COGNITIVE STYLE AS A FACTOR AFFECTING TASK-BASED READING COMPREHENSION TEST SCORES

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For purposes of the present study, it was hypothesized that field (in)dependence would introduce systematic variance into Iranian EFL learners' overall and task-specific performance on task-based reading comprehension tests. 1743 freshman, sophomore, junior, and senior students all majoring in English at different Iranian universities and colleges took the Group Embedded Figures Test (GEFT). The resulting 582 Field-Independent (FI) and the 707 Field-Dependent (FD) students then took the 1990 version of the IELTS. Using SPSS commands for collapsing continuous variables into groups, and subjects' IELTS scores (based on 25, 50, 75 percentiles), four proficiency groups were identified for each kind of cognitive styles. From each proficiency group, 36 FD and 36 FI subjects were selected through a matching process. The resulting sample of 288 subjects took the Task-Based Reading Test (TBRT) designed for the study. The results of data analysis revealed that subjects' cognitive styles resulted in a significant difference in their overall test performance in proficient, semi-proficient, and fairly proficient groups, but not in the low-proficient group. The findings also indicated that cognitive style resulted in a significant difference in subjects' performance of true-false, sentence completion, outlining, skimming, and elicitation tasks in all proficiency groups.

KEYWORDS: cognitive style; field dependence; field independence; test performance; factors; language testing; reading comprehension; task-based testing

1. INTRODUCTION

Research on factors that affect test scores in general and language test scores in particular has long been the concern of language testing specialists. During the past few decades, the proposal of multi-layered models of language ability, like that of Bachman (1990), has shed some light at least on the areas where one should search for traces of possible factors (also see Hymes, 1974; Canale & Swain, 1980; Anivan, 1991; Alderson, 1991). Attempts at identifying factors that affect test scores have resulted in a taxonomy of factors. Such a taxonomy is neither exhaustive nor comprehensive. More research is needed to determine what other factors may influence the performance of test takers.

One such potential area is the test takers' cognitive styles. The term 'cognitive style' refers to the link between personality and cognition that controls the way we learn things in general and the particular approach we adopt when dealing with problems. Cognitive styles are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment (Keefe, 1979). In theory, there exist lots of cognitive styles. Nevertheless, only a few of the possible number of cognitive styles have received the attention of L2 researchers in recent years; one such area is "field independence" (FI) or "field dependence" (FD).

Field dependence (FD) refers to a cognitive style in which an individual tends to look at the whole of a learning task which contains many items. The FD individual has difficulty in studying a particular item when it occurs within a field of other items. The "field" may be perceptual or it may be abstract, such as a set of ideas, thoughts, or feelings. Field

independence (FI), on the contrary, refers to a cognitive style in which an individual is able to identify or focus on particular items and is not discredited by other items in the background or context (Brown, 2000; Gollnick and Chein, 1994).

Due to the psychologists' hypothesized relationship of field-(in)dependence to cognitive and interpersonal abilities, it appears possible that language tests of today may favor learners with certain cognitive styles. The present study is an attempt at finding the possible effects of learners' cognitive styles on their performance on task-based reading comprehension tests.

2. BACKGROUND OF THE STUDY

The concepts and methods derived from work on cognitive style over the past two-and-a-half decades are being applied at an ever increasing rate to research on problems of education. Among the cognitive styles identified to date, the field-dependence-independence dimension has been the most extensively studied and has had the widest application to educational problems. While research on educational applications is still in its early stages, the evidence that research has already produced suggests that a cognitive style approach may be applied with profit to a variety of educational issues, and language testing is not an exception.

Field-independence, in particular, has been found to correlate positively and significantly with L2 learning in school settings where the target language is taught formally. Genesee and Hamayan (1980), in their study of first grade English-speaking students in a French immersion program in Canada, reported significant and positive correlations between FI and general achievement in French on the one hand, and French listening comprehension skills on the other. Naiman, et al. (1978) also obtained significant correlations between field-independence and L2 learning for English speaking 12th grade Canadian learners of French.

In the USA, Hansen and Stanfield (1981) found that field-independence played a major role in the acquisition of linguistic competence for American college students enrolled in a Spanish course. The same researchers also found a positive but rather modest link between field-independence and satisfactory scores on cloze tests, with a similar group of adult learners. Roberts (1983), in a study conducted with adult ESL learners in an American university, discovered that field-independence predicted success for this group on traditional tests of an analytic nature.

Likewise, Hansen-Strain (1984) found that a significant positive relationship existed between field-independence and scores on L2 tests, which was particularly noticeable in the case of the cloze test, and which was also dependent to a certain degree on the learners' cultural background and sex. Along the same lines, both Chapelle and Roberts (1986) and Carter (1988) found support for the correlation of field-independence with L2 learning in the case of college students.

In the same vein, Dulay, Burt, and Krashen (1982) indicated that more analytical field-independent characteristics were related to the conscious learning of metalinguistic skills, while field-dependence seemed to serve the development of communication skills through subconscious acquisition. Thus, it is no wonder that Abraham (1983) discovered a significant positive relationship between Krashen's (1981) strategy of monitoring, which is part of conscious tutored learning and field-independence.

The study done by Alptekin and Atakan (1990) was designed to explore the relationship between L2 achievement and field-dependence versus field-independence and hemisphericity. The researchers reported that, as expected, the results of their study answered the first question (i.e. whether there was any relationship between L2 achievement and the field-dependence-independence dimension of cognitive style) affirmatively.

A valuable report on the relationship of field-dependent/field-independent cognitive style to Spanish language achievement and proficiency has been provided by Carter (1988). A

corollary question, according to Carter (1988), concerns whether cognitive style and course orientation affect learners' perception of the process of learning a foreign language. Such perception may logically be assumed to influence choice of learning strategies, and thereby, perhaps the learners' degree of success. Carter found that field-dependence was more conducive to language learning than field-independence.

Brown (1987) and Bialystok and Fröhlich (1978) postulated that field-independent learners may have the advantage in classroom foreign language learning because of the formal, or structure-oriented, nature of the classroom task, as opposed to a more natural or functional use of language for communication of meaning. The implication is that the supposed superiority of a field-independent cognitive style in classroom learning may be related to a distinction between the usual formal linguistic achievement orientation of classrooms and tests on the one hand, and real competence, that is, functional language proficiency, on the other. Brown (1987) concludes that the advantage of FD individuals in naturalistic L2 acquisition may be due to the fact that naturalistic language acquisition involves natural communication in which field-dependent people may be more successful by virtue of their empathy, social outreach, and perception of other people.

In their study, Naiman, et al. (1978) concluded that field-independence was more important as a predictor of success in the higher stages of language learning than in the early stages. This hypothesis corresponded to the ascending importance accorded to grammatical accuracy in Higgs and Clifford's (1982) model of the relative contribution of various factors to language proficiency. However, both in Carter's (1988) and in Hansen-Strain's (1984) studies, field-dependence/independence was found to have a significant effect even at the very early stages of language learning. Most field-dependent subjects in Carter's study received an ACTFL rating of novice-mid or novice-high, indicating that they were still largely dependent on memorized words and phrases for whatever communication they found possible.

In a study conducted by Davey (1990), fifty-six field-dependent and 55 field-independent students in grades six through eight were assessed on reading comprehension tasks varying in memory load and cognitive restructuring requirements. The results indicated that field-independent readers outperformed field-dependent readers on tasks with high memory demands and requirements for efficient restructuring. In another study, Alptekin and Atakan (1990) examined the relationship between second-language achievement and field dependence-independence and hemisphericity among 11- and 12-year-old Turkish students in an intensive English-as-a-Second-Language program. They found that field independent learners performed better on discrete-point and cloze tests. They also found that hemisphericity was not related to second-language achievement.

In a study in 1990, Bean found that a field dependent cognitive style could cause problems for learners of English as a Second Language (ESL). Bean (1990) tested English language ability and cognitive styles (i.e., field dependence (FD), and field independence (FI)) in 157 adult Korean and Japanese ESL learners in university and community-sponsored classes. The results indicated that (a) more of the Koreans (72.5%) demonstrated FD than did the Japanese (20.8%); (b) more of the community students (73.6%) were field dependent than were the university students (33.3%); and (c) more of those who had resided in the United States longer, primarily Korean immigrants, tended to be field dependent. The results of Bean's study (1990) also indicated that field independence correlated positively with English language ability and years of education.

According to Bean's (cited in Oxford and Anderson 1995, p. 210) research, investigating the learning styles of students in America, Japanese EFL students exhibited field independence. Conversely, Condon (1984) and Nelson (1995) argued that Japanese EFL learners tended to

demonstrate sensitivity to their environment, indicating field dependence. Nelson (1995) suggested that Japanese EFL students were typical field dependent learners, at least in a Japanese setting, preferring authority figures and demonstrating sensitivity to group relationships. Along the same lines, Tudjman (1991) suggested that both field independent and field dependent Japanese EFL students were sensitive to the instructional environment. Tudjman (1991, p. 239) claimed that "Japanese learners communicate according to the confines of their environment." Tudjman described how for a Japanese student, knowledge and expression were inseparable from relations and interpersonal communication.

In a study conducted in 1992, Jamieson investigated the hypothesis that good guessers are good second-language learners. The focus of the study was on one characteristic of successful and unsuccessful learners—their cognitive styles. Overall, the study provided continuing evidence for the positive relationship between field independence and proficiency in English-as-a-Second-Language (ESL). However, Griffiths and Sheen (1992) wrote a critical review of the theoretical underpinnings, measurement instruments, and the then-current status of the field (in)dependence dimension of the cognitive style construct. They claimed that research in FI/FD had shed little light on the relationship between cognitive style and L2 learning. They dismissed cognitive style as a source of systematic variance in language test performance, and argued that previous research on FD/FI was seriously flawed in that the famous Group Embedded Figures Test (GEFT) measured ability rather than style. Griffiths and Sheen (1992) also claimed that most of the studies done by 1992 had found either no relationship between FI/FD and L2 achievement or only a weak one. Griffiths and Sheen (1992) concluded their paper by making the suggestion that, if FI/FD and the GEFT were to have a future in SLA research, it would probably be in investigations of aptitude rather than of cognitive style. In fact, their critique was meant to lead to the inevitable conclusion that FD/FI did not have, and never had had, any relevance for second-language learning.

In a response to Griffiths and Sheen, Chapelle (1992, cited in Skehan, 1998) refuted their arguments against the connection between FD/FI and second-language learning. She claimed that second-language acquisition (SLA) researchers might gain some insights from a genuine reappraisal of FD/FI in SLA research. Chapelle (1992) offered two reasons why research into the relationship between FI/FD and L2 achievement could still have some merit. First, she criticized previous studies on the ground that they did not use appropriate measures to assess FD/FI adequately, and claimed that, if they did, they would be much more fruitful. Second, she argued that a redefinition of the cognitive style construct was necessary. Therefore, in another study conducted in 1992, Chappelle and Green suggested that research concerning the connection between cognitive style and second-language learning should, in addition to FD/FI, draw on other cognitive factors such as (a) reliance on internal or external frames of reference, (b) cognitive restructuring abilities, and (c) interpersonal competence.

Some researchers, however, prefer to use the term "learning style" to refer to such an aggregation of cognitive factors (Reid, 1998). According to Brown (2000), "when cognitive styles are specifically related to an educational context where affective and physiological factors are intermingled, they are usually more generally referred to as learning styles" (p. 113). Brown also mentions that learning styles might be thought of as “cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment” (p. 114). Or more simply, as “a general disposition, voluntary or not, toward processing information in a particular way” (p. 114). (Also see Moody, 1988; MacIntyre & Charos, 1996; Carrell, et al , 1996; Oxford, 1997; Dewaele & Furnham, 1999).

In their study in 1993, Johnson and Rosano investigated the relationships among measures of language proficiency, cognitive style, and metaphor comprehension. Fifteen native speakers of English at Toronto University, fifteen ESL students who had just started the first term of the course (ESL 1), and fifteen ESL students who were beginning the second term (ESL 2) took part in this study. Three tasks were given to the subjects: (a) Block designs test (used as a nonverbal index of both analytical ability and field dependent-independent cognitive style), (b) Woodcock Language Proficiency Battery test (composed of 2 tests, the picture vocabulary task and the analogy task, and used to provide measures of decontexualized proficiency in English), and (c) metaphor interpretation task (used as an index for communicative proficiency). According to Johnson and Rosano (1993), in metaphor interpretation task, subjects were orally asked to explain the meanings of the topic and vehicle nouns used in the metaphor (e.g. My shirt was a butterfly.). This task had been designed to yield a measure of level of cognitive complexity (degree of semantic transformation) and of fluency (number of metaphor interpretation). Another index for communicative proficiency was the teachers rating of subjects' pragmatic competence in L2 communication. On academic measures of English proficiency, native speakers scored better than ESL students, but there were no differences on level of cognitive sophistication in metaphor interpretation or on a measure of metaphor fluency. For ESL students, metaphor fluency was positively related to a measure of communicative proficiency (r=0.71), whereas a measure of field independence was negatively related with both metaphor fluency (r=-0.49) and communicative proficiency (r=-0.57). Johnson and Rosano (1993) concluded that, although language proficiency appeared to be a major factor in determining complexity level in metaphor interpretation, linguistic and cultural factors might well influence the content of metaphor interpretations.

The objective of a study done by Yaghoubi (1994) was to find out whether, and to what extent, there was a relationship between FD/FI cognitive styles and foreign language proficiency of Iranian EFL students. The study addressed two questions: (1) whether FI cognitive style affected Iranian EFL learners language proficiency; and (2) if the answer to foregoing question was positive, whether FI cognitive style was facilitative or debilitative. The study indicated that FI individuals were better achievers in language classes, and that FI cognitive style was conducive to language learning. Along the same lines, Liu and Reed (1994) reported on a study that examined different learning strategies used by sixty-three field-independent (FI) people and field-dependent (FD) international college students in a hypermedia assisted language learning setting. They reported findings that described the different types of media, tools, and learning aids chosen by FI and FD students. Here again, FI was conducive to language learning. In yet another study of the relationship between FD/FI and language performance, Fehrenbach (1994) compared the cognitive styles of thirty gifted and thirty average secondary-level readers. The study found that both groups used the same reading strategies but with differing frequencies. Fehrenbach also found significant differences in how frequently some strategies were used by FD and FI readers.

In another study in 1995, Lu and Suen addressed the issues surrounding the fair and equitable assessment of students considering their individual FD/FI cognitive style differences. According to Lu and Suen, by 1995, it had become more popular in educational institutions to assess students on their higher-order thinking within a specific context. The term they used to refer to this type of achievement measurement was 'alternative' or 'performance-based' assessment. Because the literature they reviewed had revealed that FI students performed better on unstructured tasks than did FD learners, they hypothesized that the FI subjects would perform better on performance-based assessments because performance-based measures were less structured. Lu and Suen (1995) also hypothesized that there would be no difference in performance between FI and FD students on multiple-choice tests because these

instruments tended to be highly structured. The cognitive styles of the students were measured using the Group Embedded Figures Test (GEFT). Their results revealed a substantial interaction between cognitive style and assessment approach. They concluded that field-independent students scored substantially higher on performance-based assessment than did field-dependent students, whereas no such difference was found on the multiple-choice test. They also ruled out other potential variables such as task difficulty, writing ability, scoring metric, and equating procedure.

The importance of the examinee's cognitive style in the multiple-choice answer-changing process testing was also investigated in two studies with 125 and 84 undergraduates (Friedman and Cook, 1995). The results of both studies suggested that examinees, especially high-scoring students, usually benefited if they changed answers, but FD/FI cognitive styles did not appear to be a factor. In another study conducted by Wagner, Cook, and Friedman (1998), fifth graders completed multiple choice exams and measures of cognitive style to determine whether changing answers was more frequent and productive for field independent or field dependent, reflective or impulsive, students. The results indicated that impulsive students changed more answers and gained more points. The study also showed that field dependence/field independence did not relate to answer changing. Wagner, Cook, and Friedman (1998) also concluded that exam performance improved with greater field independence.

In a study by Griffin and Franklin (1996), one hundred and forty-three subjects were identified as FI or FD based on their performance on the Group Embedded Figures Test (GEFT). Unlike Griffiths and Sheen (1992), Griffin and Franklin (1996) accepted GEFT as a measure of cognitive style. The results of their study indicated that FI students performed significantly better on course tests. The study also suggested that FI students had higher academic potential than their FD counterparts.

Shalbafan (1996), in the review of literature for his study, noticed that previous studies on the relationship between field dependence/field independence (FD/FI) cognitive style and second/foreign language learning (S/FLL) had demonstrated that, while field independent individuals were successful at analytic and deductive language learning activities, field dependent learners exhibited their advantage at induction and communication. Shalbafan (1996), therefore, intended to investigate whether the findings of previous research could be extrapolated to Iranian EFL learners' writing ability. The results of this study showed that, where form of a writing task was considered, field independent students performed better than their field dependent counterparts. The results also indicated that where content of writing was of concern, field dependent subjects were more successful than field independent students.

In 1997, Rickards, Fajen, Sullivan, and Gillespie conducted two experiments, one in listening and one in reading, in connection to FD/FI cognitive styles. They examined the relationships among signaling (structural cues), notetaking, and FD/FI styles in college students. The results of both studies indicated that FI subjects seemed to use a tacit structure strategy, whereas FD subjects seemed to display structuring skills when notetaking. In other words, FDs were able to elicit a powerful structure strategy for recall when allowed to take notes while reading a passage. Along the same lines, Tinajero and Paramo (1998) reviewed research into the possible effects of FD/FI on achievement at school. They found that FI subjects performed better than FD subjects, whether in a specific discipline or across all subjects.

Studies on the relationship of FD/FI cognitive styles and language proficiency continued to the 21st century too. Johnson, Prior, and Artuso (2000) investigated the hypothesis that a more field-dependent cognitive style might be adaptive for certain components of second

language proficiency. They asked 28 native English speakers and 29 students of English as a second language (ESL) to complete measures of language proficiency (formal and communicative) as well as measures of field dependence–independence (FDI). They concluded that native English speakers performed better than ESL students on language measures, but not on FDI measures. They also concluded that measures of FDI correlated negatively with measures of communicative production in the ESL group. The study indicated that a more field-dependent style was associated with better performance on second language communicative measures. Johnson, Prior, and Artuso (2000) claimed, on the basis of their study, that FDI scores were not related to native English speakers' language. Their results also supported a bipolar cognitive-style conception of FDI.

Pithers (2002) argued that cumulative research evidence on field dependence-field independence suggested that matching teacher and learner cognitive styles had limits, but could be used to identify varied teaching methods. Pithers suggested that both learners and teachers should develop a flexible approach to cognitive style attitudes and behavior.

3. AIMS OF THE STUDY

The literature reviewed up to this point shows that the study of FD/FI cognitive styles in relation to ESL/EFL issues is still worthwhile, and that cognitive style remains as a controversial issue in ESL/EFL research. Therefore, the present study attempted to account for the probable effects of FD/FI cognitive style on subjects' performance on task-based reading comprehension tests. It was hypothesized that subjects' FD/FI cognitive styles affected their test and task performance in meaningful and significant ways. The study specifically addressed the following questions:

1. Is there a significant difference in the mean test scores for FDs and FIs?
2. Is there a significant difference in the mean "true-false task" scores for FDs and FIs?
3. Is there a significant difference in the mean "sentence-completion task" scores for FDs and FIs?
4. Is there a significant difference in the mean "outlining task" scores for FDs and FIs?
5. Is there a significant difference in the mean "skimming task" scores for FDs and FIs?
6. Is there a significant difference in the mean "elicitation task" scores for FDs and FIs?

In all of the above questions, subjects' proficiency levels were held constant. In other words, mean comparisons were done between FD and FI subjects within the same proficiency group.

4. METHOD

4.1. INSTRUMENTS

The instruments used for subject selection and data collection in this study included (a) The Group Embedded Figures Test (GEFT), (b) The 1990 version of IELTS, and (c) The Task-Based Reading Test (TBRT).

4.1.1. The Group Embedded Figures Test (GEFT)

The Group Embedded Figures Test (GEFT) was used to identify subjects' FD/FI cognitive styles. The GEFT instrument has been developed by Witkin, Raskin, and Oltman (1971). They reported a Spearman-Brown reliability coefficient of 0.82 for their instrument. The GEFT instrument contains three sections with 25 complex figures from which participants are asked to identify eight simple forms (labeled A to H). Section one of GEFT includes seven complex figures and sections two and three include nine complex figures each. The respondents are asked to find the simple forms (A to H) in the complex figures, and to trace them in pencil directly over the lines of the complex figures. 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. In their study, Witkin, et al. (1971) reported a mean GEFT score

of 12.0 for males (N=155) and a mean of 10.8 for females (N=242). The grand mean of participants in their study was 11.3. In 1980, Panek, Funk, and Nelson reanalyzed data from a previous investigation to determine the reliability and validity of the Group Embedded Figures Test (GEFT). They found that GEFT had adequate split-half reliability. They also noticed that estimates of internal consistency and construct validity for GEFT were adequate and satisfactory. Other studies that have reported adequate reliability and validity for GEFT include Cano, Garton, and Raven (1992), Brenner (1997), and Sexton and Raven (1999). For the purposes of this study, subjects were dichotomized as either field dependent (FD), mixed field (MF), or field independent (FI). Using the SPSS commands for collapsing a continuous variable into groups, I classified subjects with GEFT scores below the 33.33 percentile into the FD group, those with GEFT scores above the 66.67 percentile into the FI group and those with GEFT scores in between into the MF group (See Pallant, 2001, pp. 81-84).

4.1.2. The IELTS

One of the steps of the present study was to assess the subjects' level of proficiency. The instrument used to this end was the 1990 version of the IELTS. Based on their scores on the IELTS, the subjects were classified into for proficiency groups: non-proficient, semi-proficient, fairly proficient, and proficient. Here again, the SPSS commands for collapsing a continuous variable into groups were used (See Pallant, 2001, pp. 81-84). This time, the SPSS was asked to afford four equal groups based on 25, 50, and 75 IELTS percentiles.

4.1.3. The Task-Based Reading Test (TBRT)

The Task-Based Reading Test (TBRT) had already been developed by the investigator for another study (Salmani-Nodoushan, 2003). It consisted of three modules (each with 40 items) that measured subjects' performance on five reading tasks: true-false, sentence-completion, outlining, elicitation of writer's views (called elicitation), and skimming. For this study, only the general module of the TBRT was used. It consisted of five passages of varying lengths, textual complexity, and readability indexes. However, at the time of the development of the TBRT in 2003, the texts that appeared in the TBRT had been chosen in such a way as to ensure maximum correspondence to the 2000 version of the IELTS General Training Reading Module in terms of such textual features as readability, structural complexity, etc. (See Salmani-Nodoushan, 2003). Table 1 presents the readability statistics for the IELTS General Training Reading module (version 2000); table 2 presents the readability statistics for the TBRT.

Table1
Readability statistics for the IELTS General Training Reading Module (UCLES 2000)

PROPERTIES		PASSAGES				
		1	2	3	4	5
Counts	Words	155	237	379	442	826
	Characters	795	1244	1867	2286	3930
	Paragraphs	5	11	7	8	7
	Sentences	7	16	18	24	36
Averages	Sentence per paragraph	1.4	1.2	3.6	3	5.1
	Words per sentence	21	13.5	20.6	17.8	22.8
	Characters per word	5	5	4.7	5.1	4.6
Readability	Passive sentences	28%	6%	0%	0%	19%
	Flesch reading ease	37.6	53.4	50	44.8	49.4
	Flesch-Kincaid grade level	12	9.1	11.4	11.4	11.1

Table 2
Readability Statistics for the TBRT

PROPERTIES		PASSAGES				
		1	2	3	4	5
Counts	Words	155	237	379	442	826
	Characters	827	1287	1927	2431	4023
	Paragraphs	2	2	5	8	7
	Sentences	9	17	18	25	44
Averages	Sentence per paragraph	4.5	8.5	3.6	3.1	6.2
	Words per sentence	17.2	13.9	21	17.6	18.7
	Characters per word	5.2	5.2	4.9	5.3	4.7
Readability	Passive sentences	22%	5%	0%	0%	18%
	Flesch reading ease	37.6	53.4	50.1	44.7	49.4
	Flesch-Kincaid grade level	12	9.2	11.4	11.4	11

For purposes of the present study, the TBRT was validated against the 1990 version of the IELTS. The correlation coefficient between them was 0.892. The TBRT also had a Spearman-Brown reliability coefficient of 0.871.

The TBRT consisted of forty test items (i.e., the same number of items as appeared in the IELTS General Training Reading Module, Version 2000). The first group of items that measured subjects' performance on the true-false task included twelve items. Each item was followed by three answers: true, false, and not given. The subjects were expected to read the corresponding passages and to decide whether the propositions expressed in the true-false items were given in the passages or not, and if yes, to make their own choice whether the items were true or false. The second set of items in the TBRT aimed at measuring the subjects' performance on sentence completion tasks. This set included eight items. The items in this set were eight open-ended sentences which could be completed in two ways. Following this set of items was a list of possible endings. The subjects' job was to read the corresponding passage and, on the basis of the information present in the passage, to choose two possible endings from the list to complete each item. A third group of items measured the subjects' performance on outlining tasks. This category included six items. The subjects were expected to read a passage. Each paragraph within the passage was labeled with a letter from the English alphabet. The subjects were expected to choose from among a list of summaries (i.e., main ideas) the ones that best represented the propositions expressed in each paragraph. They would then match the summary for each paragraph with the label that signified that paragraph. Subjects' performance on the task of 'identifying the writer's view' (i.e., the elicitation task) was also in focus. Five multiple-choice items followed a passage in the TBRT. Each item had three choices: yes, no, not given. The subjects were expected to read the passage and to decide whether the propositions expressed in these five items were given in the passage or not, and if yes, whether they represented the views of the writer of the passage or not. The last set of items measured the subjects' performance on skimming tasks. The nine items of this category asked the subjects to skim the reading passage for two types of information: dates and proper nouns. The former included five items while the latter included four items. The subjects' job was to skim the reading passage and to identify the date or the proper noun that was questioned in the item.

4.2. SUBJECTS AND PROCEDURES

On the whole, 288 subjects provided the sample for the present study. They were chosen in a systematic way to make the results of the study more dependable. In the first step of subject selection, 1743 freshman, sophomore, junior, and senior students all majoring in English in a

number of Iranian universities and colleges took the Group Embedded Figures Test (GEFT). Their scores on the GEFT revealed that 582 of them were Field-Independent (FI), 707 were Field-Dependent (FD), and 454 were Mixed Field (MF) people. The 454 MF subjects were discarded from the study. As such, I had two major subgroups: FD with 707 members, and FI with 582 members.

In the second step, both the FD and FI subject groups took the 1990 version of the IELTS. The raw scores of these subjects on the IELTS were used for classifying them into four proficiency groups. The method used for this step was the capabilities of SPSS for collapsing continuous variables into groups (See Pallant, 2001, pp. 81-84). The 25, 50, and 75 percentiles were calculated for the IELTS scores of both FD and FI subgroups. As such, I had eight proficiency groups: four for the FD subjects—namely, low-proficient, semi-proficient, fairly-proficient, and proficient; and four for the FI subjects—namely, low-proficient, semi-proficient, fairly-proficient, and proficient.

In the third step, subjects from the same proficiency group but from different cognitive styles were matched on the basis of their IELTS raw scores. This was done to ensure maximum correspondence between the FD and FI subjects in terms of language proficiency; for each IELTS score in the FD group, I wanted to have a corresponding score in the FI group. As such, there was a one-to-one correspondence between IELTS scores in FD and FI groups. That is, each IELTS score in the FI group had a counterpart in the FD group; scores which had no counterparts in either the FD or the FI groups were discarded from the study. For example, if a subject from the low-proficiency FD group had scored 13 on the IELTS but no one from the low-proficiency FI group had scored the same, that subject was discarded from the study.

In the last step, from each proficiency group in each cognitive style 36 subjects were selected by means of the matching technique. For example, if one subject with a raw IELTS score of 13 from the low-proficiency FD group was chosen, one subject with a raw IELTS score of 13 from the low-proficiency FI group would also be chosen. For each proficiency group, 36 subjects were selected in this way. Therefore, for each of the eight subgroups under study, there were 36 subjects. As such, the final sample group of the study included 288 subjects: 144 subjects in the FI group (36 non-proficient, 36 semi-proficient, 36 fairly proficient, and 36 proficient), and 144 subjects in the FD group (36 non-proficient, 36 semi-proficient, 36 fairly proficient, and 36 proficient). These subjects took the Task-Based Reading Test (TBRT) which was used as the main tool of the study for purposes of data collection. Each correct item received a value of 01.00 and each wrong item a value of 00.00. The scores of the TBRT were then input to the "independent-samples t-test" statistic; since the totals for the overall test score and individual task scores were not the same, the scores were first converted into a scale of 100 and then were input into the t-statistic analysis.

5. RESULTS

One of the question addressed by the present study was whether there was a significant difference in the mean test scores for FD and FI subjects within the same proficiency group. Therefore, an independent-samples t-test was conducted to compare the overall TBRT scores for FD and FI subjects. The results revealed that, in the case of the low-proficient subjects, there was no significant difference in scores for FD subjects (M=13.96, SD=4.76), and FI subjects [M=11.806, SD=4.38; $t(70)$=1.99, p=.05]. The magnitude of the differences in the means was small (Eta squared=.0539). The guidelines (proposed by Cohen, 1988) for interpreting Eta squared values are: 0.01 = small effect, 0.06 = moderate effect, and 0.14 = large effect. Expressed as a percentage, (Eta squared value multiplied by 100), only 5.39% of the variance in test performance was explained by cognitive style (see Pallant, 2001, p. 181).

As for the semi-proficient group, the results revealed that there was a significant difference in scores for FD subjects (M=40.35, SD=7.47), and FI subjects [M=36.94, SD=5.98; t(70)=2.13, p=.036]. The magnitude of the differences in the means was moderate (Eta squared=.061). 6.1% of the variance in test performance was explained by cognitive style. In the case of fairly-proficient subjects, a significant difference was observed in scores for FD subjects (M=66.11, SD=8.38), and FI subjects [M=66.11, SD=6.83; t(70)=2.77, p=.007]. The magnitude of the differences in the means was moderate (Eta squared=.0992). 9.92% of the variance in test performance was explained by cognitive style. Finally, in the case of proficient subjects, too, the results revealed that there was a significant difference in scores for FD subjects (M=89.24, SD=3.82), and FI subjects [M=85.97, SD=4.94; t(70)=3.13, p=.002]. The magnitude of the differences in the means was moderate (Eta squared=.1232). 12.32% of the variance in test performance was explained by cognitive style (tables 3 and 4).

Table 3
Group Statistics for Overall Test Performance as the Dependent Variable

Proficiency	Cognitive Style	N	Mean	SD	Std. Error of Mean
Low-Proficient	FD	36	13.96	4.76	0.79
	FI	36	11.80	4.38	0.79
Semi-Proficient	FD	36	40.35	7.47	1.24
	FI	36	36.94	5.98	0.99
Fairly-Proficient	FD	36	66.11	8.38	1.39
	FI	36	66.11	6.83	1.14
Proficient	FD	36	89.24	3.82	0.64
	FI	36	85.97	4.94	0.82

Notice that the first section of the independent samples Test table in SPSS output provides the results of Levene's test for equality of variances; if the Sig. value for Levene's test is larger than 0.05, the first line in the output table should be used (i.e., Equal Variances Assumed). If this value is = 0.05 or smaller, the second line in the output table should be used (i.e., Equal Variances Not Assumed). This line of the table provides an alternative t-value which compensates for the fact that the variances for the two groups are not the same (see Pallant, 2001, p. 179). In my tables that report the results of the independent samples t-test, the F and t values for Levene's test are not reported. I have preferred to report only the appropriate lines from the t-test output tables (of SPSS). Also notice that Eta squared can range from 0 to 1 and represents the proportion of variance in the dependent variable that is explained by the independent (group) variable. SPSS does not provide Eta squared values for t-tests. The formula for Eta squared (Pallant, 2001, p. 180) is as follows:

$$\text{Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)}$$

Table 4
Independent Samples T-Test for Overall Test Performance as the Dependent Variable

Proficiency	**t**	**df**	**sig. (2-tailed)**	**Eta squared**	**Variance %**
Low-Proficient	1.99	70	.050	.0539	05.39
Semi-Proficient	2.13	70	.036	.0610	06.10
Fairly Proficient	2.77	70	.007	.0992	09.92
Proficient	3.13	70	.002	.1232	12.32

Another question under study was whether there was a significant difference in the mean "true-false task" scores for FD and FI subjects. Therefore, an independent-samples t-test was conducted to compare the "true-false task" scores for FD and FI subjects. The results indicated that there was a significant difference between FD and FI subjects in all proficiency groups. In the case of the low-proficient subjects, there was a significant difference in scores for FD subjects (M=20.83, SD=11.35), and FI subjects [M=7.17, SD=8.00; t(70)=5.897, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3318). 33.18% of the variance in this case was explained by cognitive style. As for the semi-proficient group, the results revealed that there was a significant difference in scores for FD subjects (M=47.91, SD=15.21), and FI subjects [M=26.38, SD=13.58; t(70)=6.332, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3641). 36.41% of the variance was explained by cognitive style. In the case of fairly-proficient subjects, a significant difference was observed in scores for FD subjects (M=75.46, SD=11.94), and FI subjects [M=50.46, SD=15.03; t(70)=7.813, p=.000]. The magnitude of the differences in the means was large (Eta squared=.4658). 46.58% of the variance was explained by cognitive style. Finally, in the case of proficient subjects, too, the results showed that there was a significant difference in scores for FD subjects (M=99.76, SD=1.38), and FI subjects [M=77.54, SD=13.03; t(70)=10.171, p=.000]. The magnitude of the differences in the means was large (Eta squared=.5964). 59.64% of the variance was explained by cognitive style.

Table 5
Group Statistics for True-False Task Performance as the Dependent Variable

Proficiency	Cognitive Style	N	Mean	SD	Std. Error of Mean
Low-Proficient	FD	36	20.83	11.35	1.89
	FI	36	07.17	08.00	1.33
Semi-Proficient	FD	36	47.91	15.21	2.53
	FI	36	26.38	13.58	2.26
Fairly-Proficient	FD	36	75.46	11.94	1.99
	FI	36	50.46	15.03	2.50
Proficient	FD	36	99.76	01.38	0.23
	FI	36	77.54	13.03	2.17

Table 6
Independent Samples T-Test for True-False Task Performance as the Dependent Variable

Proficiency	**t**	**df**	**sig. (2-tailed)**	**Eta squared**	**Variance %**
Low-Proficient	5.897	70	.000	.3318	33.18
Semi-Proficient	6.332	70	.000	.3641	36.41
Fairly Proficient	7.813	70	.000	.4658	46.58
Proficient	10.171	70	.000	.5964	59.64

The third question addressed by the present research was whether there was a significant difference in the mean "sentence-completion task" scores for FD and FI subjects. Therefore, another independent-samples t-test was conducted to compare the "sentence-completion task" scores for FD and FI subjects. The results indicated that there was a significant difference between FD and FI subjects in all proficiency groups. In the case of the low-proficient subjects, there was a significant difference in scores for FD subjects (M=6.59, SD=6.99), and

FI subjects [M=22.56, SD=13.30; t(70)=-6.376, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3673). 36.73% of the variance in this case was explained by cognitive style. As for the semi-proficient group, the results revealed that there was a significant difference in scores for FD subjects (M=24.65, SD=16.49), and FI subjects [M=50.34, SD=17.80; t(70)=-6.352, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3656). 36.56% of the variance was explained by cognitive style. In the case of fairly-proficient subjects, a significant difference was observed in scores for FD subjects (M=50.00, SD=18.89), and FI subjects [M=73.95, SD=17.51; t(70)=-5.578, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3077). 30.77% of the variance was explained by cognitive style. Finally, in the case of proficient subjects, too, the results showed that there was a significant difference in scores for FD subjects (M=72.56, SD=14.58), and FI subjects [M=97.91, SD=4.72; t(70)=-9.921, p=.000]. The magnitude of the differences in the means was large (Eta squared=.5843). 58.43% of the variance was explained by cognitive style.

Table 7
Group Statistics for Sentence-Completion Task Performance as the Dependent Variable

Proficiency	Cognitive Style	N	Mean	SD	Std. Error of Mean
Low-Proficient	FD	36	06.59	06.99	1.16
	FI	36	22.56	13.30	2.21
Semi-Proficient	FD	36	24.65	16.49	2.74
	FI	36	50.34	17.80	2.96
Fairly-Proficient	FD	36	50.00	18.89	3.14
	FI	36	73.95	17.51	2.91
Proficient	FD	36	72.56	14.58	2.43
	FI	36	97.91	04.72	0.78

Table 8
Independent Samples T-Test for Sentence-Completion Task Performance as the Dependent Variable

Proficiency	**t**	**df**	**sig. (2-tailed)**	**Eta squared**	**Variance %**
Low-Proficient	-6.376	70	.000	.3673	36.73
Semi-Proficient	-6.352	70	.000	.3656	36.56
Fairly Proficient	-5.578	70	.000	.3077	30.77
Proficient	-9.921	70	.000	.5843	58.43

Yet another question addressed by the present research was whether there was a significant difference in the mean "outlining task" scores for FD and FI subjects. Therefore, another independent-samples t-test was conducted to compare the "outlining task" scores for FD and FI subjects. The results indicated that there was a significant difference between FD and FI subjects in all proficiency groups. In the case of the low-proficient subjects, there was a significant difference in scores for FD subjects (M=23.61, SD=20.06), and FI subjects [M=2.77, SD=7.45; t(70)=5.839, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3275). 32.75% of the variance in this case was explained by cognitive style. As for the semi-proficient group, the results revealed that there was a significant difference in scores for FD subjects (M=47.68, SD=21.51), and FI subjects [M=25.00,

SD=20.50; t(70)=4.580, p=.000]. The magnitude of the differences in the means was large (Eta squared=.2305). 23.05% of the variance was explained by cognitive style. In the case of fairly-proficient subjects, a significant difference was observed in scores for FD subjects (M=76.38, SD=17.07), and FI subjects [M=56.01, SD=19.58; t(70)=4.704, p=.000]. The magnitude of the differences in the means was large (Eta squared=.2401). 24.01% of the variance was explained by cognitive style. Finally, in the case of proficient subjects, too, the results showed that there was a significant difference in scores for FD subjects (M=100.00, SD=0.00), and FI subjects [M=76.38, SD=20.06; t(70)=7.059, p=.000]. The magnitude of the differences in the means was large (Eta squared=.4158). 41.58% of the variance was explained by cognitive style.

Table 9
Group Statistics for Outlining Task Performance as the Dependent Variable

Proficiency	Cognitive Style	N	Mean	SD	Std. Error of Mean
Low-Proficient	FD	36	23.61	20.06	3.34
	FI	36	02.77	7.45	1.24
Semi-Proficient	FD	36	47.68	21.51	3.58
	FI	36	25.00	20.50	3.41
Fairly-Proficient	FD	36	76.38	17.07	2.84
	FI	36	56.01	19.58	3.26
Proficient	FD	36	100.00	00.00	0.00
	FI	36	76.38	20.06	3.34

Table 10
Independent Samples T-Test for Outlining Task Performance as the Dependent Variable

Proficiency	**t**	**df**	**sig. (2-tailed)**	**Eta squared**	**Variance %**
Low-Proficient	5.839	70	.000	.3275	32.75
Semi-Proficient	4.580	70	.000	.2305	23.05
Fairly Proficient	4.704	70	.000	.2401	24.01
Proficient	7.059	70	.000	.4158	41.58

The fifth question addressed by the present research was whether there was a significant difference in the mean "skimming task" scores for FD and FI subjects. Therefore, another independent-samples t-test was conducted to compare the "skimming task" scores for FD and FI subjects. The results indicated that there was a significant difference between FD and FI subjects in all proficiency groups. In the case of the low-proficient subjects, there was a significant difference in scores for FD subjects (M=1.85, SD=4.19), and FI subjects [M=20.37, SD=15.37; t(70)=-6.972, p=.000]. The magnitude of the differences in the means was large (Eta squared=.4098). 40.98% of the variance in this case was explained by cognitive style. As for the semi-proficient group, the results revealed that there was a significant difference in scores for FD subjects (M=27.77, SD=13.67), and FI subjects [M=48.76, SD=15.55; t(70)=-6.081, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3456). 34.56% of the variance was explained by cognitive style. In the case of fairly-proficient subjects, a significant difference was observed in scores for FD subjects (M=57.09, SD=15.29), and FI subjects [M=74.38, SD=14.74; t(70)=-4.882, p=.000]. The magnitude of the differences in the means was large (Eta squared=.2295). 22.95% of the variance was explained by cognitive style. Finally, in the case of proficient subjects, too, the

results showed that there was a significant difference in scores for FD subjects (M=79.32, SD=11.00), and FI subjects [M=100.00, SD=.000; t(70)=-11.279, p=.000]. The magnitude of the differences in the means was large (Eta squared=.6450). 64.50% of the variance was explained by cognitive style.

Table 11
Group Statistics for Skimming Task Performance as the Dependent Variable

Proficiency	Cognitive Style	N	Mean	SD	Std. Error of Mean
Low-Proficient	FD	36	1.85	4.19	0.69
	FI	36	20.37	15.37	2.56
Semi-Proficient	FD	36	27.77	13.67	2.27
	FI	36	48.76	15.55	2.59
Fairly-Proficient	FD	36	57.09	15.29	2.54
	FI	36	74.38	14.74	2.45
Proficient	FD	36	79.32	11.00	1.83
	FI	36	100.00	00.00	0.00

Table 12
Independent Samples T-Test for Skimming Task Performance as the Dependent Variable

Proficiency	**t**	**df**	**sig. (2-tailed)**	**Eta squared**	**Variance %**
Low-Proficient	-6.972	70	.000	.4098	40.98
Semi-Proficient	-6.081	70	.000	.3456	34.56
Fairly Proficient	-4.882	70	.000	.2295	22.95
Proficient	-11.279	70	.000	.6450	64.50

The last question addressed by the present research was whether there was a significant difference in the mean "elicitation task" scores for FD and FI subjects. Therefore, another independent-samples t-test was conducted to compare the "elicitation task" scores for FD and FI subjects. The results indicated that there was a significant difference between FD and FI subjects in all proficiency groups. In the case of the low-proficient subjects, there was a significant difference in scores for FD subjects (M=19.44, SD=17.55), and FI subjects [M=1.11, SD=4.64; t(70)=6.057, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3438). 34.38% of the variance in this case was explained by cognitive style. As for the semi-proficient group, the results revealed that there was a significant difference in scores for FD subjects (M=61.11, SD=20.80), and FI subjects [M=33.88, SD=16.43; t(70)=6.159, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3514). 35.14% of the variance was explained by cognitive style. In the case of fairly-proficient subjects, a significant difference was observed in scores for FD subjects (M=73.33, SD=19.12), and FI subjects [M=48.33, SD=22.10; t(70)=5.132, p=.000]. The magnitude of the differences in the means was large (Eta squared=.2476). 24.76% of the variance was explained by cognitive style. Finally, in the case of proficient subjects, too, the results showed that there was a significant difference in scores for FD subjects (M=95.55, SD=9.69), and FI subjects [M=73.33, SD=19.12; t(70)=6.219, p=.000]. The magnitude of the differences in the means was large (Eta squared=.3558). 35.58% of the variance was explained by cognitive style.

Table 13
Group Statistics for Elicitation Task Performance as the Dependent Variable

Proficiency	Cognitive Style	N	Mean	SD	Std. Error of Mean
Low-Proficient	FD	36	19.44	17.55	2.92
	FI	36	1.11	4.64	0.77
Semi-Proficient	FD	36	61.11	20.80	3.46
	FI	36	33.88	16.43	2.73
Fairly-Proficient	FD	36	73.33	19.12	3.18
	FI	36	48.33	22.10	3.68
Proficient	FD	36	95.55	9.69	1.61
	FI	36	73.33	19.12	3.18

Table 14
Independent Samples T-Test for Elicitation Task Performance as the Dependent Variable

Proficiency	**t**	**df**	**sig. (2-tailed)**	**Eta squared**	**Variance %**
Low-Proficient	6.057	70	.000	.3438	34.38
Semi-Proficient	6.159	70	.000	.3514	35.14
Fairly Proficient	5.132	70	.000	.2476	24.76
Proficient	6.219	70	.000	.3558	35.58

6. DISCUSSION

A close look at the results reported in tables 3 through 14 suggests that test takers' cognitive styles result in statistically significant differences in test and task performance. As for subjects' overall test performance, FD/FI did not affect non-proficient subjects' test scores. However, cognitive style began to impose its power at an increasing rate on semi-proficient, fairly proficient, and proficient subjects' test performance. In fact, a continuum or cline can be suggested for the effect of cognitive style on subjects' test performance with minimum effect at the non-proficient end of the continuum and maximum effect at the proficient end.

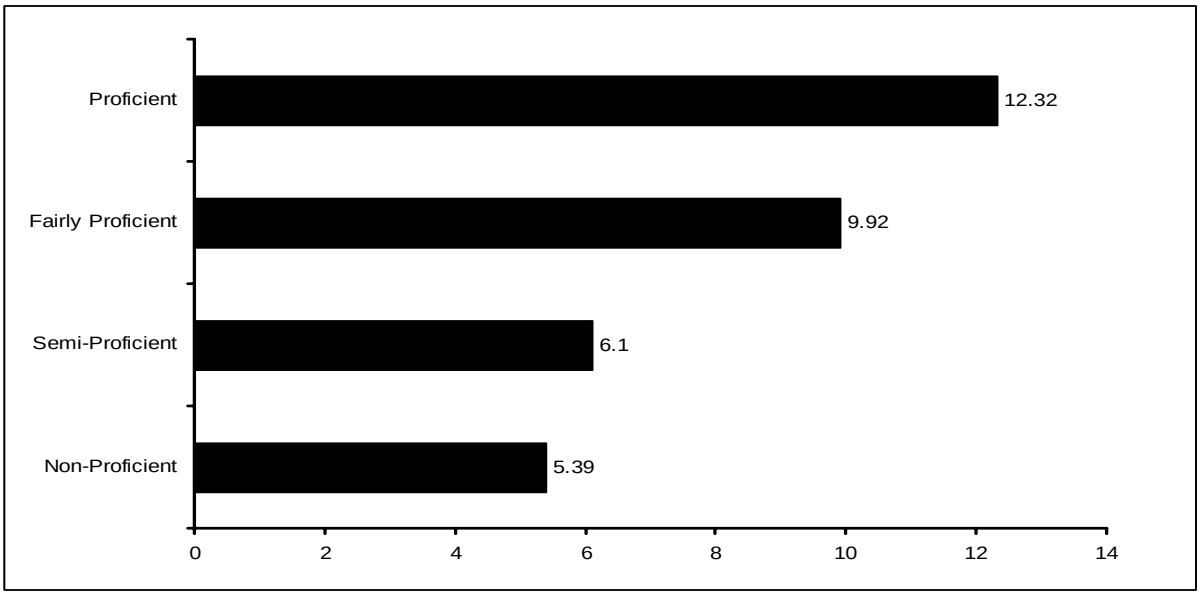

Figure 1. Percentages of variance explained by cognitive style across different proficiency levels for subjects' overall test performance.

Although non-proficient subjects' cognitive styles accounted for 5.39% of the variance observed in their test scores, the effect was not large enough to result in a statistically significant difference between FD and FI subjects' test performance (p=.055). The difference for other proficiency groups was statistically significant.

The reason why this happens is really hard to provide. It can perhaps be related to the degree to which subjects' focused on the test items. Logically speaking, subjects at lower levels of proficiency are more focused on form than subjects at higher proficiency levels. In other words, when low proficiency subjects take a test, they do their best to watch linguistic accuracy of the answers they provide; they use their limited proficiency optimally. However, as their level of proficiency grows, they pay lesser and lesser attention to linguistic form and fail to use their proficiency optimally. Hence, factors other than language proficiency find opportunity to show up. This may imply that monitoring (i.e., what Krashen (1982) calls the monitor model) is at work here; low proficiency subjects are probably monitor over-users while proficient subjects are perhaps monitor under-users. As a result of this kind of monitoring, low proficiency subjects draw on the totality of their linguistic competence in performing a linguistic task while proficient subjects employ only a limited portion of their competence in performing the same job.

The results also revealed that FD/FI was a factor that affected subjects' performance on the different reading task types. FD subjects outperformed their FI counterparts on True-False, Outlining, and Elicitation tasks; on the contrary, FI subjects outperformed FD subjects on Sentence-Completion and Skimming tasks. This discrepancy may have to do with the nature of the reading tasks in question. In the True-False, Outlining, and Elicitation tasks, the subjects were expected (a) to read the corresponding passages, (b) to gain a holistic understanding of each passage, and (c) to answer the questions that preceded or followed each passage. In the Sentence-Completion and Skimming tasks, however, subjects had to be able to isolate specific information from the corresponding passages to answer the questions that preceded or followed each passage; in other words, the passages in Sentence-Completion and Skimming tasks were the fields, and the test items were the simple forms embedded within these fields. This clearly justifies why FI subjects outperformed FD subjects on these tasks. In fact, the analytic nature of FI subjects was the key to their success in these tasks. By way of contrast, the tests items in True-False, Outlining, and Elicitation tasks were field based. The subjects did not require an analytic skill for attempting these items. In fact, a holistic approach was what the subjects of the study needed for answering the test items that measured performance of these tasks. As such, the results show that FD subjects outperformed FI subjects on tasks that required holistic skills while FI subjects outperformed FD subjects on tasks that required analytic skills. This finding is in line with the findings of previous studies done in other parts of the world. Table 15 compares the percentages of variance accounted for by FD/FI cognitive styles across different proficiency levels for different reading tasks.

Table 15

Comparison of Percentages of Variance Explained by Cognitive Style for Different Reading Tasks across Different Proficiency Levels

Proficiency	True-False	Sentence-Completion	Outlining	Elicitation	Skimming
Low-Proficient	33.18	36.73	32.75	34.38	40.98
Semi-Proficient	36.41	36.56	23.05	35.14	34.56
Fairly Proficient	46.58	30.77	24.01	24.76	22.95
Proficient	59.64	58.43	41.58	35.58	64.50

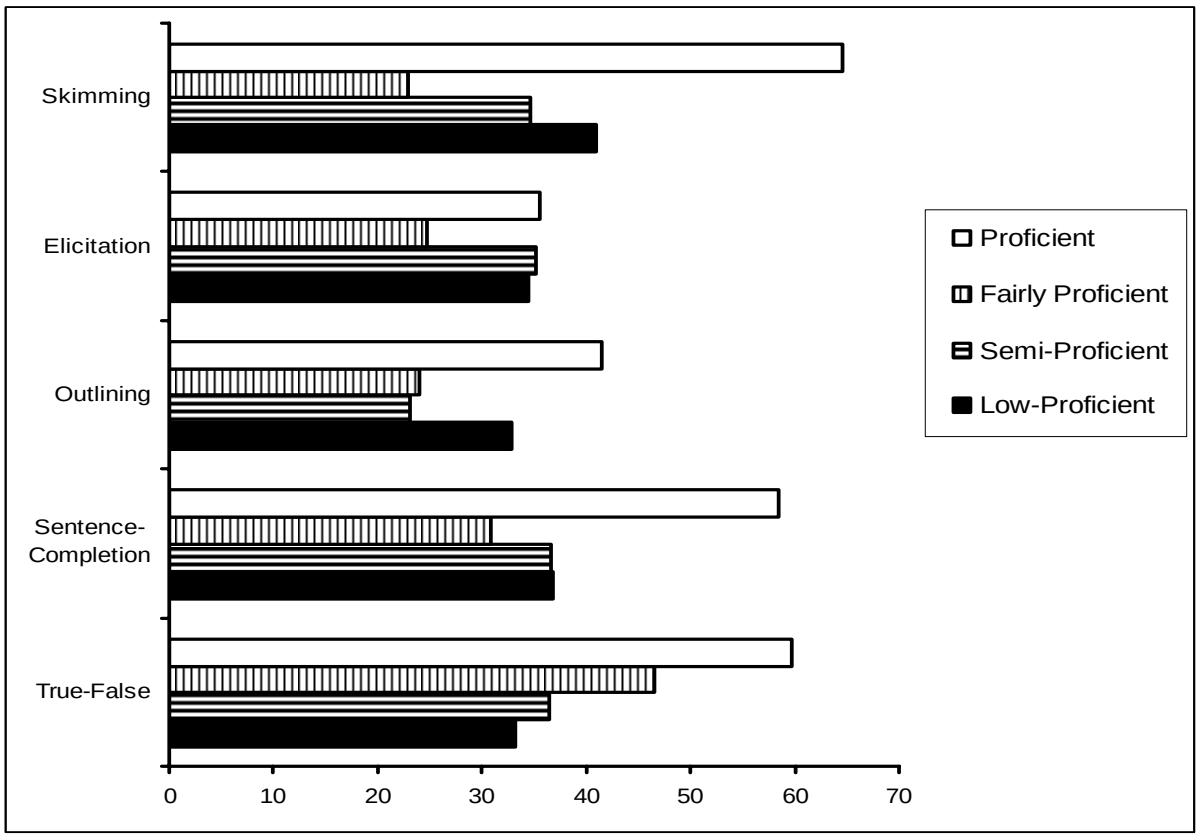

Figure 2. Percentages of variance explained by cognitive style across different proficiency levels.

7. CONCLUSION

The present study attempted to account for the probable effects of FD/FI cognitive style on subjects' scores on task-based reading comprehension tests. The results showed that cognitive styles imposed their strongest effects on test performance when test takers were most proficient. Maybe, more proficient test-takers are subconsciously led towards less reliance on monitoring their linguistic performance. More research is required to see if this claim holds true. The study also revealed that the holistic or analytic nature of reading tasks correlated with FD/FI cognitive style. Holistic tasks correlated positively with FD style and negatively with FI style; analytic tasks, by way of contrast, correlated positively with FI style and negatively with FD style.

In brief, the results of the study showed that factors other than proficiency are sources of systematic variance in test scores. This finding has implications for test developers; a well-designed test is expected to minimize, if not eradicate, the effects of extraneous factors on test results.

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