Is Field Dependence or Independence a Predictor of EFL Reading Performance?

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In this study it was hypothesized that field dependence or independence would introduce systematic variance into Iranian EFL learners' overall and task-specific performance on task-based reading comprehension tests. One thousand, seven hundred, forty-three freshman, sophomore, junior, and senior students, all majoring in English at various Iranian universities and colleges, took the Group Embedded Figures Test (GEFT). The resulting 582 field-independent (FI) and 707 field-dependent (FD) students then took the 1990 version of the IELTS. Using SPSS commands for collapsing continuous variables into groups and participants' IELTS scores (based on the 25th, 50th, and 75th percentiles), four proficiency groups were identified for each cognitive style. From each proficiency group, 36 FD and 36 FI individuals were selected through a matching process. The resulting sample of 288 participants took the Task-Based Reading Test (TBRT) designed for the study. Data analysis revealed that individuals' cognitive styles resulted in a significant difference in their overall test performance in the proficient, semiproficient, and fairly proficient groups, but not in the low-proficient group. The findings also indicated that cognitive style resulted in a significant difference in participants' performance on true-false, sentence completion, outlining, scanning, and elicitation tasks in all proficiency groups.

Cette étude est fondée sur l'hypothèse selon laquelle la dépendance-indépendance à l'égard du champ provoquerait une variation systématique dans la performance (globale ainsi que basée sur des tâches précises) en ALE chez des apprenants iraniens lors d'évaluations de la compréhension de la lecture. Le test des figures intriquées (Group Embedded Figures Test, GEFT) a été administré à 1 743 étudiants de la 1re à la 4e année, tous suivant un programme de majeur en anglais dans divers collèges et universités en Iran. Par la suite, les 582 étudiants ayant démontré une indépendance à l'égard du champ (FI) et les 707 ayant démontré une dépendance à l'égard du champ (FD) ont passé l'édition 1990 du test international de langue anglaise (International English Language Testing System, IELTS). À partir de ces résultats (d'après trois tranches des percentiles – 25, 50 et 75) et s'appuyant sur l'ensemble des programmes statistiques relatifs aux sciences sociales (SPSS) pour réduire les variables continues en catégories, on a identifié quatre groupes de rendement pour chaque style cognitif. On a ensuite sélectionné, par jumelage, 36 étudiants FD et 36 étudiants FI de chaque groupe de rendement. L'échantillon de 288 étudiants qui en a résulté ont passé le test de

compréhension de la lecture (Task Based Reading Test, TBRT) conçu en fonction de cette étude. L'analyse des données a indiqué que le style cognitif des étudiants des groupes compétent, semi-compétent et passablement compétent, influence de façon significative leur rendement au test global, mais que ce n'est pas le cas pour les étudiants du groupe peu compétent. Par contre, le style cognitif a joué un rôle important chez les étudiants de tous les groupes quant à leurs résultats aux tests impliquant des tâches précises (questions vrai-faux, phrases à compléter, formulation de résumés ou de plans de textes).

Introduction

Research on factors that affect test scores in general and language test scores in particular has long interested language-testing specialists. During the past few decades, the proposal of multilayered models of language ability, like that of Bachman (1990), has shed at least some light on areas where one could 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, although such taxonomies tend to be neither exhaustive nor comprehensive. More research is needed to determine what other factors may influence the performance of test-takers.

One potential area for closer study is test-takers' cognitive styles. The term *cognitive style* refers to the link between personality and cognition that influences how 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, numerous cognitive styles may exist. Nevertheless, only a few of the possible number of cognitive styles have received attention from L2 researchers in recent years; one such area is field independence or field dependence.

Field dependence (FD) refers to a cognitive style in which an individual tends to look at the whole of a learning task that 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 distracted by other items in the background or context (Brown, 2000; Gollnick & Chinn, 1994).

Owing to the hypothesized relationship of field dependence or independence to cognitive and interpersonal abilities, it appears possible that language tests may favor learners with certain cognitive styles. This study is an attempt to identify possible effects of learners' cognitive styles on their performance on task-based reading comprehension tests.

Background of the Study

The concepts and methods of this study derive from work on cognitive styles over the past two-and-a-half decades, with increasing application to research on issues in 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 concerns. Although research on educational applications is still in its early stages, the evidence suggests that a cognitive-style approach might be applied with profit to a variety of educational issues, and language testing is no exception. However, because there has been a good deal of controversy in this area, a careful review of the literature is especially important.

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 a study of grade 1 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, Fröhlich, Todesco, and Stern (1978) also obtained significant correlations between FI and L2 learning for English-speaking grade 12 Canadian learners of French.

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

Similarly, Hansen (1984) found a significant positive relationship 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 FI 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, whereas 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.

A valuable report on the relationship of field-dependent/independent cognitive style to Spanish-language achievement and proficiency was pro-

vided by Carter (1988). A corollary question, according to Carter, was whether cognitive style and course orientation affected learners' perception of the process of learning a foreign language. Such perception may logically be assumed to influence the choice of learning strategies, and thereby perhaps learners' degree of success. Carter found that FD was more conducive to language learning than FI.

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 classroom tasks, as opposed to more natural or functional uses of language for the communication of meaning. The implication is that the commonly 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 concludes that the advantage of FD individuals in naturalistic L2 acquisition may be because 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's (1984) studies, field dependence/independence was found to have a significant effect even in the early stages of language-learning. Most FD individuals 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), 56 field-dependent and 55 field-independent students in grades 6-8 were assessed on reading comprehension tasks varying in memory load and cognitive restructuring requirements. The results indicated that FI readers outperformed FD readers on tasks with high memory demands and with 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 (ESL) program. They found that FI learners performed better on discrete-point and cloze tests. They also found that hemisphericity was not related to second-language achievement.

Bean (1990, cited in Oxford & Anderson, 1995) found that a field-dependent cognitive style could cause problems for learners of ESL. Bean tested

English-language ability and cognitive styles (i.e., FD and 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 FD than were the university students (33.3%); and (c) more of those who had resided in the US longer, primarily Korean immigrants, tended to be FD. The results of Bean's study also indicated that FI correlated positively with English-language ability and years of education.

Although Bean's (1990) research on the learning styles of students in the US indicated that Japanese EFL students exhibited field independence, Condon (1984) and Nelson (1995) argued that Japanese EFL learners tended to demonstrate sensitivity to their environment, indicating field dependence. Nelson suggested that Japanese EFL students were typical FD 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 FI and FD Japanese EFL students were sensitive to the instructional environment. Tudjman claimed that "Japanese learners communicate according to the confines of their environment" (p. 239). Tudjman described how for a Japanese student knowledge and expression were inseparable from relationships 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 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 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, dismissed cognitive style as a source of systematic variance in language test performance, and argued that earlier research on FD/FI was seriously flawed in that the famous Group Embedded Figures Test (GEFT) measured ability rather than style. Griffiths and Sheen 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 concluded their paper by making the suggestion that if FI/FD and the GEFT were to have a future in SLA research, this 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 (1992), Chapelle (1992) 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 offered two reasons why research into the relationship between FI/FD and L2 achievement could still have some merit. First, she criticized earlier studies on the grounds that they had not used appropriate measures to assess FD/FI adequately and claimed that if they had, they would have been much more fruitful. Second, she argued that a redefinition of the cognitive style construct was necessary. Therefore, in another study, Chappelle and Green (1992) suggested that research concerning the connection between cognitive style and second-language learning, in addition to FD/FI, should 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" (pp. 113-114). Keefe (1979, cited in Brown 2000) 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, Skehan (1991, cited in Brown, 2000) refers to learning styles as "a general disposition, voluntary or not, toward processing information in a particular way" (p. 114, see also Moody, 1988; MacIntyre & Charos, 1996; Carrell, Prince, & Astika, 1996; Oxford, 1997; Dewaele & Furnham, 1999).

In their study, Johnson and Rosano (1993) investigated the relationships among measures of language proficiency, cognitive style, and metaphor comprehension. Fifteen native speakers of English at the University of Toronto, 15 ESL students who had just started the first term of the course (ESL 1), and 15 ESL students who were beginning the second term (ESL 2) took part in this study. Three tasks were given to the participants: (a) the Block Designs test (used as a nonverbal index of both analytical ability and field-dependent/independent cognitive style); (b) the Woodcock Language Proficiency Battery test (composed of two tests, the picture vocabulary task and the analogy task, and used to provide measures of decontexualized proficiency in English); and (c) a metaphor interpretation task (used as an index for communicative proficiency). According to Johnson and Rosano, in the metaphor interpretation task, participants were orally asked to explain the meanings of the topic and vehicle nouns used in metaphors (e.g., *My shirt was a butterfly*). This task had been designed to yield a measure of the level of cognitive complexity (degree of semantic transformation) and of fluency (number of metaphor interpretations). Another index for communicative proficiency was the teachers' rating of participants' pragmatic competence in

L2 communication. On academic measures of English proficiency, native speakers scored better than ESL students, but there were no differences on the level of cognitive sophistication in metaphor interpretation or on the 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 FI was negatively related with both metaphor fluency (r=–0.49) and communicative proficiency (r=–0.57). Johnson and Rosano 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 the field dependent/independent cognitive styles and the foreign-language proficiency of Iranian EFL students. The study addressed two questions: (a) whether an FI cognitive style affected Iranian EFL learners' language proficiency; and (b) if the answer to this first question was positive, whether an FI cognitive style was facilitative or debilitative. The study indicated that FI individuals were better achievers in language classes and that an FI cognitive style was conducive to language-learning. Along the same lines, Liu and Reed (1994) reported on a study that examined learning strategies used by FI and FD international college students in a hypermedia-assisted language-learning setting. They reported findings that described the various 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 30 gifted and 30 average secondary-level readers. The study found that both groups used the same reading strategies, but with differing frequencies, noting significant differences in how frequently some strategies were used by FD or FI readers.

Lu and Suen (1995) addressed the issues surrounding the fair and equitable assessment of students considering their individual field-dependent/independent cognitive style differences. According to Lu and Suen, by 1995 educational institutions were often assessing students' higher-order thinking in a specific context; the term they used for 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 FI individuals would perform better on performance-based assessments because performance-based measures were less structured. Lu and Suen 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 GEFT. Their results revealed a substantial interaction between cognitive

style and assessment approach. They concluded that field-independent students scored substantially higher on a performance-based assessment than did field-dependent students, whereas no such difference was found on a multiple-choice test. They also ruled out other potential variables such as task difficulty, writing ability, scoring metrics, and equating procedures.

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 & Cook, 1995). The results of both studies suggested that examinees, especially high-scoring students, usually benefited if they changed answers, but that field-dependent/independent cognitive styles did not appear to be a factor. In another study conducted by Wagner, Cook, and Friedman (1998), grade 5 students 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 or for reflective or impulsive students. The results indicated that impulsive students changed more answers and gained more points. The study also showed that FD/FI did not relate to answer changing frequency, but concluded that exam performance improved with greater field independence.

In a study by Griffin and Franklin (1996), 143 individuals were identified as field-dependent or independent based on their performance on the GEFT. Unlike Griffiths and Sheen (1992), Griffin and Franklin accepted the 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 own study, noticed that earlier work on the relationship between field-dependent/independent cognitive styles and second- or foreign-language learning (S/FLL) had demonstrated that whereas FI individuals were successful at analytic and deductive language-learning activities, FD learners exhibited an advantage with induction and communication. Shalbafan investigated whether the findings of earlier research could be extrapolated to Iranian EFL learners' writing ability. His results showed that where the form of a writing task was considered, FI students performed better than their FD counterparts. The results also indicated that where the content of writing was of concern, FD were more successful than FI students.

Rickards, Fajen, Sullivan, and Gillespie (1997) conducted two experiments, one in listening and one in reading, in connection with 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 participants seemed to use a tacit structure strategy, whereas FD participants appeared to display structuring skills when note-

taking. Tor example, FD students were able to access a powerful structure strategy for recall when allowed to take notes while reading a passage. Moreover, Tinajero and Paramo (1998) reviewed research into the possible effect of FD/FI on achievement in school and also found style-related effects: FI participants performed better than FD participants, whether in a specific discipline or across all subjects.

Studies on the relationship of field-dependent/independent cognitive styles and language proficiency continued into the 21st century. Johnson, Prior, and Artuso (2000) investigated the hypothesis that a more FD cognitive style might be adaptive for certain components of second-language proficiency. They asked 28 native English-speakers and 29 students of ESL to complete measures of language proficiency (formal and communicative) as well as measures of FD/FI. They concluded that native English-speakers performed better than ESL students on language measures, but not on FD/FI measures. They also concluded that measures of FD/FI correlated negatively with measures of communicative production in the ESL group. The study indicated that a more FD style was associated with better performance on second-language communicative measures. Johnson et al. claimed on the basis of their study that FD/FI scores were not related to native English-speakers' language. Their results also supported a bipolar cognitive-style conception of FD/FI.

Pithers (2002) argued that cumulative research evidence on field dependence/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 behaviors.

Aims of the Study

The above literature review suggests that cognitive style remains a controversial issue in ESL/EFL research, but that the study of field-dependent/independent cognitive styles in relation to ESL/EFL issues still has a potential to be worthwhile. Therefore, the present study attempted to account for the probable effects of FD/FI cognitive style on individuals' performance with task-based reading comprehension tests. It was hypothesized that participants' 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 "scanning task" scores for FDs and FIs?
6. Is there a significant difference in the mean "elicitation task" scores for FDs and FIs?

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

Method

Instruments

The instruments used for subject selection and data collection in this study included (a) the GEFT, (b) the 1990 version of IELTS, and (c) the TBRT.

The Group Embedded Figures Test (GEFT)

The GEFT was used to identify participants' FD/FI cognitive styles. The GEFT instrument was developed by Witkin, Raskin, Oltman, and Karp (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 the 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. reported a mean GEFT score of 12.0 for males (N=155) and a mean score of 10.8 for females (N=242). The grand mean of participants in their study was 11.3. Panek, Funk, and Nelson (1980) reanalyzed data from an earlier investigation to determine the reliability and validity of the GEFT. They found that the GEFT had adequate split-half reliability. They also noticed that estimates of internal consistency and construct validity for the GEFT were adequate and satisfactory. Other studies that have reported adequate reliability and validity for the GEFT include Cano, Garton, and Raven (1992), Brenner (1997), and Sexton and Raven (1999). For the purposes of this study, participants were identified 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 participants 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 (Pallant, 2001).

The IELTS

One of the steps of this study was to assess the participants' level of proficiency. The instrument used for this was the 1990 version of the IELTS. Based on their scores on the IELTS, the participants were classified into four proficiency groups: nonproficient, semiproficient, fairly proficient, and proficient. Here again, the SPSS commands for collapsing a continuous variable into groups were used (Pallant, 2001). This time, SPSS was asked to create four equal groups based on the 25th, 50th, and 75th IELTS percentiles.

The Task-Based Reading Test (TBRT)

I had already developed the Task-Based Reading Test (TBRT) for another study (Salmani-Nodoushan, 2003). It consisted of three modules (each with 40 items) that measured participants' performance on five reading tasks: true-false, sentence-completion, outlining, elicitation of writer's views (called elicitation), and scanning. For this study, only the general module of the TBRT was used. It consisted of five passages of varying lengths, textual complexity, and readability indices. However, at the time of the development of the TBRT in 2003, the texts that appeared in the TBRT were chosen so 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, and so forth. Table 1 presents the readability statistics for the IELTS General Training Reading module (version 2000); Table 2 presents the readability statistics for the TBRT.

For the 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 40 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, which measured participants' performance on the true-false task, included 12 items. Each item was followed by three answers: true, false, and not given. The test-takers were expected to read the corresponding passages and to decide whether the propositions expressed in the true-false items were given in the passages, and if so, to make their own choice whether the items were true or false. The second set of items in the TBRT aimed at measuring participants' performance on sentence-completion tasks. This set included eight items. The items in this set were eight open-ended sentences that could be completed in two ways. Following this set of items was a list of possible endings. The test-takers' 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 participants' performance on outlining tasks. This category included six items. Test-takers were expected to read a passage; each paragraph within the passage was labeled with a letter from the English alphabet.

Table 1
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	1,244	1,867	2,286	3,930
Paragraphs	5	11	7	8	7
Sentences	7	16	18	24	36
Averages					
Sentences 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					
Sentences 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

They were expected to choose from among a list of summaries (i.e., main ideas) those that best represented the propositions expressed in each paragraph. They would then match the summary for each paragraph with the letter that signified that paragraph. Test-takers' performance on the task of identifying the writer's point of view (i.e., the elicitation task) was also considered. Five multiple-choice items followed a passage in the TBRT. Each

item had three choices: yes, no, not given. Participants were expected to read the passage and to decide whether the propositions expressed in these five items were given in the passage, and if so, whether they represented the views of the writer of the passage. The last set of items measured performance on scanning tasks. The nine items in this category asked participants to scan the reading passage for two types of information: dates and proper nouns. The former included five items, whereas the latter included four. The participants' job was to scan the reading passage and to identify the date or the proper noun that was questioned in the item.

Participants and Procedures

On the whole, 288 participants provided the sample for the present study. They were chosen systematically to make the results of the study more dependable. In the first step of subject selection, 1,743 freshman, sophomore, junior, and senior students all majoring in English in a number of Iranian universities and colleges took the GEFT. Their scores revealed that 582 of them were FI, 707 were FD, and 454 were Mixed Field (MF). The 454 MF participants were discarded from the study. Thus I had two major subgroups: FD with 707 members, and FI with 582 members.

In the second step, both the FD and FI participant groups took the 1990 version of the IELTS. The raw scores of these participants were used to classify them into four proficiency groups. The method used for this step was the capacity of SPSS for collapsing continuous variables into groups (Pallant, 2001). The 25th, 50th, and 75th percentiles were calculated for the IELTS scores of both FD and FI subgroups. Thus I had eight proficiency groups: four for the FD participants, namely, low-proficient, semiproficient, fairly proficient, and proficient; and four for the FI participants: once again, low-proficient, semiproficient, fairly proficient, and proficient.

In the third step, participants 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 participants in terms of language proficiency; for each IELTS score in the FD group, I wished to have a corresponding score in the FI group. Thus there was a one-to-one correspondence between IELTS scores in the FD and the FI groups. That is, each IELTS score in the FI group had a counterpart in the FD group; individuals with scores that had no counterparts in either the FD or the FI groups were excluded from the study. For example, if a participant 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 participant was excluded from the study.

In the last step, from each proficiency group in each cognitive style 36 participants were selected by means of a matching technique. For example, if one participant with a raw IELTS score of 13 from the low-proficiency FD

group was chosen, one participant with a raw IELTS score of 13 from the low-proficiency FI group would also be chosen. For each proficiency group, 36 participants were selected in this way. Therefore, for each of the eight subgroups under study, there were 36 participants. Thus the final sample group for the study included 288 participants: 144 participants in the FI group (36 nonproficient, 36 semiproficient, 36 fairly proficient, and 36 proficient), and 144 participants in the FD group (also 36 nonproficient, 36 semiproficient, 36 fairly proficient, and 36 proficient). These students then took the 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 from the TBRT were then analyzed according to the independent-samples *t*-test statistic; because 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 entered for *t*-statistic analysis.

Results

One question addressed by the present study was whether there was a significant difference in the mean test scores for FD and FI individuals within the same proficiency group. Therefore, an independent-samples *t*-test was conducted to compare the overall TBRT scores for FD and FI individuals. The results revealed that in the case of the low-proficient participants, there was no significant difference in scores for FD participants (M=13.96, SD=4.76) and FI participants (M=11.806, SD=4.38; $t(70)$=1.99, p=.05). The magnitude of the difference 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 accounted for by cognitive style (Pallant, 2001). As for the semiproficient group, the results revealed that there was a significant difference in scores for FD participants (M=40.35, SD=7.47) and FI participants (M=36.94, SD=5.98; $t(70)$=2.13, p=.036). The magnitude of the difference in the means was moderate (Eta squared=.061); 6.1% of the variance in test performance was accounted for by cognitive style. In the case of fairly proficient participants, once again a significant difference was observed in scores for FD participants (M=66.11, SD=8.38) and FI participants (M=66.11, SD=6.83; $t(70)$=2.77, p=.007). The magnitude of the difference in the means was moderate (Eta squared=.0992); 9.92% of the variance in test performance was accounted for by cognitive style. Finally, in the case of proficient individuals too the results revealed that there was a significant difference in scores for FD individuals (M=89.24, SD=3.82) and FI participants (M=85.97, SD=4.94; $t(70)$=3.13, p=.002). Again, the magnitude of the difference in the means was moderate (Eta squared=.1232); 12.32% of the variance in test performance was accounted for 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
Semiproficient	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

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 (Pallant, 2001). In my tables reporting 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) is as follows:

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

Another question under study was whether there was a significant difference in the mean true-false task scores for FD and FI individuals. Therefore, an independent-samples *t*-test was conducted to compare the true-false

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
Semiproficient	2.13	70	.036	.0610	06.10
Fairly proficient	2.77	70	.007	.0992	09.92
Proficient	3.13	70	.002	.1232	12.32

task scores for FDs and FIs. The results indicated that there was a significant difference between FD and FI participants in all proficiency groups. In the case of the low-proficient individuals, there was a significant difference in scores for FD participants (M=20.83, SD=11.35) and FI participants (M=7.17, SD=8.00; t(70)=5.897, p=.000). The magnitude of the difference in the means was large (Eta squared=.3318); 33.18% of the variance in this case was accounted for by cognitive style. As for the semiproficient group, the results revealed that there was a significant difference in scores for FD participants (M=47.91, SD=15.21) and FI participants (M=26.38, SD=13.58; t(70)=6.332, p=.000). The magnitude of the difference in the means was again large (Eta squared=.3641); 36.41% of the variance was accounted for by cognitive style. In the case of fairly proficient individuals, once more a significant difference was observed in scores for FD participants (M=75.46, SD=11.94) and FI participants (M=50.46, SD=15.03; t(70)=7.813, p=.000), and the magnitude of the difference in the means was large (Eta squared=.4658); 46.58% of the variance was accounted for by cognitive style. Finally, in the case of proficient individuals too the results showed that there was a significant difference in scores for FD participants (M=99.76, SD=1.38) and FI participants (M=77.54, SD=13.03; t(70)=10.171, p=.000). The magnitude of the difference in the means was large (Eta squared=.5964); 59.64% of the variance was accounted for by cognitive style.

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 individuals. Therefore, another independent-samples t-test was conducted to compare the sentence-completion task scores for FD and FI individuals. The results indicated that there was a significant difference between FDs and FIs in all proficiency groups. In the case of the low-proficient participants, there was a significant difference in scores for FD participants (M=6.59, SD=6.99) and FI participants (M=22.56, SD=13.30;

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
Semiproficient	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
Semiproficient	6.332	70	.000	.3641	36.41
Fairly proficient	7.813	70	.000	.4658	46.58
Proficient	10.171	70	.000	.5964	59.64

$t(70)=-6.376$, $p=.000$). The magnitude of the difference in the means was large (Eta squared=.3673); 36.73% of the variance in this case was accounted for by cognitive style. As for the semiproficient group, the results revealed that there was again a significant difference in scores for FD participants ($M=24.65$, $SD=16.49$) and FI participants ($M=50.34$, $SD=17.80$; $t(70)=-6.352$, $p=.000$). The magnitude of the difference in the means was large (Eta squared=.3656); 36.56% of the variance was accounted for by cognitive style. In the case of fairly proficient individuals, a significant difference was observed in scores for FD participants ($M=50.00$, $SD=18.89$) and FI participants ($M=73.95$, $SD=17.51$; $t(70)=-5.578$, $p=.000$). The magnitude of the difference in the means was large (Eta squared=.3077); 30.77% of the variance was accounted for by cognitive style. Finally, in the case of proficient individuals too the results showed that there was a significant difference in scores for FD participants ($M=72.56$, $SD=14.58$) and FI individuals ($M=97.91$, $SD=4.72$; $t(70)=-9.921$, $p=.000$). The magnitude of the difference in the means was large (Eta squared=.5843); 58.43% of the variance was accounted for 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
Semiproficient	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
Semiproficient	–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 participants. Therefore, another independent-samples *t*-test was conducted to compare the outlining task scores for FDs and FIs. The results indicated that there was a significant difference between FD and FI individuals in all proficiency groups. In the case of the low-proficient participants, there was a significant difference in scores for FD participants (M=23.61, SD=20.06) and FI participants (M=2.77, SD=7.45; $t(70)$=5.839, p=.000). The magnitude of the difference in the means was large (Eta squared=.3275); 32.75% of the variance in this case was accounted for by cognitive style. As for the semiproficient group, the results revealed that there was a significant difference in scores for FD individuals (M=47.68, SD=21.51) and FI participants [M=25.00, SD=20.50; $t(70)$=4.580, p=.000]. The magnitude of the difference in the means was once more large (Eta squared=.2305); 23.05% of the variance was accounted for by cognitive style. In the case of fairly proficient individuals, a significant difference was observed in scores for FD participants (M=76.38, SD=17.07) and FI participants (M=56.01, SD=19.58; $t(70)$=4.704, p=.000). The magnitude of the difference in the means was large (Eta squared=.2401); 24.01% of the variance was accounted for by cognitive style. Finally, in the case of proficient individuals too the results showed that there was a significant difference in scores for FD participants (M=100.00, SD=0.00) and FI individuals (M=76.38, SD=20.06; $t(70)$=7.059, p=.000). The magnitude of the difference in the means was large (Eta squared=.4158); 41.58% of the variance was accounted for by cognitive style.

The fifth question addressed by the present research was whether there was a significant difference in the mean scanning task scores for FD and FI participants. Therefore, another independent-samples *t*-test was conducted to compare the scanning task scores for FDs and FIs. The results indicated that there was a significant difference between FD and FI individuals in all proficiency groups. In the case of the low-proficient participants, there was a significant difference in scores for FD participants (M=1.85, SD=4.19) and FI

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
Semiproficient	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

individuals (M=20.37, SD=15.37; t(70)=–6.972, p=.000). The magnitude of the difference in the means was large (Eta squared=.4098); 40.98% of the variance in this case was accounted for by cognitive style. As for the semiproficient group, the results revealed that there was a significant difference in scores for FD participants (M=27.77, SD=13.67) and FI participants (M=48.76, SD=15.55; t(70)=–6.081, p=.000). The magnitude of the difference in the means was large (Eta squared=.3456); 34.56% of the variance was accounted for by cognitive style. In the case of fairly proficient participants, a significant difference was observed in scores for FD participants (M=57.09, SD=15.29) and FI individuals (M=74.38, SD=14.74; t(70)=–4.882, p=.000). The magnitude of the difference in the means was large (Eta squared=.2295); 22.95% of the variance was accounted for by cognitive style. Finally, in the case of proficient participants too the results showed that there was a significant difference in scores for FD participants (M=79.32, SD=11.00) and FI individuals (M=100.00, SD=.000; t(70)=–11.279, p=.000). The magnitude of the difference in the means was large (Eta squared=.6450); 64.50% of the variance was accounted for by cognitive style.

The final question addressed by the present research was whether there was a significant difference in the mean elicitation task scores for FD and FI

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
Semiproficient	4.580	70	.000	.2305	23.05
Fairly proficient	4.704	70	.000	.2401	24.01
Proficient	7.059	70	.000	.4158	41.58

Table 11
Group Statistics for Scanning 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
Semiproficient	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

individuals. Therefore, a final independent-samples *t*-test was conducted to compare the elicitation task scores for FDs and FIs. The results indicated that there was a significant difference between FD and FI participants in all proficiency groups. In the case of the low-proficient participants, there was a significant difference in scores for FD participants (M=19.44, SD=17.55) and FI individuals (M=1.11, SD=4.64; $t(70)$=6.057, p=.000). The magnitude of the difference in the means was large (Eta squared=.3438); 34.38% of the variance in this case was accounted for by cognitive style. As for the semiproficient group, the results revealed that there was a significant difference in scores for FD participants (M=61.11, SD=20.80) and FI participants (M=33.88, SD=16.43; $t(70)$=6.159, p=.000). The magnitude of the difference in the means was large (Eta squared=.3514); 35.14% of the variance was accounted for by cognitive style. In the case of fairly proficient individuals, a significant difference was observed in scores for FD participants (M=73.33, SD=19.12) and FI participants (M=48.33, SD=22.10; $t(70)$=5.132, p=.000). The magnitude of the difference in the means was large (Eta squared=.2476); 24.76% of the variance was accounted for by cognitive style. Finally, in the case of proficient individuals too the results showed that there was a significant difference in scores for FD participants (M=95.55, SD=9.69) and FI participants

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

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

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
Semiproficient	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

(M=73.33, SD=19.12; $t(70)$=6.219, p=.000). The magnitude of the difference in the means was large (Eta squared=.3558); 35.58% of the variance was accounted for by cognitive style.

Discussion

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

Although nonproficient individuals' 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

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
Semiproficient	6.159	70	.000	.3514	35.14
Fairly proficient	5.132	70	.000	.2476	24.76
Proficient	6.219	70	.000	.3558	35.58

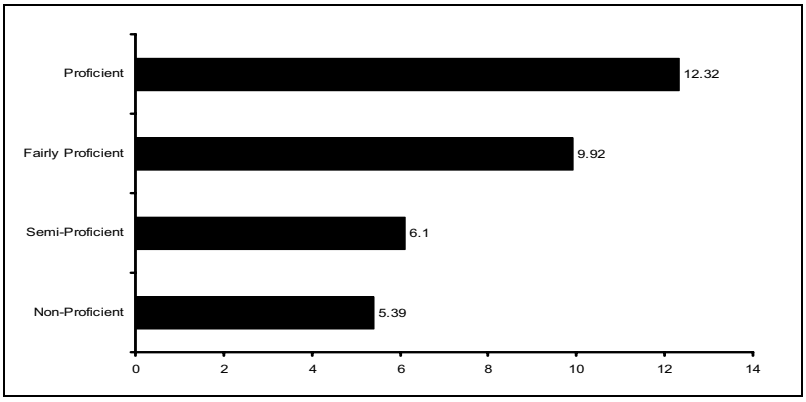

Figure 1. Percentages of variance explained by cognitive style across proficiency levels for participants' overall test performance.

participants' test performance (p=.055). The difference for the other proficiency groups was statistically significant.

It is difficult to provide an explanation for this pattern. It can perhaps be related to the degree to which individuals focused on the test items. Logically speaking, participants at lower levels of proficiency are more focused on form than participants at higher proficiency levels. In other words, when low-proficiency individuals take a test, they do their best to watch the linguistic accuracy of the answers they provide, which may be viewed as using their limited proficiency optimally. However, as their level of proficiency grows, individuals arguably pay less and less attention to linguistic form and may fail to use their proficiency optimally. Hence there could be room for factors other than language proficiency to show an influence. This may imply that monitoring (i.e., what Krashen, 1981, identifies in the monitor model) is at work here; low-proficiency participants may indeed be monitor overusers, whereas proficient participants are perhaps monitor underusers. As a result of this kind of monitoring, it is conceivable that low-proficiency individuals draw on the totality of their linguistic competence in performing a linguistic task, whereas proficient participants 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 participants' performance on the various reading task types. FD participants outperformed their FI counterparts on true-false, outlining, and elicitation tasks; on the contrary, FI participants outperformed FD participants on sentence-completion and scanning 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 participants were expected (a) to read the corresponding

Table 15
Comparison of Percentages of Variance Explained by Cognitive Style for Various Reading Tasks Across Proficiency Levels

Proficiency	*True-False*	*Sentence-Completion*	*Outlining*	*Elicitation*	*Scanning*
Low-proficient	33.18	36.73	32.75	34.38	40.98
Semiproficient	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

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 scanning tasks, however, participants had to be able to isolate specific information from the corresponding passages so as to answer the questions that preceded or followed each passage; in other words, the passages in the sentence-completion and scanning tasks were the fields, and the test items were the simple forms embedded in these fields. This may be viewed as a clear justification for why FI participants outperformed FD participants on these tasks: the analytic nature of FI participants would be

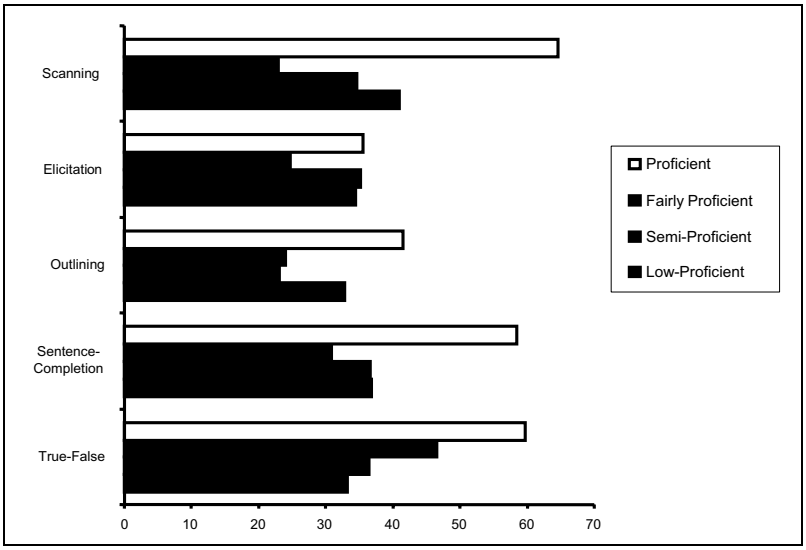

Figure 2. Percentages of variance explained by cognitive style across proficiency levels.

the key to their success in these tasks. By way of contrast, the test items in the true-false, outlining, and elicitation tasks were field-based. The participants did not require analytic skill to attempt these items: a holistic approach was what participants needed to answer the test items measuring performance of these tasks. Thus the results seem to show that FD individuals outperformed FI participants on tasks that required holistic skills, whereas FI participants outperformed FD participants on tasks that required analytic skills. This finding for Iranian participants is in line with the findings of earlier studies done in other parts of the world. Table 15 compares the percentages of variance accounted for by FD/FI cognitive styles across proficiency levels for various reading tasks.

Conclusion

This study attempted to account for the probable effects of field-dependent/independent cognitive style on participants' scores on task-based reading comprehension tests. The results showed that cognitive styles had the strongest effect on test performance when test-takers were most proficient. Perhaps more proficient test-takers are subconsciously led toward less reliance on monitoring their linguistic performance. More research is required to see if this claim holds true. The study also revealed that success with more holistic or more analytic reading tasks correlated with FD/FI cognitive style. Scores on holistic tasks correlated positively with FD style and negatively with FI style; by contrast, scores on analytic tasks correlated positively with FI style and negatively with FD style.

In brief, the results of the study showed that factors other than proficiency appear to be 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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