

Field Dependence/Independence, Impulsivity/Reflectivity, Gender, and Cloze Test Performance of Iranian EFL Learners: A Study of Relations

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Abstract

This study aimed at exploring any significant relationships among field dependence/independence, impulsivity/reflectivity, and cloze test performance of Iranian EFL learners, and attempted to seek any significant differences between males and females regarding their field dependence/independence, impulsivity/reflectivity, and cloze test performance. Participants were 72 (47 females and 25 males) Iranian EFL university students in Shahid Bahonar University of Kerman. Group Embedded Figures Test (GEFT) by Witkin et al. (1971), Impulsivity subscale of Impulsiveness, Venturesomeness, and Empathy (IVE) scale by Eysenck and Eysenck (1978), and a cloze test consisting of two cloze passages (Oller & Perkins, 1980) were utilized to obtain the required data. To statistically analyze the data, the statistical procedures of Pearson Product Moment Correlation and Independent Samples T-test were utilized using SPSS version 21. The findings of this study indicated that field independence had a significant positive correlation with reflectivity, and field dependence also had a significant positive correlation with impulsivity. However, the findings revealed no significant relationship between cloze test performance and any of other variables. It was also found that females are more reflective and males tend to be more impulsive.

Keywords: Cognitive style, Field dependence, Field independence, Impulsivity, Reflectivity, Gender, EFL students, Cloze test

Introduction

Students have different abilities in learning a foreign or second language.

To be more specific, they use different learning strategies and learning styles. Among different factors that may affect foreign language learning, field dependence/independence as a cognitive style has attracted much attention. Some researchers have studied the relationship between field dependence/independence and different language skills. On the other hand, impulsivity/reflectivity as another cognitive style is an important factor which has to be considered. Some studies reveal interesting points about field dependent/independent and impulsive/reflective students and different routes and rates they have in mastering a foreign or second language.

Cognitive style is defined as the way a person learns materials or finds solutions to the problems (Brown, 2007). In a field dependent mode of discerning, organization of the field dominates recognition of its parts; individual items within a field merge into their background. In contrast, in a field independent mode of discerning, the individual is able to discern items as discrete from the organized field of which they are a part (Witkin, 1967). Reflection/impulsivity refers to "the tendency to reflect over alternative solutions or classifications in which several response alternatives are available simultaneously" (Kagan, Rosman, Day, Albert, & Phillips, 1964, p. 2).

The term cloze was first used by Taylor in 1953. A cloze test is a technique for measuring reading comprehension as well as overall language proficiency. In a cloze test, words are deleted from a reading passage at regular intervals, leaving blanks. The ability to fill in the blanks within a passage indicates the comprehension ability of reader (Farhady, Jafarpur, & Birjandi, 2012).

The present study investigated the relationships among field dependence/independence, impulsivity/reflectivity, and gender, considering second language test performance, especially as it relates to performance on an integrative type of measure known as cloze test.

Literature Review

Field Dependence/Independence

Field dependence and field independence were developed by Witkin to represent the contrasting differences between field dependent (global) and field independent (analytic) cognitive styles. Field dependence/independence style determines the way individuals experience their surroundings, either globally or analytically. People who are field dependent have a general view of things, failing to focus on minor details. On the contrary, field independent people are keen observers with an eye for

details, ignoring the background in which the details emerge. Field dependent individuals rely on external signals and shapes, have short memory spans, are simply distracted and prefer natural learning situations. On the contrary, field independent individuals are naturally more motivated, more investigative and self-reliant, have higher concentration and longer memory spans, rely more on internal signals and prefer academic environments in which they can achieve their goals through competition (Blakely & Tomlin, 2008).

Brown (2007) considered both styles as important, and observed that they deal with two different kinds of language learning. Field independence is related to classroom learning and includes analyzing, considering details, learning drills, exercises, and tests, while field dependence is related to nonacademic language learning mainly in communicative aspects and scarcely in the average language classroom.

Rozenchwajg and Corroyer (2005) studied the relationship between field dependence/independence and impulsivity/reflectivity. They mentioned that field dependent individuals and impulsive individuals both use a holistic, global processing mode and field independent individuals and reflective individuals both use an analytic processing mode, therefore it would be difficult to differentiate the two cognitive styles.

Campbell and Douglas (1972) investigated field dependence/independence and impulsivity/reflectivity among children. They reported that more reflective children are field independent, and impulsive children are field dependent. In one study of males with serious behavioral and learning disorders conducted by Keogh and Donlon (1972), the results came out that males with learning disorders were field dependent, and males with extreme learning disorders were both field dependent and impulsive.

Massari (1975) reported that reflective children are more field independent. In another study, Feij (1976) found that field independent students were reflective. However, he pointed out that field dependence and impulsivity were unrelated measures. He also reported a negative correlation between impulsivity and statistics grades, and concluded that cognitive styles have probably relevance in predicting academic evolution.

Loo and Townsend (1977) found that field independence was associated with low impulsivity and slow decision making which implies reflectivity. Gargiulo (1982) conducted a research among children, measuring their levels of field dependency/independency and impulsivity/reflectivity. He concluded that mentally retarded children were significantly field dependent and impulsive. Gargiulo (1982) also found a significant positive relationship between field independency and reflectivity. In another study, Rozenchwajg and Corroyer (2005) found that fast-accurate individuals achieved the highest scores on the GEFT, and reflective

individuals (slow-accurate) achieved higher scores than impulsive learners (fast-inaccurate).

However, some other researchers reported differently. Messer (1976) reported a moderate non-significant relationship between these learning styles, and pointed out that this might be due to the similarity of the conducted tests. Jamieson (1992) reported some degree of overlap in these two cognitive styles, but no strong or significant relationship between field independence and impulsivity/reflectivity was found. Lotwick, Simon, and Ward (1981) investigated the relationship between polytechnic students' gender and their cognitive styles. They reported a significant relationship between field dependence/independence and gender, indicating greater field dependence among females than males. In another study similar results were obtained by Bosacki, Innerd, and Towson (1997). However, Morf, and Howitt (1970) and Khan (1987) discovered no gender differences among males and females regarding their field dependency/ independency. Rezai and Noori (2013) mentioned that gender had an effect, not on field independency, but just on field dependency indicating that males were more field dependent than females. In a recent study, Onyekuru (2015) studied secondary school students in Nigeria. He found that a higher proportion of males were field independent while a higher proportion of the females were field dependent.

Most researchers had found that a tendency towards field independency helped students with conventional classroom learning. Hansen and Stansfield (1981) indicated that field independency played a major role in second language acquisition, especially in linguistic competence and integrative competence and hardly perceptible in the acquisition of communicative competence. In the same study they found a positive relationship between field independency and satisfactory scores on cloze tests.

According to Jamieson (1992) who found a positive relationship between field independence and language proficiency, field independence was positively correlated with success on the Test of English as a Foreign Language (TOEFL). However, field independency could not anticipate a student's success throughout the semester.

Blanton (2004) conducted different models of reading comprehension test to compare the means of scores with students' cognitive styles. She found that the format of the test items had a significant effect on field-dependent students' performance: The students performed significantly better in the un-timed multiple-choice test than the timed one. Field independent students performed better than field dependent students in both timed and un-timed multiple choice tests. She also concluded that cognitive style had

more effect than ethnicity or gender on students' performance on a standardized test of reading comprehension.

Maghsudi (2007) also examined the relationship between field dependence/independence and English achievement test performance. The results revealed that field independent learners excelled in classroom learning, which involved analysis, attention to details, and mastering of exercises, drills and other focused activities. Rezai and Noori (2013) reported that less proficient students were more field dependent. They also concluded that as the students' level of field dependency decreased as they became more proficient, but field independency did not seem to be under the influence of proficiency level.

However, few studies reported different results. Wells (2000) found no significant difference between the two cognitive styles regarding course achievement among learners who had enrolled in a graduate online education course. In a similar study, Shih and Gamon (2001) studied field dependence and field independence among students who had registered for an online biology or zoology course. They reported no significant difference between field dependent and field independent students concerning their course achievement. Soozandehfar and Souzandehfar (2011) reported a non-significant relationship between the GEFT scores and speaking performance.

Impulsivity/Reflectivity

Kagan et al. (1964) were the first researchers to propose the term impulsivity/reflectivity, which they measured using the Matching Familiar Figures Test (MFFT). Reflectivity and also the ability to distinguish relevant from irrelevant facets of a prompt contribute mainly to the analysis of a concept. According to Brown (2007), impulsivity is defined as the inclination to resolve problems hastily, making chance decisions or high-risk decisions. Reflectivity or reflective style is the tendency to spend a comparably long time for making a decision or finding an answer to a problem, sometimes to consider all possibilities before making a decision.

Lewis, Rausch, Goldberg, and Dodd (1968) concluded that boys were more impulsive than girls, and that their errors significantly correlated with their response speed. In a similar study by Lewis (1971) the same results were obtained. However, Messer (1976) found no gender difference on the basis of impulsivity/reflectivity.

Jamieson (1992) reported that impulsivity and reflectivity were neither positively nor negatively related to language proficiency. Considering reflective students slow and accurate and impulsive ones fast and inaccurate, Jamieson adds that these dimensions might cancel each other on a timed test; reflective students answer fewer questions but get more right out of them, while impulsive ones answer more questions but also make

more errors. She concluded that fast accurate learners performed better in language proficiency tests. Bazargani and Noroozi (2013) found that reflective participants performed better than the impulsive ones on the multiple choice items.

Cloze Test Performance

As it was mentioned earlier, most researchers concluded that a tendency towards field independency helped students with conventional classroom learning. Chapelle and Roberts (1986) found a significant correlation between field independence and cloze test performance in ESL students. In a similar study, Hansen and Stansfield (1981) found a positive relationship between field independence and scores on L2 tests, particularly in the case of the cloze tests.

In the case of gender differences, according to Hansen and Stansfield (1981) a positive and significant correlation was found between students' gender and their language proficiency; females consistently performed at a higher level than males. In another study by Ryan and Bachman (1992), no significant relationship was found between gender and performance on TOEFL and the First Certificate of English (FCE).

Blanton (2004) conducted untimed and timed multiple choice items. Result analysis indicated that there were no significant mean differences between the scores of females and males on all of the formats of the reading tests. She found that cognitive style had more impact on students' performance on reading comprehension than did ethnicity or gender. Bazargani and Noroozi (2013) investigated gender and performance on multiple choice items. They found that learners' gender did not affect their performance on multiple-choice tests.

Research Questions

The present study investigated the relationships among the cognitive styles of field dependence/independence and impulsivity/reflectivity, gender, and cloze test performance of EFL university students. Therefore, the following research questions were formed:

1. Is there a significant relationship between field dependence/independence and cloze test performance?
2. Is there a significant relationship between impulsivity/reflectivity and cloze test performance?
3. Is there a significant relationship between field dependence/independence and impulsivity/reflectivity?
4. Are there any differences between males and females regarding their scores on field dependence/independence, impulsivity/reflectivity, and cloze test?

Methodology

Participants

The participants in this study were 72 undergraduate EFL students randomly chosen among EFL students in Shahid Bahonar University of Kerman. 47 female students and 25 male students were studied in this case; the distribution percentage of the participants' gender was 65.3 and 34.7 for females and males, respectively.

Instruments

The following three instruments were used for data collection in this study.

1. The Group Embedded Figures Test (Witkin, et.al., 1971)
2. The Impulsiveness subscale of Eysenck's Impulsiveness, Venturesomeness, and Empathy (IVE) Scale (Eysenck & Eysenck, 1978)
3. A cloze Test (Oller & Perkins, 1980)

Group Embedded Figures Test (GEFT)

The GEFT was developed by Witkin, Oltman, Raskin, and Karp (1971) and it is still the most widely accepted test of measurement for the cognitive styles of field independence and field dependence. Some recent studies which used the GEFT are the studies of Rozenchwajg and Corroyer (2005), Maghsudi (2007), Soozandefarand Souzandehfar (2011), and Onyekuru (2015). The GEFT is a group administered test that requires the subjects to identify a simple geometric shape within a complex figure. It includes three sections of increasingly complex geometric figures. The first section, which is for practice and is not scored, contains seven figures. The second and third sections each contain nine figures. Students were asked to trace specified simple figures that were embedded in complex designs within a time limit of five minutes for each section. The total test score was the number of simple forms correctly traced in these second and third sections, ranging from 0 to 18. The higher a student's score is, the more field independent she/he would be. Those whose scores on GEFT are more than mean (10 and more) are classified as field independent and those whose scores are equal to or less than mean (9 and less) are field dependent (Blanton, 2004).

The Impulsiveness subscale of Eysenck's Impulsiveness, Venturesomeness, and Empathy (IVE) Scale

The Impulsiveness subscale of Eysenck's Impulsiveness, Venturesomeness, and Empathy (IVE) Scale was used to measure the participant's level of impulsivity (Eysenck & Eysenck, 1978). This questionnaire has 19 items in which the respondents were required to

indicate with either a “yes” or “no” response, whether they agreed or disagreed with the statement. Items 5, 16, and 17 were reversely scored. Scores range can vary from 0 to 19 with higher scores demonstrating greater levels of impulsivity. Subjects with score equal to 9 and less are considered reflective and those who scored 10 and more are impulsive (refer to its manual).

Cloze test

Finally, to test the performance of the participants on cloze test, two cloze passages (Oller & Perkins, 1980) were administered to them. One passage contained fifteen and the other had ten items. Participants had the total time of twenty five minutes for the two cloze tests. Participants were asked to choose the exact word or words which were deleted; this is called the exact word method.

Data Collection Procedures

During the data collection phase, one of the researchers was present and administered all tests under standard conditions; the GEFT and the cloze tests had time limits and the participants were not allowed to talk during the test administration. The three questionnaires were attached together and distributed among the participants as one set, so that each participant's score could be matched later on. Participants were reassured that the given information would remain confidential and be employed only for research purposes. The data collected through the GEFT, the IVE subscale, and the cloze tests were imported into SPSS software to determine whether any significant relationships existed among the variables.

Results

Tables 1 to 5 show descriptive statistics of this study. Table 1 includes the number of participants, range, min, max, mean, standard deviation, and variance of the gathered data.

Table 1. Descriptive Statistics of the Variables

	N	Range	Min	Max	Mean	SD	Variance
Field dependence/independence	72	16.00	2.00	18.00	9.37	4.57	20.97
Impulsivity/Reflectivity	72	13.00	2.00	15.00	7.69	3.33	11.11
Cloze Test	72	22.00	2.00	24.00	13.29	4.48	20.12
Valid N (list wise)	72						

Table 2 shows the number of male and female participants.

Table 2. Descriptive Statistics-Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	25	34.7	34.7	34.7
	Female	47	65.3	65.3	100.0
	Total	72	100.0	100.0	

Table 3 displays the number of participants belonging to field dependent and field independent groups.

Table 3. Descriptive Statistics-Field Dependency Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Field Dependent	35	48.6	48.6	48.6
	Field Independent	37	51.4	51.4	100.0
	Total	72	100.0	100.0	

Table 4 indicates the number of participants belonging to impulsive and reflective groups.

Table 4. Descriptive Statistics-Impulsive/Reflective

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Reflective	47	65.3	65.3	65.3
	Impulsive	25	34.7	34.7	100.0
	Total	72	100.0	100.0	

Table 5 shows that, out of 47 reflective participants, 15 belonged to the field dependent group and the remaining 32 belonged with the field independent group. Moreover, out of 25 impulsive participants, 20 were field dependent and 5 were field independent.

Table 5. Field Dependency Level * Impulsive/Reflective Cross tabulation

		Impulsive/Reflective		Total
		Reflective	Impulsive	
Field Dependency Level	Field Dependent	15	20	35
	Field Independent	32	5	37
Total		47	25	72

Statistical Analysis of the Research Questions

To answer the first question of this study and find out whether there exists a significant relationship between field dependence/independence and cloze test performance, a Pearson Product Moment Correlation was launched. As indicated in Table 6, since Sig. (2-tailed) is not less than the

alpha level of .05, it is concluded that there is not a significant relationship between EFL learners’ field dependence/independence and their scores on cloze test.

Table 6. Correlations

		Field Dependence/Independence	Cloze Test
Field Dependence/Independence	Pearson Correlation	1	.095
	Sig. (2-tailed)		.425
	N	72	72
Cloze Test	Pearson Correlation	.095	1
	Sig. (2-tailed)	.425	
	N	72	72

To find out whether there exists a significant relationship between impulsivity/reflectivity and cloze test performance, the second research question, a Pearson Product Moment Correlation analysis was conducted. As indicated in Table 7, since *p*-value, or Sig. (2-tailed), was not less than the alpha level of .05, it was concluded that there is not a significant relationship between EFL learners’ impulsivity/reflectivity and their cloze test performance.

Table 7. Correlations

		Impulsivity/Reflectivity	Cloze Test
Impulsivity/Reflectivity	Pearson Correlation	1	-.213
	Sig. (2-tailed)		.072
	N	72	72
Cloze Test	Pearson Correlation	-.213	1
	Sig. (2-tailed)	.072	
	N	72	72

In the third research question of this research, the relationship between field dependence/independence and impulsivity/reflectivity was questioned. To obtain the answer a Pearson Correlation was utilized, the result of which is presented in Table 8.

Table 8. Correlations

		Field Dependence/Independence	Impulsivity/Reflectivity
Field Dependence/Independence	Pearson Correlation	1	-.309**
	Sig. (2-tailed)		.012
	N	72	72
Impulsivity/Reflectivity	Pearson Correlation	-.309**	1
	Sig. (2-tailed)	.012	
	N	72	72

Since p -value (.012) is less than .05, there is a negative and moderately high significant relationship between Field Dependence/Independence and Impulsivity/Reflectivity. Since these constructs are polar, considering the information presented in table 5, it can be asserted that field independent participants were more reflective (32 out of 47), while the majority of field dependents had impulsive tendencies (20 out of 25).

The fourth research question aimed at finding differences between males and females regarding their scores on field dependence/independence, impulsivity/reflectivity, and cloze test. To answer this general question, three independent samples t -tests were utilized.

Table 9. T -Test for the three variables in Two Groups of males and females

Gender	Male			Female			t	Df	Sig.
	N	Mean	SD	N	Mean	SD			
Field Dependence/Independence	25	9.12	4.43	47	9.51	4.69	-.34	70	.73
Impulsivity/Reflectivity	25	8.88	3.19	47	7.06	3.26	2.26	70	.02**
Cloze Test	25	12.48	4.16	47	13.72	4.63	-1.12	70	.26

According to the results presented in Table 9, there are not any significant differences between male and female EFL learners regarding field dependence/independence and cloze test scores. The reason is that none of the mentioned variables (0.73 and 0.26) had p -values lower than .05.

Nevertheless, when it comes to impulsivity/reflectivity, since $p=.02$ is smaller than $\alpha = 0.05$, there is a significant difference between males and females regarding their impulsivity/reflectivity (Table 9). Comparing the means obtained from males ($M = 8.88$) and female participants ($M = 7.06$) and considering the fact that higher scores indicate impulsiveness, it can be concluded that male students in this study turned out to be more impulsive than female students.

Discussion

Considering the relationship between field dependence/independence and impulsivity/reflectivity, it was found that field independent students were more reflective and field dependent students were more impulsive. This is in line with findings of Campbell and Douglas (1972) and Rozencwajg and Corroyer (2005). Findings also confirmed the studies of (Feij, 1976; Loo & Townsend 1977; Massari, 1975), indicating a significant positive relationship between field independent learners and their reflectiveness. Results also confirm Keogh and Donlon (1972) and Gargiulo (1982) findings that indicate significant positive correlation between field dependency and impulsivity and also between field independency and reflectivity. However findings of this study were in conflict with Jamieson's (1992).

In this study, field dependence/independence did not seem to be affected by gender. This confirms findings of Morf and Howitt (1970) and Khan (1987), and is in contrast with findings of Lotwick et. al. (1981) and Bosacki et al. (1997).

The statistically insignificant relationship between learners' cloze test performance and other variables revealed that at least for this sample of Iranian EFL students the cognitive styles and gender may not be a factor in interpreting the learners' cloze test performance. However, a positive relationship was found between field independency and cloze test performance, but this relationship was not significant at all.

Therefore, the findings of this study concerning the relationship between field dependence/independence and cloze test performance are in contrast with the studies of Blanton (2004) who investigated the relationship between field dependence/independence and multiple choice items, and Hansen and Stansfield (2006) who studied the relationship between the two cognitive styles and linguistic and integrative competence. However the findings of this study are in line with the findings of Wells (2000), Shih and Gamon (2001) who studied online course achievements and the two cognitive styles, and Soozandehfar and Souzandehfar (2011) who studied the relationship between field dependence/independence and speaking performance.

This study found no relationship between impulsivity/reflectivity and cloze test performance. However, like field dependence/independence, a non-significant positive relationship was found. The finding of this study related to impulsivity/reflectivity and cloze test performance is in line with findings of Jamieson (1992) who reported that impulsivity and reflectivity were neither positively nor negatively related to language proficiency, but it is in contrast with findings of Bazargani and Noroozi (2013).

Considering gender differences affecting other variables, the only variable that seemed to be affected by gender was impulsivity/reflectivity. It was found that females were more reflective than males who were more impulsive. This confirms findings of Lewis, Rausch, Goldberg, and Dodd (1968), and Lewis (1971). However, it is in contrast with Messer's (1976) findings.

Conclusion

According to the findings of this study, the cognitive styles, field dependence/independence and impulsivity/ reflectivity, were one of the two pairs of variables which had a significant relationship with each other. According to Huteau (1987, as cited in Rozenchwajg & Corroyer, 2005) the pair of variables have three components in common: attention allocation behavior, a general intelligence factor, and motivational processes. The other

significantly related pair of variables was impulsivity/reflectivity and gender. This might be because males tend to be more risk taker than females.

Considering the relationship between field dependence/independence and students' cloze test performance, most of the studies found that field independence has a positive influence on different aspects of learning and achievement. Although in this study this relationship was not found to be significant, a positive relationship existed.

The relationship between impulsivity/reflectivity and students' cloze test performance, although positive, was also found to be insignificant. Considering the positive correlation, the findings of this study can be useful for English teachers involved in language testing. The teachers' judgment about students' scores on different types of tests including cloze test or multiple choice items should not be merely attributed to their language ability, but factors such as the reflectivity/ impulsivity and field dependence/independence cognitive styles of test takers should also be taken into consideration.

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