cognitive style. This test was translated and utilized by Noghabi (1999) to examine the relationship between FDI cognitive styles in students and their parents' trainings styles. Reliability of this test in his study was reported as (N=73) 0.82 for males and (N=63) 0.63 for females.

Additionally, in this survey, score of any testee in English language exams (first semester of academic year 2010-11) has been used as achievement parameter in learning English. To measure different skills of English language among high school students, the expertise and coordinated tests are administered throughout the country, which have certain scoring scale. To determine rate of student's English reading comprehension skill, score of testee was utilized in reading comprehension part of the given English exam. At the end, average score of testee from all lessons at the same semester has been adapted as criterion for evaluation of his/ her educational achievement.

Reliability coefficient of this, which extracted abroad by Witkins et al on 160 students from university, was calculated as 82% for males and 97% for females. In the latest study, which has been carried out regarding cognitive styles by Faramarzi in Tehran Tarbiat Moalem University, the reliability coefficient of this test that administered on 30 students was calculated as 0.60 by Kuder- Richardson (KR-20) formula.

In the current study, 50 participants were chosen in all three fields of mathematics, natural sciences, and human sciences as follows: Mathematics = 71%, Natural Sciences = 65% and Human Sciences = 59%. Content validity of this exam was studied by Faramarzi

in Iran. 60% of experts have agreed unanimously on content validity of all figures and this shows that figures measure field independence- dependence well.

RESULTS

Research Question I: Is there any relationship among Field Dependence- Independence (FDI) cognitive styles and English reading comprehension skill? Single- variable regression is used to test this hypothesis. Score of English reading comprehension skill is dependent variable and GEFT test is independent variable in this test. By review on above table, it is observed that correlation value is 0.296 and rate of determination coefficient is 0.088 so it suggests that 8.8% of variance in English reading comprehension skill may be interpreted by FDI cognitive style. The regression test results indicated that the derived correlation is significant at level 0.05 so Null Hypothesis is rejected and the research hypothesis is verified (p<0.05). Thus, it can be concluded that there is a significant linear relationship among FDI cognitive style and English reading comprehension skill. Coefficients of linear model have been approximated in the table 3.

Research Question II: Is there any relationship among Dependence- Independence (FDI) cognitive styles and English language learning? Single- variable regression is utilized to test this hypothesis. Score of English language learning is dependent variable and GEFT test is independent variable in this test. By review

on the above table, it is seen that correlation value is 0.304 and rate of determination coefficient is 0.092 so this value signifies that FDI cognitive style could interpret 9.2% of variance in English language learning. Results of regression test showed that the extracted correlation is significant at level 0.05 so Null Hypothesis is rejected and research hypothesis is confirmed (P<0.05). Therefore it can be concluded that there is a significant linear relationship among FDI cognitive styles and English language learning. Coefficients of linear model are approximated on the table 5.

Research Question III: Is there any relationship among Dependence- Independence (FDI) cognitive styles and educational achievement? To test this hypothesis, single- variable regression is used. Score of educational achievement is dependent variable and GEFT test is independent variable in this test. By investigation into the above table, it may be observed that correlation value is 0.341 and rate of determination coefficient is 0.116 and this suggests that 11.6% of variance in variable of educational achievement may be interpreted by FDI cognitive style. Regression test results showed that the given correlation is significant at level 0.05 so Null Hypothesis is rejected and research hypothesis is verified. Thus, it may be concluded that there is a significant relationship among FDI cognitive style and educational achievement. Coefficients of linear model have been approximated in the table 7.

Table 1. Characteristics of members of research population

Variable	Girl	Boy	Total
Mathematics	198	192	390
Natural Sciences	362	128	490
Human Sciences	364	232	596
Total	924	552	1476

Table 2. Review of linear relationship among FDI cognitive style and English reading comprehension skill

R	R ²	F Value	DF	P
0.296	0.088	29.057	(1.303)	0.001

Table 3. Review on coefficients of linear model based on FDI cognitive style and English reading comprehension skill

Coefficients	The approximated Coefficients		T Value	P
	Standard	Non- standard		
Fixed Coefficient	-	3.460	13.974	0.001
Score of FDI Cognitive Style	0.296	0.134	5.390	0.001

English reading comprehension skill = 3.460+ 0.134 × (GEFT score)

Table 4. Review of linear relationship among FDI cognitive style and English language learning

R	R ²	F Value	DF	P
0.304	0.092	30.784	(1.303)	0.001

Table 5. Review on coefficients of linear model based on FDI cognitive style and English Language learning

Coefficients	The approximated Coefficients		T Value	P
	Standard	Non- standard		
Fixed Coefficient	-	12.281	25.414	0.001
Score of FDI Cognitive Style	0.304	0.268	5.548	0.001

English language learning = 12.281+ 0.268 × (GEFT score)

Table 6. Review of linear relationship among FDI cognitive style and educational achievement

R	R ²	F Value	DF	P
0.341	0.116	39.758	(1.303)	0.001

Table 7. Review on coefficients of linear model based on FDI cognitive style and educational achievement

Coefficients	The approximated Coefficients		T Value	P
	Standard	Non- standard		
Fixed Coefficient	-	13.586	40.491	0.001
Score of FDI Cognitive Style	0.341	0.212	6.305	0.001

Total Average (GPA) = 13.586+ 0.212 × (GEFT score)

DISCUSSION

In an investigation which has been conducted to revise the done studies regarding the impact of FDI cognitive styles on Second Language Acquisition related skills (conversation, reading, and writing etc.) by Tinagero and Paramo (1997), they have declared that all cases of results indicate that field- independent learner act better than field- dependent learner. The group of these results is complied with the finding of the present research.

In a study under title of "The impact of FDI cognitive styles as source of variation in writing performance of English learners as a Foreign Language (EFL)", Nilforooshan and Afghari (2007) came to the result that field- independent learners have the better performance in writing particularly in writing of descriptive texts. They consider potential possible source of this difference in type of reasoning, competence of reconstruction and taking information processing strategies and utilization from memory capability in writing process and since these items contributed language learners to better English reading comprehension and also giving answer to questions of reading comprehension requires English writing skill so results of their studies are complied with results of present study in table 4.

Given the extracted results, it may be concluded that FDI cognitive style can play important role in learning Second Language Acquisition (SLA) related skills including English reading comprehension skill. Chapelle and Green (1992) consider linguistic analytical competence in close relationship with ability of perceived disembodied which are measured by GEFT tests that explain the reason for better capabilities of field- independent persons in acquisition of second language skills.

All of these interpretations confirm this idea that capabilities of field- independent learners contribute them in acquisition of second language various skills. Nevertheless, the potential impact of interpersonal skills should be tested in field- dependent persons. As Tinagero and Paramo (1997) consider it as a possibility, these person may acquire language like field independent learners and even better than them in contact to language native speakers in the field of

language skills. Brown (1987, quoted by Tinagero and Paramo, 1997) states that key success in learning second language is embedded in mobility of language learner; namely, language learner should be able to adapt oneself with learning field so that be benefitted from the best features of both FDI cognitive styles. Thus, recognition and identifying cognitive styles in second language learners may play crucial role in facilitation of teaching and learning.

In their investigations, Naiman et al. (1975) concluded that in formal training classrooms, FDI learning style is related to learning of second language and this is in line with the result of the current study.

In their studies, Chapelle and Green (1992), Witkin and Goodenough (1981) have considered both styles in language learning based on situation; in other words, field- independence cognitive style in formal training classrooms is related to second language learning so that this viewpoint is complied with result of this study (Table 13-4). But, field- dependence cognitive style in natural contexts and in relation to second language native speakers may contribute them in learning of second language because of further capacities in interpersonal relation of learners that take this style.

With respect to characteristics of field- independent learners and result of the present research, this hypothesis may be accepted that more successful learners are ones who can focus their attention on the relevant language derives to language learning task and ignore irrelevant stimulants. This is probably related to ability of distinguishing and identifying single lexicons. In this regard, English language may not be exception to this rule since despite of having certain grammatical rules, there are several exceptions in this language that recognizing them requires analytical processing by learner and paying attention to details.

In his survey, Srivastava (2003) indicated that in comparison to field- dependent testees, field- independent testees reflect higher achievement in all lesson. Study done by Tinagero and Paramo (1997) showed that in general, field- independent female and male learners indicate higher achievement and better

performance than field- dependent students so this finding is complied with the result derived from this study.

Kagan and Zahan (1975) supported from this hypothesis in their investigation that field- dependent learners might acquire lower achievement in school. With respect to results of the above question, it could be concluded that FDI cognitive styles play important role in learning and educational achievement. The fact that field- independent learners act more successfully in educational formal context like schools may be related to positive impact of this style on their performance in a formal language. Tinagero and Paramo (1997) express that so far all the conducted studies in this filed show that field- independent learners may have better performance in educational formal contexts in formal language. They deduce that this superiority is related to their competence in reconstruction and disembodying. It is obvious that student's higher competence in formal language help him/ her to increase his/ her information in textbook various materials.

REFERENCES

- Bosacki, S., Innerd, W. & Towson, S. (1997). Field independence-dependence and self-esteem in preadolescents: Does gender make a difference? *Journal of Youth and Adolescence*, 26(6), 691-703.
- Chapelle, C., & Green, P. (1992). Field dependence/independence in second language acquisition research. *Language learning*, 42, 47-83.
- Ehrman, M. (1996). *Second Language Learning Difficulties: Looking Beneath the Surface*. Thousand Oaks, CA: Sage.
- Kagan, S. & Zahan, G. L. (1975). FD and the school gap between Anglo American and Mexicali American children. *Journal of Educational psychology*, 67, 643-650.
- Kolb, D. A., & Goldman, M. B. (1973). *Toward a Typology of Learning Styles and Learning Environments: An Investigation of the Impact of Learning Styles and Discipline Demands on the Academic Performance Social Adaptation and Career Choices of MIT Seniors*. In D. A. Kolb, & M. B. Goldman. Cambridge, Massachusetts: LIBRARY of the MASSACHUSETTS INSTITUTE OF TECHNOLOGY.
- Kurd Noghabi, R. (1999). *The relationship among FDI cognitive styles in students and training methods used by their parents*, MA thesis, Tehran Allameh Tabatabaei University.
- Naiman, N., Fröhlich, M., Todesco, A., & Stern, H.H. (1978). *The good language learner*. Research in Education Series7. Toronto: Ontario Institute for Studies in
- Nilforooshan, N., & Afghari, A. (2007). The effect of Field Dependence-Independence as a Source of Variation in EFL Learners Writing Performance. *Iranian Journal of Language Studies (IJLS)*, 1(2), 103-118.
- Oxford, R.L., & Ehrman, M.E. (1995). Adults' language learning strategies in an intensive foreign language program in the United States. *System*, 23, 359-386.
- Srivastava, P. (2003). *Cognitive styles from teaching and training perspective*, Transl. Noroozi Dariush & Salehi Akbar, Tehran: Amir Press.
- Tinagero, C. & Paramo, M.F. (1997). Field dependence independence and academic achievement: A reexamination of their relationship. *British journal of Education psychology*, 67, 199-212.
- Wintergest, A. C. Decapua, A. & Itzen, R. C. (2001). The construct Validity of one learning styles instrument. *System*, 29, 385-401.
- Witkin, H. A., P. K. Oltman, E. Raskin, & Karp, S. (1971). *Group Embedded Figures Test manual*. Consulting Psychologist Press: Palo Alto, CA.
- Witkin, H.A. & Goodenough, D.R. (1981). *The essence and origin of cognitive style field dependence and independence*. Psychological Issue. Monograph. No 51. New York: International university press.
- Woolfolk, A.E., (2005). *Educational Psychology (11th Ed.)*, Allyn and Bacon.