

## General and Specific Cognitive/Metacognitive Reading Strategies Used by Field-Dependent/Independent Iranian EFL Learners

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### Abstract

The current study attempted to investigate if there was a significant difference between field-dependent/independent Iranian EFL learners in terms of the use of cognitive and metacognitive reading strategies. The difference between these two groups was studied with reference to both their general reading strategy use and the strategies they used in reading a particular text they were invited to read. To this end, 62 EFL students (27 males and 35 females) who were assumed to be skilled in L2 reading were chosen from Urmia University. As a first step, Group Embedded Figures Test was employed in order to assign the participants into either field-dependent or field-independent groups. Next, they were requested to answer a self-reported reading strategies questionnaire to determine their general reading strategies utilized across various contexts. After one week's interval, a reading text was given to the participants to read first and then to answer another adapted reading strategies questionnaire to identify context-specific strategies they actually used in the reading task that they had just completed. The frequency of general/specific cognitive and metacognitive reading strategies employed by male and female field-dependent/independent students were calculated and compared through Chi-Square statistical test using SPSS software. The results indicated that there was a significant difference between field-dependent and field-independent participants in terms of using general metacognitive and specific cognitive reading strategies. However, there was no significant difference between Field-dependent/independent learners regarding the use of general cognitive as well as specific metacognitive reading strategies.

**Keywords:** field-dependence, field-independence, general reading strategies, specific reading strategies, cognitive reading strategies, metacognitive reading strategies,

### Introduction

Reading has been considered as one of the most important skills that second/foreign language learners should acquire. This skill is specially related to knowledge, maturation of thoughts, innovation, advancement, and modernization (Hamdan, Ghafar, Sihes, & Binti-Atan, 2010). Brumfit (1980) defines reading as an extremely complex activity that entails a combination of perceptual, linguistic, and cognitive abilities. According to Goodman (1967), reading is a

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“psycholinguistic process” that starts with a linguistic surface representation encoded by a writer and ends with meaning constructed by the reader (p. 127).

Numerous investigations on learning English as a second/foreign language (ESL/EFL) have revealed that strategic-based instruction can enhance language acquisition in general and second language reading in particular. According to Oxford (1990), language learning strategies are “actions taken by learners to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to other situations” (p. 8). In other words, learning strategies are the specific attacks that learners employ when faced with a problem (Brown, 1994). Learning strategies have been classified by different researchers into slightly different categories. O’Malley and Chamot (1990), for example, have identified three main categories of language learning strategies including cognitive, metacognitive, and social/affective strategies. According to O’Malley and Chamot (year not necessary here), cognitive strategies are “more directly related to individual learning tasks and entail direct manipulation or transformation of the learning material” (p. 8). The cognitive strategies identified by O’Malley and Chamot are resourcing, repetition, grouping, deduction, imagery, key word method, elaboration, and transfer.

They define metacognitive learning strategies as “higher-order executive skills that may entail planning, monitoring, and evaluating the success of a learning activity” (p. 44). The metacognitive learning strategies identified by O’Malley and Chamot (1990) are planning, directed attention, functional planning, selective attention, self-management, monitoring, and self-evaluation. Finally, according to O’Malley and Chamot (year not necessary here), social/affective learning strategies (questioning for clarification, cooperation, and self-talk) involve either interaction with other persons or having control over one’s own feelings.

The focus of the present study is on cognitive and metacognitive reading strategies based on O’Malley and Chamot’s (1990) learning strategy classification. Generally speaking, there is a widely accepted classification of reading strategies: cognitive and metacognitive strategies. This distinction is based on the general learning strategies because most of the studies on reading strategies are part of the larger framework of learning strategies (O’Malley, Chamot, Stewener-Mazanara, Russo, & Kupper, 1985).

### **Cognitive and metacognitive reading strategies**

Several definitions of reading strategies are available in the literature on reading. Garner (1987), for instance, defines reading strategies as deliberate and planned activities employed by active readers many times to remedy comprehension failure. According to Block (1986), reading strategies are used by the readers deliberately and consciously in order to help them decide what clues they use, and what actions they take when they have difficulty in understanding a text. Anderson (2003) argues that reading involves the interaction of four things: (1) the reader; (2) the text; (3) the fluent reading or the ability to read at an appropriate rate with adequate comprehension; and (4) the strategic reading or the ability of the reader to use a variety of reading strategies in order to accomplish the reading purposes.

Generally speaking, reading strategies have been divided into two main categories: cognitive and metacognitive reading strategies. Cognitive strategies are directly related to individual learning tasks and involve direct manipulation or transformation of learning materials (O’Malley et al., 1985). In more specific terms, cognitive reading strategies include note-taking, summarizing, paraphrasing, analyzing, predicting, and paying attention to formal

aspects of language (Singhal, 2001). Cognitive reading strategies consist of two categories: Bottom-up and Top-down strategies. In Bottom-up model, the reader perceives every letter, organizes the perceived letters into words, and then, organizes the words into phrases, clauses, and sentences in order to understand the texts (Brown, 2000).

However, Top-down processing views the notion of identification of letters to form words and the derivation of meaning from these words as inefficient reading (Ozek&Civelek, 2006). In Top-down or conceptually driven processing, the reader draws on his/her own intelligence and experience to understand a text. In contrast to Bottom-up model, it involves identifying main ideas, using background knowledge, making predictions and hypotheses about the text content, and confirming or rejecting these predictions (Ozek&Civelek, 2006). According to interactive approach to reading comprehension, it is essential for learners to master the combination of Bottom-up and Top-down strategies in order to achieve higher degrees of reading comprehension (Brown, 2000).

Metacognitive reading strategies include three main categories: planning, monitoring, and evaluating (Israel, 2007; Pressley & Afflerbach, 1995). Planning or pre-reading strategies are used before reading to activate learners' background knowledge (Almasi, 2003; Israel, 2007). For example, readers preview a title, picture, illustration, and heading or subheading to grasp the overview of the text (Almasi, 2003). Readers may also check whether their reading material has certain structure such as cause and effect, question and answer, and comparison and contrast. Furthermore, setting the purpose for reading can be categorized as a planning strategy (Pressley, 2002).

Monitoring or while-reading strategies occur during reading. Readers may attempt to check their comprehension of vocabulary and main content of the text. They also may focus on key words such as *asbut*, *however*, *on the other hand*, *in addition*, *also*, and *in conclusion* (Israel, 2007; Pressley, 2002). Additionally, they may attempt to determine which part of the passage should be emphasized or ignored based on the purpose of the reading task (Hudson, 2007). Evaluating or post-reading strategies are employed after reading; these strategies deal with the judgment of one's cognitive abilities to perform a reading task and to achieve desired goals (Iwai, 2011).

Brown (1980) identifies significant examples of metacognitive strategies involved in reading comprehension: (a) clarifying the purpose of reading; (b) identifying important aspects of the message; (c) monitoring ongoing activities to determine whether comprehension was occurring; (d) engaging self-questioning to determine whether goals were being achieved; and (e) taking corrective action when failure in comprehension was detected.

### **General and specific reading strategies**

Specific reading tasks and contexts may require L2 readers to employ various reading strategies. Phakiti (2006) believes that there might be a distinction between general reading strategies that are used by L2 readers across a variety of reading tasks and specific reading strategies that are actually used in a specific context while the readers are engaged in a particular reading task. He indicates that although general context-free strategy use is likely to be related to context-specific use of strategy, both are different from each other in terms of cognitive processing. The fact that individuals know something about their strategy use in

general does not mean that this knowledge is activated in a given cognitive process at a given time (Kintsch, 1998).

There are various research methods and tasks to examine EFL/ESL learners' strategy type and frequency of strategy use: think-aloud verbal reports, interviews, questionnaires, observations, and written recalls (Bernhardt, 1991). According to Green and Oxford (1995), using a self-report learning strategies questionnaire without engaging the students in particular L2 task provides a general picture of strategy use and not a specific one. In fact, using a specific reading text may help all the participants focus on one task, be aware of their own context-specific strategy use, and answer the questionnaire more consciously.

There is a variety of individual variables that may have a great influence on second language learning process in general and on second language reading strategy use in particular. Researchers (e.g., Chappelle & Roberts, 1986; O'Malley & Chamot, 1990; Oxford, 1990; Reid, 1987; Wenden & Rubin, 1987) have attempted to identify influential learner variables that may enhance or hinder the process of second language acquisition. These variables involve age, gender, level of language proficiency, attitude, motivation, learning styles, and cognitive styles.

### **Field-dependence/independence cognitive style**

Keefe (1979) defines cognitive styles as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. According to Ellis (1990), cognitive style is "a term used to describe the manner in which people receive, conceptualize, organize, and recall information" (p. 114). There are many different cognitive styles and most of them have an influence on language learning, one of the most important of which is field-dependence and field-independence (FD/FI) cognitive style that has attracted researchers' attention (Chappelle, 1995). This cognitive style can be measured using a psychological test called Group Embedded Figures Test (GEFT) developed by Witkin, Oltman, Raskin, and Karp (1971). The notion of field-dependence/independence refers to the extent to which a person can perceptually separate an object from the surrounding field rather than treating it as embedded within the field (Gass & Selinker, 1994). In other words, field-dependence/independence refers to the consistent way of processing the environment, whether analytically and globally, within the field (Messick, 1989). Brown (2000) points out that the field may be perceptual or it may be more abstract such as a set of thoughts, ideas, or feelings.

Field-dependent learners depend on external clues from their environment. They are likely to have short attention span; they are easily distracted and prefer casual learning environments. Additionally, field-dependents are more socially oriented, less achievement-oriented, and less competitive than field-independent individuals (Sims & Sims, 2006). On the other hand, field-independents are characterized by their analytical approach and abilities to problem solving. These learners tend to be more independent, more intrinsically motivated, and task-oriented in their learning process than their field-dependent counterparts. Moreover, field-independents tend to have a longer attention span and they depend more on internal than external clues, they prefer formal learning situations; they are achievement-oriented and more competitive than field-dependents (Witkin & Goodenough, 1981).

## Review of related literature

Among the cognitive styles identified so far, the field-dependence/independence dimension has been the most extensively studied and has had the widest application to educational issues and specifically to second language learning (Salmani-Nodoushan, 2007).

Brown (1993) proposes two conflicting hypotheses regarding the link between field-dependence and field-independence (FD/FI) cognitive style and L2 learning. In his first hypothesis, he states that “field-independence is closely related to classroom learning that involves analysis, attention to details, mastering of exercises, drills, and other focused activities” (p. 106). The second conflicting hypothesis suggested by Brown (1993) is that primarily field-dependent persons are likely to be successful in learning the communicative aspects of second language. These paradoxical hypotheses lead Brown (1993) to conclude that “clearly both styles are important and language learning in the ‘field’ beyond the constraint of the classroom, requires a field-dependent style and the classroom types of learning requires conversely, a field-independent style” (pp. 107-8). According to Brown (1993), field-dependence and field-independence are not in complementary distribution and students are able to exercise both field-dependence and field-independence in different situations.

In a study conducted by Davy (1990), 56 field-dependent and 55 field-independent students in grades 6-8 were assessed on reading comprehension tasks which were different in terms of memory load and cognitive restructuring requirements. The results indicated that field-independent learners outperformed field-dependent ones on tasks with high memory demands and restructuring requirements. Alptekin and Atakan (1990) examined the relationship between second language achievement and field-dependence/independence among 11- and 12-year-old Turkish EFL students. The results showed that field-independent learners performed better on discrete-point cloze tests. Jamieson (1992) investigated the characteristics of successful and unsuccessful second language learners with respect to their cognitive styles. The study provided evidence for the positive relationship between field-independence and proficiency in ESL. Littlemore (2001) conducted a study to investigate the use of communication strategies by second language learners. His study revealed that holistic or field-dependent learners used more communication strategies than analytic ones. However, analytic or field-independent learners employed strategies that involve focusing on individual features of the target item.

Nilforoushan and Afghari (2007) explored the relationship between Iranian EFL learners’ FD/FI cognitive style and second language writing performance. The data of the study was collected from eighty nine sophomore students (14 male and 75 female) who had enrolled in essay composition courses. They reported that field-independents outperformed field-dependents in narrative writing. However no significant difference was found between these two groups regarding argumentative writing. Souzandehfar and Souzandehfar (2011) investigated the relationship between the field-dependence/independence cognitive style and speaking performance of 53 (10 male and 43 female) Iranian EFL learners. They also examined the role of gender on Iranian EFL learners’ speaking performance. The results revealed that there was no significant relationship between FD/FI cognitive style and the participants’ speaking performance. Furthermore, the findings showed that gender did not have any significant role in speaking performance.

Kheirzadeh and Kassaian (2011) conducted an investigation to determine if field-dependence/independence was related to Iranian EFL learners’ performance on listening

comprehension sub-skills; namely, listening for main ideas, listening for details, and making inferences. They reported that there was no significant difference in the performance of FD and FI students on general listening comprehension; furthermore, no significant difference was observed in the performance of the two groups considering the listening comprehension sub-skills.

Salmani-Nodoushan (2007) attempted to investigate the probable effects of FD/FI cognitive style on EFL learners' scores on task-based reading comprehension tests. Among the participants of his study, 582 students were field-independent and 707 students were field-dependent. The results showed that FD/FI cognitive style imposed the strongest effects on test performance when test-takers were the most proficient. Also, he found that holistic tasks correlated positively with FD style and negatively with FI styles; in contrast, analytic tasks correlated positively with FI style and negatively with FD style. Behnam and Fathi (2009) investigated the relationship between reading performance and field-dependence/independence cognitive style of Iranian EFL learners. The participants of their study were 60 (30 males and 30 females) EFL learners at intermediate level of language proficiency. The results indicated that field-independent participants were more successful than field-dependent ones on reading comprehension tests. Moreover, females outperformed their male counterparts on both GEFT and the reading comprehension tests.

Ghonsouly and Eghtesadee (2006) investigated the role of cognitive style of field-dependence/independence (FD/FI) in using cognitive and metacognitive reading strategies in novice and skilled readers. The results of the study showed that the difference between frequency of metacognitive and cognitive strategies used by novice FD and novice FI readers was not significant. The authors discovered that cognitive style of FD/FI did not influence the use of metacognitive and cognitive reading strategies in novice readers. However, the difference between frequency of metacognitive and cognitive strategies used by skilled FD and skilled FI readers was significant; an observation which may mean that cognitive style of field-dependence/independence influences the use of reading strategies in skilled readers. They also found that the difference between metacognitive and cognitive strategies used by novice field-dependent and skilled field-dependent subjects was not meaningful, leading them to conclude that level of proficiency does not influence the use of metacognitive reading strategies in field-dependent subjects. In contrast, the difference between the cognitive and metacognitive reading strategies used by novice field-independent and skilled field-independent readers was significant; a finding which may mean that level of proficiency influences the use of metacognitive and cognitive reading strategies when readers are field-independent.

The relationship between FD/FI cognitive style and cognitive and metacognitive strategies employed in specific reading text by Iranian EFL learners has not however received due attention, a gap in the field which this study is hoped to partially bridge.

Accordingly, the present study attempted to find answers to the following questions:

- 1) Is there any significant difference between FD/FI Iranian EFL learners with reference to the use of general cognitive reading strategies?
- 2) Is there any significant difference between FD/FI Iranian EFL learners with reference to the use of general metacognitive reading strategies?

- 3) Is there any significant difference between FD/FI Iranian EFL learners in terms of the use of specific cognitive reading strategies?
- 4) Is there any significant difference between FD/FI Iranian EFL learners in terms of the use of specific metacognitive reading strategies?

The above research questions were answered in the form of null-hypotheses and tested at the probability level of 0.05.

## **Method**

### **Design of the study**

This study is of a descriptive (survey-based) nature and the participants were chosen on the basis of a non-probability intact class sampling design. The independent variable is field-dependence/independence cognitive style of the participants. The dependent variables are specific and general (cognitive and metacognitive) reading strategies. It should be mentioned that language proficiency of the participants was not included as a variable (either control or moderator) in the present study since it is not the variable of interest for the purpose of the current study and the use of intact groups design necessitated participants of varying proficiency levels.

### **Participants**

The data of this study was elicited from 62 participants (27 males and 35 females) who were studying English in the fourth or sixth semester of their courses of study (English Language and Literature) at Urmia University. They were supposed to be skilled in English reading, with an upper-intermediate proficiency roughly speaking, since they had passed university entrance examination and had studied English at university for at least three semesters. Moreover, they had passed three reading comprehension courses and were more or less familiar with reading strategies. The participants (males and females) were chosen through a non-probability convenience sampling procedure.

### **Instruments**

The instruments used for data elicitation purpose were as follows:

- 1) Group Embedded Figures Test;
- 2) Reading text;
- 3) Reading strategies questionnaire(s).

### *Group Embedded Figures Test (GEFT)*

To measure the degree of the participants' field-dependence/independence, Group Embedded Figures Test was applied. GEFT is a psychological test used internationally which was developed by Witkin, et al. (1971). It is used to measure the sensitivity of a particular individual toward his/her surroundings. Group Embedded Figures Test is a firmly established and widely used test in the field of second language acquisition. It has been reported to enjoy a Spearman-Brown reliability coefficient of 0.82 for both males and females (Witkin, et al., 1971). The GEFT instrument contains three sections with 25 complex figures from which participants are asked to identify and trace specified simple forms. The simple forms are present in the complex figures in the same size, the same proportions, and facing in the same direction as when they appear alone (Salmani-Nodoushan, 2007). The more figures they were able to identify, the more field-independent they were supposed to be.

### *Reading text*

A reading text of general interest was utilized in this study. It was selected from *IELTS Testbuilder* written by McCarter and Ash (2003). The title of the text was "*Day-dreaming: an art or a waste of time?*" and it was about the advantages of day-dreaming and its role in enhancing creativity. The selected reading text was judged to be at an appropriate level of difficulty based on the readability of four reading passages taken from the learners' textbooks, using Fog index of readability. To this end, four samples of reading texts were selected from the participants' textbooks. Two passages were selected from 4<sup>th</sup> semester participants' textbooks; namely, *America writes: Learning English through American short stories* by Kay and Gelshenen (1998), and *Oral Reproduction of Stories (2)* by Nowruzi and Birjandi (2007). The other passages were selected from 6<sup>th</sup> semester participants' textbooks: *Literary Criticism: An introduction to theory and practice* by Bressler (2002), and *Literary prose: A selection* written by Honarvar (2011). Using the Fog index, the readability levels of the passages were computed to be 20, 11, 16, and 14 respectively. The average readability was 15.25 and the standard deviation approximately 3. According to Farhadi, Jafarpur, and Birjandi (2009), the selected reading text should be within the range of one standard deviation below and above the average readability of the four passages. The Fog index of readability of the text selected for the purpose of this study was calculated to be 17. It means that the passage was at an appropriate level of difficulty because it was within the range of  $15.25 \pm 3$ .

### *Reading strategies questionnaire(s)*

The items of the questionnaire(s) employed in this study were taken from three valid and reliable reading strategies questionnaires developed and used by a number of researchers:

- 1) Reading strategies questionnaire designed by Li and Wang (2010) based upon O'Malley and Chamot's (1990) classification of language learning strategies.
- 2) Reading strategies questionnaire developed by Shang (2010) based on Oxford's (1990a) Strategy Inventory for Language Learning (SILL, ESL/EFL version, 7.0), and Carrell's (1989) metacognitive questionnaire.

3) Metacognitive Awareness of Reading Strategies Inventory (MARSI) developed and validated by Mokhtari (2001).

All the 63 items of the questionnaire used for measuring general reading strategies (out of which 42 items were cognitive and 21 items were metacognitive) were taken from above-mentioned questionnaires and were adapted for the purpose of the study. This instrument measured two broad categories of reading strategies: cognitive and metacognitive strategies. In order to make sure of the internal consistency of the instrument, it was piloted with 20 students who were similar, in language proficiency, to the participants taking part in the study. The questionnaire enjoyed a high level of internal consistency; Cronbach's alpha was 0.93 for the whole questionnaire; and 0.90 and 0.89 for cognitive and metacognitive subscales respectively.

This general reading strategies questionnaire was slightly modified to a 61-item specific reading strategies questionnaire in which two items (22 and 47) were dropped as they were not to do with specific reading strategies and some changes were applied to wording of other items to make them relevant for the specific text candidates read before answering this questionnaire. For example, the item in general strategies questionnaire '*I have a purpose in my mind when I read English texts*' was changed to '*I had a purpose in my mind when I started to read this English text*' in specific strategies questionnaire. Specific reading strategies questionnaire was also piloted with 20 EFL students who were similar to the main participants of this study in terms of language proficiency. Cronbach's alpha was 0.88 for the whole questionnaire; and 0.90 and 0.82 for cognitive and metacognitive subscales, respectively. The participants were requested to rate certain statements on a 5 point scale from (1) "I never or almost never do this" to (5) "I always or almost always do this".

## Procedure

This study was conducted at English language department of Urmia University during two class sessions in Spring 2012. In the first session, the Group Embedded Figures Test was distributed among almost all of the 4<sup>th</sup> and 6<sup>th</sup> semester EFL students including 28 males and 54 females. This psychological test includes a booklet with simple visual figures embedded inside progressively more complicated visual figures. The procedures for administration of GEFT strictly followed the directions included in the manual. However, a brief explanation was added in Persian to make sure that participants grasped the instruction. They were asked to locate the hidden simple figures in the more complex ones in a given time limit. In general, GEFT contains three sections: the first section is intended to make the participants familiar with the test; it includes 7 items to be completed in two minutes. These items are not counted in the total score. The body of the text is of two 9-item sets requesting the participants to complete them within a time limit of 10 minutes. The students who scored 11 or below were identified as field-dependent and those who scored above 11 were classified as field-independent (Abraham, 1985). In the present study, forty five students were field-dependent and thirty seven students were field-independent.

Immediately after completing GEFT, the participants were given the self-report general reading strategies questionnaire (the first version) in order to get information about their reading strategies which were claimed to be used across various contexts and reading tasks. The participants were allowed to take the questionnaire home and complete it so that they had enough time to think about the readings strategies that they employed generally and regardless

of any specific text. The questionnaires were collected in two days. The other version of the questionnaire, specific reading strategies questionnaire, was administered after one week's interval. This time, the same participants were invited to read the particular English text, in 15 minutes, and then the second and adapted version of reading strategies questionnaire was distributed to elicit information about the participants' reading strategies utilized while reading a particular reading text. The participants were required to complete specific strategies questionnaire in 15 minutes. In other words, they were requested to report on their strategy use with reference to the strategies that they had actually employed while reading that specific text.

It should be mentioned that although almost all of the 4<sup>th</sup> and 6<sup>th</sup> semester EFL students were included in this study (82 students), since a few participants did not complete all questionnaires, the final number was reduced to 62 participants.

### Data analysis

After identifying general and specific (cognitive and metacognitive) reading strategies used by field-dependent/independent learners, the frequency of these strategies was calculated and then compared, Chi-Square statistical test was used to analyze the data using SPSS (Statistical Package for Social Sciences) software, version 18.

## Results and Discussion

This study attempted to find out if there was a significant difference between field-dependent and field-independent Iranian EFL learners in terms of using general/specific cognitive and metacognitive reading strategies. The results of Chi-square statistical test are reported through relevant tables and their meanings are discussed.

**H01:** There is no significant difference between FD/FI Iranian EFL learners with reference to the use of general cognitive reading strategies.

Table 1 Chi-square Test for the Use of General Cognitive Reading Strategies across Style

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.871 <sup>a</sup>	40	.476
Likelihood Ratio	44.996	40	.271
Linear-by-Linear Association	.164	1	.685
N of Valid Cases	7987		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.29.

The Chi-square test shows no statistically significant difference ( $\chi^2= 39.87$ ,  $p= 0.47$ ) between field-dependent and field-independent learners regarding the use of general cognitive reading strategies. This finding provides support for the first null-hypothesis assuming no significant difference between field-dependent and field-independent learners in terms of using general cognitive reading strategies.

**H02:** There is no significant difference between FD/FI Iranian EFL learners with reference to the use of general metacognitive reading strategies.

Table 2. Chi-square Test for the Use of General Metacognitive Reading Strategies across Style

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38.972 <sup>a</sup>	22	.014
Likelihood Ratio	39.668	22	.012
Linear-by-Linear Association	.094	1	.759
N of Valid Cases	4529		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 77.85.

The Chi-square test reveals a statistically significant difference ( $\chi^2= 38.97$ ,  $p= 0.01$ ) between the field-dependent and field-independent learners in terms of using general metacognitive strategies, with field-dependent learners employing more metacognitive strategies. Therefore, the second null-hypothesis predicting no significant difference between the FD and FI participants regarding their use of general metacognitive strategies is rejected.

**H03:** There is no significant difference between FD/FI Iranian EFL learners in terms of the use of specific cognitive reading strategies.

Table 3 Chi-square Test for the Use of Specific Cognitive Reading Strategies across Style

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	57.974 <sup>a</sup>	40	.033
Likelihood Ratio	58.299	40	.031
Linear-by-Linear Association	.454	1	.501
N of Valid Cases	7251		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 58.31.

The Chi-square table clarifies a significant difference ( $\chi^2= 57.94$ ,  $p= 0.03$ ) between field-dependent and field-independent learners in terms of the use of specific cognitive reading strategies, with field-dependent participants utilizing specific cognitive strategies more frequently than the field-independent participants. Based on this result, the 3<sup>rd</sup> null-hypothesis is also rejected.

**H04:** There is no significant difference between FD/FI Iranian EFL learners in terms of the use of specific metacognitive reading strategies.

Table 4. Chi-square Test for the Use of Specific Metacognitive Reading Strategies across Style

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.946 <sup>a</sup>	19	.460
Likelihood Ratio	19.013	19	.456
Linear-by-Linear Association	3.573	1	.059
N of Valid Cases	3548		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 70.45.

The Chi-square test shows no statistically significant difference ( $\chi^2 = 18.94$ ,  $p = 0.46$ ) between the field-dependent and field-independent participants in terms of the use of specific metacognitive reading strategies, although field-dependent participants employed specific metacognitive strategies more frequently than the field-independent participants did. Accordingly, null-hypothesis 4, which assumed no significant difference between the field-dependent and field-independent participants in terms of the use of specific metacognitive reading strategies, is confirmed.

## Discussion

Regarding the first research question, Chi-square statistical test found no significant difference between field-dependent and field-independent participants in terms of the use of general cognitive reading strategies. It means that field-dependence/independence cognitive style did not seem to influence the cognitive strategies which were generally employed by the learners across various reading materials. This result is in line with the findings of the previous studies (e.g., Griffiths & Sheen, 1992; Kheirzadeh&Kassanian, 2011; Souzandehfar&Souzandehfar, 2011; Vahabi, 2006) which revealed that field-dependence/independence cognitive style had no significant relationship with the use of learning strategies and with second language acquisition.

In response to the second research question, Chi-square test revealed a significant difference between field-dependent and field-independent participants concerning their use of general metacognitive reading strategies meaning that FD/FI cognitive style seemed to play a significant role in the use of general metacognitive reading strategies. This result supports Carter's (1988) finding which showed FD/FI cognitive style as an influential factor in the choice of learning strategies. It also confirms Ghonsouly and Eghtesadee (2006) who spotted a significant difference between skilled field-dependent and skilled field-independent EFL learners concerning their use of metacognitive reading strategies. Based on the descriptive statistics, field-dependent learners tended to use general metacognitive reading strategies more frequently than their field-independent counterparts. This difference may be due to the fact that metacognitive reading strategies involve thinking about learning process and that they demand some degrees of creativity. According to Kinsella (1996), field-dependent learners are more successful in learning tasks that require creativity; therefore, it can be concluded that field-dependent learners seem to be more successful in utilizing metacognitive reading strategies than field-independent learners. This finding provides an additional support for Carter's (1988) study indicating that field-dependent individuals were more advantageous in language learning than their field-independent peers. This finding is in contrast to the previous investigations (e.g., Alptekin&Atakan, 1990; Davey, 1990; Griffin & Franklin, 1996; Jamieson, 1992) discovering that field-independent learners outperformed field-dependents in second language learning.

As far as the third research question is concerned, Chi-square test indicated a significant difference between field-dependent and field-independent participants regarding the use of specific cognitive reading strategies, with field-dependent learners employing a higher number of specific cognitive reading strategies. The difference might be because of field-dependents' sensitivity to the external clues from their surrounding environment (Gass&Selinker, 1994). In other words, field-dependent learners are likely to pay more attention to context than field-independents are. Therefore, field-dependent learners may use different strategies depending on particular reading texts and specific instructional contexts.

In contrast, field-independent learners are claimed to be less sensitive to the external clues and, as this study revealed, they may use the same cognitive reading strategies in both conditions of the absence and the presence of a specific reading text. In other words, FD/FI cognitive style could be regarded as a source of systematic variance in the use of cognitive reading strategies only when the learners were engaged in a particular reading activity. This finding confirms previous studies (e.g., Brown, 1993; Chappelle & Roberts, 1986; Hansen, 1984; Johnson, Prior, & Artuso, 2000; Littlemore, 2001; Salmani-Nodoushan, 2007) reporting a significant relationship between field-dependence/independence cognitive style and second language learning.

With reference to research question 4, Chi-square test revealed that although field-dependent learners outperformed their field-independent counterparts, the difference between field-dependent and field-independent participants in terms of the use of specific metacognitive reading strategies was not significant. It means that field-dependence/independence cognitive style did not appear to influence the use of metacognitive reading strategies when the participants were required to read a specific text. In other words, this cognitive style was likely to play an important role only when the participants tended to use metacognitive reading strategies generally rather than in a specific reading task. Again, this finding is in line with the above-mentioned studies indicating no significant difference between field-dependence/independence cognitive style and second language acquisition.

### **Conclusion**

This study provided quantitative evidence for whether field-dependence/independence cognitive style was as an influential factor in the choice of cognitive and metacognitive reading strategies by Iranian EFL learners in the following conditions: (a) when the participants employed these strategies generally and with no reference to a particular reading task; (b) when the participants utilized them in order to understand a particular text. The results indicated that field-dependence/independence cognitive style may play a significant role in the use of general metacognitive and specific cognitive reading strategies by Iranian EFL learners; and FD participants employed these strategies much more frequently than their FI counterparts. Being aware of these differences may help language learners be more independent and autonomous and provide language teachers with opportunities to adopt different teaching methods which suit their learners' various cognitive styles.

### **Pedagogical and theoretical implications of the study**

The theoretical implication of this study is that: learner differences and cognitive styles should be considered in any comprehensive theory of second or foreign language acquisition and teaching. Although cognitive processes underlying second language acquisition are not easily explored and identified, having a grasp of cognitive styles sheds light on the understanding of the nature of language learning process.

The findings may help material developers and curriculum designers in considering the role of cognitive styles in learning a foreign language. Different materials should be provided for

learners with each kind of field-dependence/independence cognitive style (Nilforooshan&Afghari, 2007). Town (as cited in Nilforooshan&Afghari, 2007) agrees that field-independents prefer abstract, impersonal, analytical, and factual materials, whereas field-dependents favor materials with social, personal, humorous, and artistic content.

L2 teachers can help students discover their own cognitive style and they can give constructive feedback about the advantages and disadvantages of field-dependence/independence cognitive style (Kang, 1999). The teachers may encourage them to be flexible regarding their cognitive style preferences in diverse situations of learning so that they become more effective language learners. Since learning strategies can be instructed, EFL teachers can recognize strategies that are not used effectively by learners with particular cognitive style and provide them with adequate strategy-based instruction to use appropriate strategies more effectively.

If EFL learners recognize their own cognitive style in which they feel less comfortable, they can enhance their language learning power by working on these style areas. It means that dealing with tasks which do not seem to suit the students' cognitive style preferences will help them stretch beyond their comfort zone and expand their language learning potential (Shi, 2011). It can be concluded that students may become more self-directed, independent, and autonomous in the process of second language learning by having an awareness of their cognitive styles and they can compensate for their weaknesses by using appropriate strategies.

### **Limitations of the study**

A major limitation of the present study is that the data was drawn from learners at a single context. Additionally, the number of participants of this study was limited to 62 EFL learners; thus, one should be cautious in making generalizations from the findings of this study. This study can be replicated with a large number of participants at multiple universities to enhance its external validity

The other limitation of this study is related to the issue of homogeneity of the participants. Because of the practical problems, the present study used no language proficiency test in order to homogenize the learners. Instead, they were assumed to be more or less at the same level, regarding their ability in English reading comprehension as they studied in the same intact groups. The underlying rationale for this assumption is that since the participants of this study were 4<sup>th</sup> and 6<sup>th</sup> semester EFL learners majoring in English literature and since they had passed three reading comprehension courses, all of them could be regarded as skilled in English reading.

Oxford (1993) believes that some factors would influence the choice of learning strategies and success in reading comprehension. These factors include motivation, gender, cultural background, type of task, age, level of language proficiency, and learning/cognitive style. In this study, FD/FI cognitive style was regarded as independent variable and reading strategies as dependent variable. However, because of practical limitations, it was impossible to examine the moderating role of other factors in the use of reading strategies.

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