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Field Dependence/Independence Cognitive Styles: Are They Significant At Different Levels Of Vocabulary Knowledge?

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Abstract

Cognitive styles influence the performance of language learners and can predict their success in the process of language learning. Considering field dependence/independence cognitive styles, this study aims at determining if they are significant in English vocabulary knowledge. A number of EFL university students took part in the study. The investigation was done through using Vocabulary Size Test (VST) (Nation, 2007) and the Group Embedded Figures Test (GEFT) (Witkin, Oltman, Raskin, and Karp, 1971). Using the Vocabulary Size Test (VST), the participants were divided into three groups of high, mid, and low. Moreover, with respect to the Group Embedded Figures Test (GEFT), they were divided into two groups, field dependents and field independents. Mean score comparison revealed there was a credible and meaningful relationship between field dependence/independence cognitive styles and total vocabulary knowledge. It was also indicated there was a significant relationship between field dependence/independence cognitive styles and vocabulary knowledge in the high and mid groups. Finally, based on the findings, teachers should take learners' individual differences into consideration so that they could adopt and apply teaching methods in line with the learners' various cognitive styles.

Keywords: Cognitive styles, field dependence/independence, vocabulary knowledge

1. Introduction

In the earlier views, cognitive styles were conceived of as the self-consistent models of functioning that an individual shows through his perceptual and intellectual activities. Messick (1984) defined cognitive styles as consistent individual differences in organizing and processing information and experience. In this regard, Brown (1994) asserts, " the way we learn things in general, and the particular attacks we make on a problem seems to hinge on a rather amorphous link between personality and cognition; this link is referred to as cognitive style" (p. 104).

Nowadays, we know that cognitive styles are manifestations of the cognitive domain in broader dimensions of functioning which include other psychological domains such as personality and personal behaviors. To put it into simple words, cognitive styles are actually broad personal styles which show typical ways in which we process information. Some examples of cognitive styles include reflectivity/impulsivity, field dependence/independence, and ambiguity tolerance/intolerance (Bertini, 1986).

Cognitive styles influence the performance of language learners and can predict their success in the process of language learning. Stansfield and Hansen (1983) claim that some students with a special cognitive style perform consistently better than other students on a particular language test. The possible relation between language learning and cognitive styles was suggested first by Brown (1973). Later other studies supported the existence of such a relationship (Carter, 1988; Hansen and Stansfield, 1981; Witkin, Moore, Goodenough, & Cox, 1977).

Field dependence/independence is a type of cognitive style introduced by Witkin, Raskin, Oltman, and Karp (1971). They defined field dependence/independence as a cognitive style, a bipolar, stable trait affecting how one thinks, feels, and behaves. They also claimed that a "field independent person is analytical, confident, and self-reliant whereas the dependent person is holistic, uncertain and dependent on others" (as cited in Chapelle & Green, 1992, p. 49). Furthermore, some studies revealed the relationship between field dependence/independence and certain personality features and social behaviors. Field dependent individuals were viewed as more outgoing and more "emphatic and perceptive of the feelings and thoughts of others" (Brown, 1994, p.86). Conversely, field independent individuals are viewed as 'cold' and 'individualistic' (Pemberton, 1952; Crutchfield, Woodworth, & Albrecht, 1958; and Dulay, Burt,

& Krashen, 1982). Witkin et al. (1977) stated that field dependent people are warm, tactful, considerate, socially outgoing and affectionate towards others. Witkin et al. (1977) also reported that field dependent people are more affected by criticism than field independent people. Moreover, they look more at the faces of others while talking to them.

Vocabulary knowledge is essential in learning a foreign or second language. Vocabulary breadth refers to the number of words a learner has in mental lexicon. According to Nation (1990, as cited in Rezvani Kalajahi and Pourshahian, 2012), all students "need to know about 2,000 to 3,000 word level so as to function effectively in English. For instance, it is difficult for learners to read complicated texts unless they know high frequency words. These words occur often in the material read or listened to, and they occur in many different kinds of material on many different topics" (p. 141).

2. Literature Review

Some scholars investigated the role of field dependent and field independent individuals on listening, speaking, reading and writing skills. Hwang (1997), for example, found a significant positive correlation between listening comprehension and field independence. Naiman et al. (1978, as cited in Hansen & Stansfield, 1981) reported that field independence positively correlated with listening comprehension tasks at the advanced stages of French study. As cited in Bialystok (1992, p. 662), Genesee and Hamayan (1980) found that field independence cognitive style was correlated with written language proficiency and listening comprehension but not with oral production for younger children. By contrast, Bialystok and Fröhlich (1978) concluded that field independence was not strongly predictive of success on the second language reading, listening, and writing tasks. Jucker et al. (1976, as cited in Hansen & Stansfield, 1981) found no significant correlation between field independence cognitive style and listening comprehension for younger students. Furthermore, Elliot (1995a, 1995b) found a moderate correlation between field independence and pronunciation accuracy.

There are, also, some research studies in the literature on the relationship between field dependence/independence and learning grammar. Day (1984) claimed that since field independent individuals are more analytic, they might learn the grammatical rules of the second language more quickly than field dependent ones. Abraham (1983) found that field dependent students learn grammatical rules better through the inductive mode and field independent students through deductive mode of teaching grammar. Dulay et al. (1982, as cited in Alptekin and Atakan, 1990) found that FI correlated positively with conscious learning of grammar rules while FD correlated positively with subconscious acquisition of communicative skills.

Some researchers revealed significant correlation between field independence and other cognitive styles and personality characteristics. Based on the results of these observations, FI individuals can be considered as analytical, reflective, highly detailed, ambiguity tolerant, and left-cerebrally-dominant. FD people, on the contrary, are described as more globally-oriented, impulsive, holistic, and right-cerebrally-dominant. (Brown, 1994; Dulay et al. , 1982; Oxford, 1989; Oxford, Ehrman, & Lavine, 1991).

Salmani-Nodoushan (2006) investigated field dependence/independence as two factors other than language proficiency that may be responsible for systematic variance in language performance. It was hypothesized that field dependence/independence would introduce significant variance into Iranian EFL learners' Communicative Test (CT). The results gave an evidence to the fact that field dependent (FD) participants, as compared to their field independent counterparts, performed much better on both (CT and IELTS), and they were better performers on communicative tests which did not have a discrete-point nature. Moreover, Mortazavi (2006) examined the relationship between vocabulary learning strategies and vocabulary size of Iranian EFL students. Her study showed that there was a relationship between vocabulary learning strategy and vocabulary size. The participants who used a variety of strategies instead of relying on a limited number of them possessed more extensive vocabulary knowledge. Furthermore, Rostampour and Niroomand (2013), in their study, found that motivation had a credible and meaningful relationship with emotional intelligence in high, mid, and low groups of vocabulary knowledge.

3. Methodology

3.1 Participants

The participants of the present study were 59 male and female students majoring in English at Islamic Azad University, Shiraz Branch. They were all studying English language teaching and thus had passed the same language courses at the university. The age of the participants was between 21 and 29.

3.2 Instruments

The instruments used in this study were an English vocabulary test and a personality test. Nation's Vocabulary size Test (2007) was a test to determine learners' vocabulary size, and the level of their vocabulary knowledge. The Group Embedded Figures Test (GEFT) was, also, a test to identify participants' FD/FI cognitive styles.

3.3 Procedure

In order to answer research questions, all the participants who were 59 male and female students majoring in English language teaching at Islamic Azad University, Shiraz Branch took part in the Vocabulary Size Test (VST) and the Group Embedded Figures Test (GEFT). For scoring and data analysis, all of the participants' GEFT scores were entered into the computer and the grading scale ranged from 0 to 18. It was assumed that the higher the scores, the more field independent the testees would be. However, in order to divide the sample into 3 groups known as Field Dependent (FD), Field Independent (FI), and Middle group (MID), a statistical operation was needed. In the literature, for

classifying the participants into FD/FI groups, their raw scores on GEFT were considered. In this method, the respondents who scored higher on GEFT were considered FI and those who scored lower were considered as FD. However, this classification was rejected by some researchers (Chapelle & Green, 1992; Brown, 1993; Elliott, 1995). Therefore, to establish a firmer criterion for FD/FI, a statistical operation was suggested by Case (1974) and Scardamalia (1977, as cited in Ghonsooly & Eghtesadee, 2006). The participants whose scores on GEFT are equal to or more than ¼ standard deviations above the mean are classified as FI (i.e. FI ≥ mean + ¼ SD) and those whose scores are equal to or less than ¼ standard deviations below the mean are considered as FD (i.e. FD ≤ mean – ¼ SD). The participants with a score between ¼ SD above and below the mean can be called Field intermediate (FInt) who may show characteristics of both field dependent and field independent people. Therefore, the participants who scored 7 or higher on GEFT were considered as FI, and those who scored 5 or lower were considered as FD. Field intermediate (FInt) scores were between 5 and 7. Furthermore, based on the students' scores of the vocabulary knowledge test, they were divided into three groups of high, mid, and low. At first, the median was calculated to find two midpoints and the mid scores turned out to be 55 and 39. Then, they classified in three groups. Those who got scores 55 or higher were put in the high group, those whose scores were between 39 and 55 were considered as the mid group, and the students with the scores of 39 or lower were put in the low group.

4. Result & Discussion

It was hypothesized that no relationship exists between field dependence/independence cognitive styles and total vocabulary knowledge, between field dependence/independence cognitive styles and vocabulary knowledge at different levels of vocabulary knowledge as well.

In order to see if there was a credible and meaningful relationship between field dependence/independence cognitive styles and total vocabulary knowledge, Pearson product-moment correlation coefficient was run. Table 1 presents the result of the correlational analysis.

Table1. Pearson Moment-Product Correlation Coefficient between Field Dependence/Independence Cognitive style and Total Vocabulary Knowledge

		Vocabulary knowledge
FD/FI	Pearson Correlation	.702**
	Sig. (2-tailed)	.000
	N	59

** Correlation is significant at the 0.01 level

According to Table1, there was a positive and significant correlation coefficient between total scores on vocabulary knowledge test and field dependence/independence cognitive style ($r= 0.70$, $P < 0.1$). In other words, the students' FD/I cognitive styles and their vocabulary knowledge are positively correlated. Therefore, the results rejected the first null hypothesis of the study that there was no significant relationship between field dependence/independence cognitive style and vocabulary knowledge of Iranian EFL students.

The second null hypothesis stated that there is not any significant relationship between field dependence/independence cognitive styles and vocabulary knowledge at different levels of vocabulary knowledge. To find out the differences between the performances of the three FD/I groups, they were divided into field dependent (FD), field intermediate (FInt), and field independent (FI) groups. Then, the correlational analysis was run for each. But, due to not having enough members in mid (FInt) group and not being statistically reliable, the researchers avoided illustrating it here. The results of the correlation between the participants' field dependence/independence and vocabulary scores are presented in Table 2.

Table 2. Correlation between the FD, FI Groups, and the Vocabulary Knowledge

		Vocabulary Knowledge
FD	Pearson Correlation	.559**
	Sig. (2-tailed)	.001
	N	30
FI	Pearson Correlation	.468*
	Sig. (2-tailed)	.016
	N	26

** Correlation is significant at the 0.01 level

* Correlation is significant at the 0.05 level

The result in Table 2 illustrated that there was a significant correlation coefficient between the scores on vocabulary knowledge test and the scores of field dependent individuals (r= 0.55, P < 0.1). There also existed a positive and significant correlation between field independent individuals' mean scores and vocabulary knowledge at the 0.05 level (r= 0.46, P < 0.5). Therefore, looking at this table carefully, one can find that the higher the scores of vocabulary size test, the more field dependent the testees are.

The study also dealt with the correlation coefficient of the three vocabulary groups' mean scores and field dependence/independence cognitive styles. Table 3 shows the results of the correlational analyses between FD/I and vocabulary knowledge in the high, mid, and low groups.

Table 3. Correlations between FD/I and Vocabulary Knowledge in High, Mid, Low Groups

			Vocabulary Knowledge
High Group	FD/I	Pearson Correlation	.477
		Sig. (2-tailed)	.053
		N	17
Mid Group	FD/I	Pearson Correlation	.683**
		Sig. (2-tailed)	.000
		N	24
Low Group	FD/I	Pearson Correlation	.437
		Sig. (2-tailed)	.070
		N	18

** Correlation is significant at the 0.01 level

As it can be observed in Table 3, the findings revealed that there was a positive and significant relationship between FD/I and vocabulary breadth in high group (r= 0.47). Moreover, there existed a significant correlation between vocabulary knowledge in mid group and FD/I cognitive styles (r= 0.68, P < 0.1). It means that the two variables showed a high positive correlation. But in the low group, the relationship between FD/I cognitive styles and vocabulary knowledge was not significant (r= 0.43, P < 0.05). As a whole, the total field dependence/independence cognitive style scores of the students in the high and mid correlated significantly with the total vocabulary knowledge, but it was not done for the low group. Therefore, the second research hypothesis, which stated that there was no relationship between field dependence/independence and vocabulary knowledge at different levels of vocabulary knowledge, was rejected.

On the basis of the findings of the study, the researchers discussed the results and compared the findings of the present study with those of the previous research in the literature. In case of field dependence/independence cognitive styles, this study supported what was asserted by Wyss (2002). He proposed that cognitive tunnel vision limits learners with a strong field independence tendency and prevents them from seeing the big picture. While they get stuck in unfamiliar vocabulary or ambiguous grammar structures, their field dependence counterparts will have already understood the gist of a written or spoken discourse, without, however, having caught the precise meaning of every word.

5. Conclusion

Language learners are more successful if they can recognize the type of cognitive style that is dominant in them. Though one type of cognitive style can be dominant in an individual, it does not mean that the other type does not exist in him. According to Brown (1994), in learning a foreign or second language, it may not be true to assume that learners should be either FI or FD. Some learners might be both highly FI and highly FD as contexts vary. Thus, the burden on the teacher is to understand the preferred styles of each learner in different contexts. Generally speaking, the study aimed at finding out the relationship between field independence/dependence cognitive styles and total vocabulary knowledge, in general, and vocabulary knowledge level, in particular. The findings revealed that there was a credible and meaningful correlation between field dependence/independence cognitive styles and total vocabulary knowledge. Thus, the higher the scores of vocabulary knowledge test, the more field dependent the testees are. In addition, there was a positive and significant correlation between field dependence/independence cognitive styles and vocabulary knowledge in the high and mid groups, but it was not true for the low group. In other words, there existed a positive but not significant correlation between vocabulary knowledge in the low group and field dependence/independence cognitive styles. Therefore, among other pedagogical implications, this study suggests that teachers should take learners' individual differences into consideration so that they could adopt and apply teaching methods in line with the learners' various cognitive styles.

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