On the Cognitive Style of Field (In)dependence as a Predicator of L2 Learners' Performance in Recognition and Text-based Tests of Metaphor

Mahmood Hashemian
English Department, Shahrekord University, Shahrekord, Iran
Email: m72h@hotmail.com

Ali Roohani
English Department, Shahrekord University, Shahrekord, Iran
Email: roohani.ali@gmail.com

Batool Fadaei
English Department, Shahrekord University, Shahrekord, Iran
Email: b.fadaei125@gmail.com

Abstract—Not only being a linguistic device to add color to texts, metaphor is an important feature of our thinking and education (Jensen, 2006). In the same line, Kövecses (2002) believes in the important role of metaphor in human thought, understanding, and making our social, cultural, and psychological reality. Yet on a closer look, L2 pedagogy has piqued L2 educators' interest in understanding of L2 learner differences. One is the attempt to match the kind of instructional activities to L2 learners' preferred styles. This study is an attempt to investigate the role of cognitive style of field (in) dependence (FI/FD) on L2 learners' performance in recognition, text-based true-false, and text-based scriptally implicit tests of metaphor. For the purpose of this study, 80 senior undergraduate university students majoring in English Translation were selected from among 110 students through a 50-item Nelson English Language Proficiency Test adopted from Fowler and Norman Coe (1978) with reasonable measures of validity and reliability. Then, the cognitive style of FI/FD and metaphorical performance were assessed, respectively. As for the former, GEFT developed by Witkin, Raskin, Oltman, and Karp (1971) was run. Regarding the latter, refined through conducting factor analysis, the tests of metaphor were run. After running a one-way multivariate analysis of variance (MANOVA), the data revealed a significant difference between the cognitive style of FI/FD on all kinds of metaphor tests. The study could have some implications for L2 research and pedagogy that will be discussed throughout the paper.

Index Terms—conceptual metaphor, cognitive style of filed (in) dependence, recognition, text-based true-false, and scriptally implicit tests of metaphor, conceptual mapping, conceptual blending

I. INTRODUCTION

Metaphor has long played an important role in an L2 as an omnipresent phenomenon not only in everyday speech but also in human thinking (Kövecses, 2002). In light of this fact, the use of metaphor is so widespread that an understanding of these invaluable expressions is essential to successful communication, whether in listening, speaking, reading, or writing. In addition, upon reading a written discourse, the potential readers may be amazed by the great abundance of metaphorical uses of language.

As Jensen (2006) explains, metaphors have filled our language, literature, and art. However, Lakoff and Johnson (1980) go far beyond this and contend that "metaphor is pervasive in everyday life, not just in language but in thought and action" (p. 4). Unlike this ubiquitous role of metaphor in thought and language, which assigns a main role to the contemporary view of metaphor, Aristotle, who believes in the classical view of metaphor deems metaphor as an ornamental tool suitable for poetry and as a useless device for scientific discourse. But Kövecses (2002, p. 199) takes this idea way more steps forward and regarding the classical view of metaphor is against the view that metaphors are "consisted of two or more words and that the overall meaning of these words cannot be predicted from the meaning of constituent words."

To put it plainly, Kövecses (2002) argues that metaphor is not an expression that has a special meaning in relation to the meanings of its constituting parts, but "it arises from our more general knowledge of the world embodied in our conceptual system" (p. 201). All the same, within the framework of L2 research, the empirical works from cognitive science (e.g., Gibbs, 1994; Lakoff & Johnson, 1980; Lakoff & Turner, 1989; Turner, 1996) show that metaphor is not a sheer linguistic or rhetorical figure, but is a fundamental part of people's ordinary thought.

Kövecses (2002) defines metaphor as understanding one conceptual domain in terms of another conceptual domain called conceptual metaphor (p. 4). Thus, it is possible to talk about *life* in terms of *journeys, arguments* in terms of *war, love* also in terms of *journeys, theories* in terms of *buildings, ideas* in terms of *food,* and *social organizations* in terms of *plants.* Technically speaking, every conceptual metaphor "consists of two conceptual domains, in which one domain is understood in terms of another" (Kövecses, 2002, p. 4). The source domain is a more concrete or physical concept that helps us draw metaphorical expressions and understand another conceptual concept. The target domain is a more abstract concept that is understood. Thus, *argument, love, idea,* and *social organizations* are all target domains, and *war, journey, food,* and *plant* are source domains, respectively.

Recognizing the source of metaphor in literature and art is an idea among lay people. Lay people think that creating metaphor is the work of poets and artists. These ideas are believed in classical view of metaphor, but they are only partially true from the cognitive linguistics point of view. Nevertheless, by introducing the contemporary view of metaphor developed by Lakoff and Johnson (1980) in their book *Metaphors We Live By*, the ideas changed dramatically. In fact, metaphors are a matter of thought in the contemporary view. Contrary to the classical view, metaphors are not just poetic expressions but apply to much of the ordinary everyday language.

At any rate, it is a truism that L2 teaching has changed as a result of curricula and teaching methods to meet the changing needs of L2 learners. Therefore, investigating the factors influencing L2 test scores has long been focused in different scientific inquiries (e.g., Alderson, 1991; Anivan, 1991; Salmani-Nodoushan, 2006, 2009). Upon these attempts, different factors have been identified. Individual L2 learner differences are one such category influencing the performance of L2 test-takers.

An awareness of individual differences in L2 learning will make L2 educators and program designers, in all probability, more sensitive to the roles of these differences in L2 teaching (Kang, 1999). One of the highly fruitful and important dimensions of the individual L2 learner differences is L2 test-takers' cognitive styles.

In the case of the cognitive style, one such area that has received attention from L2 researchers (Altun & Cakan, 2006; Daniels, 1996; Ford & Chen, 2001) is the cognitive style of filed (in)dependence (FI/FD) having possibly the widest application to the educational concerns. According to Brown (2000), FD learners pay attention to the whole of a learning task containing many items and rely on the surrounding field. On the contrary, FI individuals pay attention to particular items and perceive objects as separate from the field. In a nutshell, as it is evident from Ford and Chen□ s (2001) assertion, FD L2 learners concentrate first on making an overall picture of the subject area, and then, consider the details.

It is worth mentioning that reviewing the miscellaneous research studies (e.g., Amanzio, Geminiani, Leotta, & Cappa 2007; Blasko, 1999; Charteris-Black, 2000; Charteris-Black & Ennis, 2001; Delfino & Manca, 2007; Kövecses & Szabo′, 1996; Leavy, McSorley, & Bote′, 2007; White, 2003) conducted in the field of metaphor revealed the pervasive use of metaphor in different domains. Metaphor comprehension has also been a matter of enquiry in neuropsychology since the late 1970s. In this regard, Blasko (1999, cited in Chiappe & Chiappe, 2007, p. 174) found a link between working memory capacity and metaphor comprehension. By studying 163 male and female individuals, Blasko found that high working memory individuals produced deeper interpretations of metaphors. This study jumped on the bandwagon of Chiappe and Chiappe (2007) who believed in effectiveness of working memory capacity as an important factor in metaphor processing based on the fact that high working memory capacity individuals could make better interpretations of metaphors.

In their study of L2 learners' explanations of conceptual metaphor and cognitive style variables, Boers and Littlemore (2000), through using the Riding□ s (1991) computer-assisted test of the cognitive styles, asked a group of 71 students of business and economics in the University of Brussels to explain three conceptual metaphors. Then, Boers and Littlemore classified the participants' cognitive styles into *analytic* or *holistic* and *imager* or *verbalizer.* The results revealed that the holistic thinkers tended to blend their conception of the target domain with the source domain and the imagers were more likely to refer to images to explain the metaphors.

Concerning the correlation between L2 learners' cognitive style and choice of metaphor, Palmquist (2001) hypothesized that understanding and choice of metaphors would be dependent on L2 learners' cognitive style. In order to test this hypothesis, Palmquist investigated which metaphors were preferred by L2 learners, and then, measured their cognitive styles. Palmquist gave a list of metaphors to L2 learners, asked them to choose their favorite metaphor, and then, to explain the reason for choosing that metaphor. Then, by using GEFT, the L2 learners' cognitive styles were determined. Although no correlation was found between the cognitive styles and L2 learners' choice of metaphors, the FD learners tended to use social topics and such broad terms as *vast* and *uncharted* to explain the reason for their choices. Conversely, the FI learners were action-oriented and tended to use verbs to do this task.

True as it may seem, due to lack of any clear methodology, one can claim that L2 research domain has had its main focus of attention on the comprehension processes of metaphorical language rather than the production side (Harris, Friel, & Mickelson, 2006). With all this amount of emphasis laid on such vital and fruitful area as the comprehension side of metaphorical language, most advanced L2 learners likely experience moments of difficulty in reading a passage containing metaphors.

In a nutshell, the area of L1 and L2 research abounds with miscellaneous studies on the figurative use of language and the cognitive style of FI/FD, respectively. However, regarding the relationship between this ilk of cognitive style

and metaphorical use of language in recognition and text-based tests of metaphor, upon examining the relevant literature, one would spot areas of neglect in this research domain. Thus, if the study of the relationship between the cognitive style of FI/FD and performance in metaphor tests is so important for L2 learner's success, both in their academic studies and communication in L2, it makes sense to try and probe into such area.

From the above discussion and to the best of the present researchers' knowledge, almost no attempt has been made to investigate the difference between the FI/FD cognitive style and the metaphorical test performance, whereas, according to Kövecses (2002), metaphor has an important role in human thought, understanding, and making our social, cultural, and psychological reality. Therefore, the specific focus in this study is to assess the L2 learners' metaphorical test performance in recognition, text-based true-false, and text-based scriptally implicit tests of metaphor. In line with the above sections, the present study is an attempt to provide answers to the following questions:

    1. Is there any difference between the performance of FI/FD learners in recognition test of metaphor?

    2. Is there any difference between the performance of FI/FD learners in text-based true-false test of metaphor?

    3. Is there any difference between the performance of FI/FD learners in text-based scriptally implicit test of metaphor?

II. Methodology

A. Participants

For the purpose of this study, 80 senior undergraduate university students including both male and female, majoring in English Translation were selected from Isfahan University, Shahrekord University, and Shahid Chamran University of Ahvaz. Their age ranged from 19 to 26 with Persian as their L1 language. The participants were selected in line with their mean scores and standard deviations, from among 110 students through a 50-item Nelson English Language Proficiency Test with reasonable measures of validity and reliability. The reason for the selection of the aforementioned L2 learners was that they had passed a course on *Application of Idiomatic Expressions in Translation/Language*. Therefore, it was assumed that these undergraduates had familiarity with metaphors.

B. Materials

For the present study, the materials were as the followings: The first material was a 50-item Nelson English Language Proficiency Test, most commonly used for the advanced level, adopted from Fowler and Coe (1978) to make sure that all the participants enjoyed the same level of proficiency, and accordingly, to homogenize them prior to the study. In the current study, the reliability coefficient of this test was high (Cronbach's Alpha = .82).

The second material was a paper-and-pencil test of GEFT adopted from Witkin, Raskin, Oltman, and Karp (1971) to assess the cognitive style of FI/FD. The previously mentioned test required the participants to separate an item (i.e., a simple geometric shape) from a background (i.e., a more complex shape). In this test, the participants who managed to recognize a hidden figure from a field were FI and those who failed to do this task were FD. Of the vital importance is that Witkin et al. (1971) reported a Spearman-Brown reliability coefficient of .82 for their instrument. It should be mentioned that the reliability of the aforementioned test was also examined for the current study via Cronbach□s Alpha that turned out to be .78.

The third material was a metaphor test consisting of three parts: recognition, text-based true-false, and text-based scriptally implicit tests from the books *English Idioms in Use* (McCarthy & O'Dell, 2002), *Idiom Organizer* (Wright, 1999), and *Practicing Idioms* (Watson, 1991) given to the participants in order to investigate their metaphorical performance (see Appendix). The metaphor test was a multiple-choice test consisting of 15 recognition tests of metaphor and three passages as the text-based tests of metaphor. Each passage consisted of five true-false and five scriptally implicit questions, respectively. Thus, every passage included 10 questions and the total number of the questions regarding the passages was 30.

Concerning the true-false questions, each item was followed by three answers of *true*, *false*, and *not given*. In addition, the scriptally implicit questions were 15 open-ended sentences to be completed by one of the alternatives presented in the form of multiple-choice test. In fact, according to Alderson (2000, p. 87), these questions require readers to integrate text information with their background knowledge to find the correct responses to the questions. Every correct answer had one score. Therefore, the total score for the recognition test of metaphor was 15 and for the passages 30, respectively.

Furthermore, in order to refine the test items and form a smaller number of coherent subscales, prior to use them, Factor Analysis was conducted. The 60 items of the metaphor tests were subjected to principal components analysis (PCA) using SPSS Version 16. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Oklin value was .618, exceeding the recommended value of .6 (Kaiser, 1970, 1974) and Bartlett□s Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix. The results of parallel analysis showed only three components with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (60 variables × 160 respondents).

The three-component solution explained a total of 44.85% of the variance. To aid in the interpretation of these three components, Oblimin rotation was performed. The rotated solution revealed the presence of a simple structure (Thurstone, 1947), with the three components showing a number of strong loadings. The results of this analysis

supported the use of recognition, text-based true-false, and text-based scriptally implicit tests of metaphor as separate constructs.

C. Procedure

All in all, this research study consisted of three phases: Assessing Proficiency, Cognitive Style, and Metaphorical Performance, each with its own specific procedures.

To collect the data, first, a 50-item Nelson English Language Proficiency Test was administered. As Table 1 shows, according to the proficiency mean score ($M = 26$) and standard deviations ($SD = 11$) assessed by SPSS, 80 participants from among 110 ones whose scores were from 15 to 37 were selected:

TABLE 1.
THE MEAN SCORE AND STANDARD DEVIATION OF THE NELSON TEST

Scores	*N*	Min	Max	Mean	*SD*
	110	6.00	46.00	26.26665	11.36109

Second, in order to assess the participants' cognitive style of FI/FD, the selected participants were given GEFT. This paper-and-pencil test contained three sections including 25 figures. The participants were asked to identify eight simple shapes labeled A to H in the complex figures. The criterion for the participants' dichotomization is 11. Those who got scores above 11 are considered as FI and those below 11 are considered as FD. It should be mentioned that the seven figures in section 1 of the test are just for the purpose of practicing and familiarizing the participants with the test procedure, and they are not considered in the test scoring. Thus, the scores range between 0-18. The second and third sections for identifying the FI/FD learners were both five minutes long and consisted of 9 items, respectively (the test totally lasted 12 minutes). The possible scores ranged from 0 to 18. A score of 11 and above showed the FI learners and a score of below 11 identified the FD learners. The participants were informed about the purpose of the study before collecting the data.

As the last part of data collection, in order to assess the participants' metaphorical performance, three kinds of metaphor tests—namely recognition test of metaphor, text-based true-false test of metaphor, and text-based scriptally implicit test of metaphor—were given to the participants according to their code for GEFT. The aforementioned metaphor tests consisted of 15 recognition questions and three passages as text-based part. Each passage consisted of five true-false and five scriptally implicit questions to be completed by one of the alternatives, respectively. Thus, every passage included 10 questions and the total number of the questions regarding the passages was 30. The participants had to choose their alternative by putting a check mark (√) in the answer sheets distributed among them.

III. RESULTS AND DISCUSSION

The raw data gathered from the FI/FD learners in such three kinds of metaphor tests as recognition, text-based true-false, and text-based scriptally implicit questions were submitted to the SPSS, and the subsequent computations were made as presented in Table 2:

TABLE 2.
ESTIMATED MARGINAL MEANS

Dependent Variable	Cognitive Style	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Recognition	FD	8.159	.404	7.355	8.963
	FI	9.944	.446	9.056	10.833
T-F	FD	10.477	.455	9.572	11.382
	FI	8.333	.502	7.333	9.334
Scriptally Implicit	FD	9.386	.194	9.001	9.772
	FI	8.639	.214	8.213	9.065

In recognition test of metaphor, the mean score for the FD learners is 8.15 and for the FI learners is 9.94, respectively. Although statistically significant, the actual difference in the two mean scores is small, almost less than 2 scale points. In text-based true-false test of metaphor, the mean score for the FD learners is 10.47 and for the FI counterparts is 8.33, which shows a statistically significant difference. At last, in the scriptally implicit test of metaphor, the mean score for the FD participants is 9.38 and for the FI ones is 8.63. Although statistically significant, the actual difference in the two mean scores is small, almost less than 1 scale point.

In order to compare the FD and FI groups and analyze the mean differences between the aforesaid groups in all three kinds of metaphor tests, MANOVA was done. In this study, the aforementioned metaphor tests were recognized as the dependent variables and the cognitive style of FI/FD was recognized as two levels of the independent variable. To test for multivariate normality, the present researchers calculated Mahalanobis distances:

TABLE 3.
RESIDUALS STATISTICS

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.00	1.89	1.45	.199	80
Std. Predicted Value	-2.280	2.196	.000	1.000	80
Standard Error of Predicted Value	.064	.228	.100	.031	80
Adjusted Predicted Value	1.00	2.09	1.45	.206	80
Residual	-.876	.755	.000	.459	80
Std. Residual	-1.871	1.612	.000	.981	80
Stud. Residual	-2.088	1.707	-.001	1.008	80
Deleted Residual	-1.091	.847	-.001	.485	80
Stud. Deleted Residual	-2.136	1.730	.000	1.013	80
Mahalanobis Distance	.508	17.767	2.962	3.071	80
Cook's Distance	.000	.267	.014	.031	80
Centered Leverage Value	.006	.225	.037	.039	80

In order to decide whether a case was an outlier, the present researchers compared the Mahalanobis distance value against a critical value reported by Pallant (2007, p. 280) through using a chi-square critical value table as provided below:

TABLE 4.
CRITICAL VALUES FOR EVALUATING MAHALANOBIS DISTANCE VALUES

Number of Dependent Variables	Critical Value	Number of Dependent Variables	Critical Value	Number of Dependent Variables	Critical Value
2	13.82	5	20.52	8	26.13
3	16.27	6	22.46	9	27.88
4	18.47	7	24.32	10	29.59

According to Pallant (2007), individuals whose mah-1 scores exceed these critical values are considered outliers. In Table 3, under the column marked maximum, Mahalanobis distance value is 17.76. Then, this number is compared to the critical value determined by the number of dependent variables being the value for degree of freedom (*df*). The number of the dependent variables in this study is three. Thus, the critical value in this case is 16.27.

In the current study, Mahalanobis distance value (17.76) is larger than the critical value (16.27). Thus, there are multivariate outliers in the study. Through looking at the data file, one of the cases exceeded the critical value of 16.27, suggesting the presence of one multivariate outlier. This was the person with *ID* = 9 and a score of 17.76. Because there was only one person and his score was not too high, the present researchers left this person in the data file. In the next stage, the assumption of linearity between the dependent variables was checked. There was a straight line relationship between each pair of the dependent variables. To test whether the data violates the assumption of homogeneity of variance-covariance matrices, Box□ s Test of Equality of Covariance Matrices was studied. The Box□ s M*Sig.* value is .116 that is larger than .001; therefore, this assumption is not violated:

TABLE 5.
BOX'S TEST OF EQUALITY OF COVARIANCE MATRIX

Box's M	10.658
F	1.701
Df1	6
Df2	3.954E4
Sig.	.116

To test equal variances, the next box to look at is the Leven's Test of Equality of Error Variance shown in Table 6:

TABLE 6.
LEVEN'S TEST OF EQUALITY OF ERROR VARIANCES

	F	*df*1	*df*2	*Sig.*
Recognition	1.486	1	78	.226
T-F	.198	1	78	.658
Scriptally Implicit	1.625	1	78	.206

p < .05

In the *Sig.* column, none of the variables are less than .05. In fact, they do not record significant values. Therefore, equal variance is assumed, and the assumption of the equality of variance is not rejected. In order to see whether there were statistically significant differences among the groups on a liner combination of the dependent variables, the set of

multivariate tests of significance was studied. One of the most commonly reported statistics, according to Pallant (2007), is Wilk☐ s Lambda as presented in Table7:

TABLE 7.
MULTIVARIATE TESTSB

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.989	2.229E3[a]	3.000	76.000	.000	.989
	Wilks' Lambda	.011	2.229E3[a]	3.000	76.000	.000	.989
	Hotelling's Trace	87.979	2.229E3[a]	3.000	76.000	.000	.989
	Roy's Largest Root	87.979	2.229E3[a]	3.000	76.000	.000	.989
Cognitive Style	Pillai's Trace	.158	4.746[a]	3.000	76.000	.004	.158
	Wilks' Lambda	.842	4.746[a]	3.000	76.000	.004	.158
	Hotelling's Trace	.187	4.746[a]	3.000	76.000	.004	.158
	Roy's Largest Root	.187	4.746[a]	3.000	76.000	.004	.158

a. Exact Statistics
b. Design: Intercept + Cognitive Style

In the second section of the Multivariate Tests Table, in the row labeled with the name of the independent variable (cognitive style), the value for Wilk☐ s Lambda and its associated significant level are presented. The Wilk☐ s Lambda value is .842, with a significant value of .004 that is less than .05; therefore, there is a statistically significant difference between the FI/FD learners in terms of their metaphorical performance. Because a significant result was obtained on the multivariate test of significance, there is a chance to investigate further in relation to each of the dependent variable. Thus, the Test of Between-Subject Effects output box should be studied.

Due to a number of separate analyses, Pallant (2007) suggested a higher alpha level to reduce the chance of a type 1 error. The most common way of doing this is to apply what is known as Bonferroni adjustment. In its simplest form, this involves dividing the original alpha level of .05 by a number of analyses that the researchers intends to do. In this study, there are three dependent variables to investigate (recognition test of metaphor, text-based true-false test of metaphor, and text-based scriptally implicit test of metaphor); therefore, .05 is divided by 3, giving a new alpha level of .017. The result is considered significant only if the probability value (*Sig.)* is less than .017.

Thus, in the Test of Between-Subjects Effects box presented in Table 8, the values in a row labeled with the independent variable (cognitive style), each of the dependent variables is listed with their associated univariate *F*, *df,* and *Sig.* values.

TABLE 8.
TESTS OF BETWEEN-SUBJECTS EFFECTS

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Cognitive Style	Recognition	63.112	1	63.112	8.794	.004	.101
	T-F	91.010	1	91.010	10.013	.002	.114
	Scriptally Implicit	11.063	1	11.063	6.703	.011	.079
Error	Recognition	559.775	78	7.177			
	T-F	708.977	78	9.089			
	Scriptally Implicit	128.737	78	1.650			
Total	Recognition	7049.000	80				
	T-F	8039.000	80				
	Scriptally Implicit	6692.000	80				
Corrected Total	Recognition	622.887	79				
	T-F	799.988	79				
	Scriptally Implicit	139.800	79				

a. R Squared = .101 (Adjusted R Squared = .090)
c. R Squared = .079 (Adjusted R Squared = .067)
b. R Squared = .114 (Adjusted R Squared = .102)

Upon looking for any values that are less than .017 (our new adjusted alpha level) in Table 8, the *Sig.* column for all the three dependent variables in the row labeled with the independent variable (cognitive style) reported a significant value less than the cut-off point (with the *Sig.* values of .004, .002, and .011). Thus, the significant difference between the FI/FD learners was on all kinds of metaphor tests.

The importance of the impact of cognitive style on metaphorical performance was also evaluated using the effect size statistics provided in the final column. Partial Eta Squared represents the proportion of the variance in the dependent variables (recognition, true-false, and scriptally implicit) that can be explained by the independent variable (cognitive style). Utilizing commonly used guidelines (.01 = small, .06 = moderate, .14 = large) proposed by Cohen (1988, p. 284-287), this value of .101 for the recognition test of metaphor is considered somehow a large effect and represents 10.1% of variance explained by cognitive style. The aforementioned Partial Eta Squared for the text-based true-false test of metaphor is .114, which again is considered somehow a large effect and represents 11.4% of variance explained by cognitive style. Finally, Partial Eta Squared for the scriptally implicit test of metaphor is .079, which is considered quite a moderate effect and represents 7.9% of variance explained by the cognitive style of FI/FD.

IV. CONCLUSION

Being at the nexus of mind and language, metaphor has been studied by different scholars (Gibbs, 2006; Lankton, 2002; Roberts & Kreuz, 1994; Tendahl & Gibbs, in press;) in order to define this ilk of metaphorical language and, in main, understand its function in language, thought, and culture. This manifests itself in a unanimous agreement among the aforesaid scholars who astonishingly believe that the mind is also metaphorical in nature.

Thus, metaphor is not merely a figure of speech, but may as well be attributed to the mental mappings in which one conceptualizes source and target domains of metaphor (Tendahl & Gibbs, in press). Tendahl and Gibbs justify the idea that particular keywords from the source domain may activate a conceptual metaphor that involves understanding one conceptual domain in the light of another conceptual one; and accordingly, the inference occurs. The aforementioned model is in accord with Lakoff and Johnson's (1980) model of conceptual mappings. Just the same, through proposing conceptual blending theory, Fauconnier and Turner (2002) introduce another major development being of paramount importance in cognitive linguistics relevant to metaphor. Through extending this theory to the realm of metaphorical language, metaphorical meaning is captured by a blended space having in common some structure from both source and target domains. In other words, blending theory extends conceptual mapping by creating mappings that are not unidirectional between source and target domains (Tendahl & Gibbs, in press).

Thus, the findings of this study are consistent with the one by Boers and Littlemore (2000) who explain that the possibility of different approaches towards conceptual metaphor may be related to different cognitive style. To explain the reason for the aforesaid metaphorical performance, based on Boers and Littlemore (2000), the analytic participants, or FI learners are more likely to conceive the two domains of metaphor (i.e., source domain and target domain) as distinct domains, whereas the holistic participants, or FD ones are less able to ignore irrelevant contexts.

To jump on the bandwagon of Boers and Littlemore (2000), L2 learners with different cognitive style understand conceptual metaphors in two ways. FI L2 learners use the approach of mapping across two distinct domains of source and target ones that is in accord with Lakoff and Johnson's (1980) model of conceptual mappings. Lakoff and Johnson's (1980) conceptual mappings assume that all the concepts are structured through more basic concepts and they argue that metaphorical conceptual mappings are not only reflected in the expressions that one may use, but also one use these conceptual mappings to understand metaphorical expressions. As a result, this capacity facilitates metaphor recognition.

On the other hand, using the model of blending or conceptual integration of different domains, Fauconnier and Turner (1994, 1995, 1998) believe that FD L2 learners conceive the source and target domains of metaphor as an integrated entity, whereas analytic L2 learners are more likely to conceive the source and target domains of a metaphor as separate parts.

These explanations, in turn, count as a piece of corroborative evidence for the view held by Oxford and Anderson's (1995) hypothesis, explaining that the holistic individuals, or FD ones study the whole picture of a problem, whereas analytic individuals, or FI ones will focus on the separate parts of the problem. As in the current study, the holistic individuals focused on the text-based tests of metaphor consisting of true-false and scriptally implicit questions, whereas the analytic participants outperformed in the recognition test of metaphor.

Besides, the findings are somehow in line with Palmquist's (2001) conclusion. To determine which metaphors are preferred by L2 learners and why, Palmquist (2001) found that the holistic participants tended to see metaphors with a broad concept base. In a similar vein, the results of the current study reported that L2 learners' cognitive style resulted in statistically significant differences in the recognition and text-based tests of metaphor. To put the same thing differently, the FI L2 learners focused more on sentences than on the overall organization. Hence, the analytic participants attended to the isolated parts of a whole and outperformed in the recognition tests of metaphor, whereas the holistic learners attend to the overall organization of a field and outperform in text-based tests of metaphor, respectively.

In addition, the findings of the present study support the claims of recent researchers like Salmani-Nodoushan (2006) who claim that the cognitive style of FI/FD can be a factor affecting the participants' performance on such different reading task types as true-false. Because holistic L2 learners should read the passage, gain a holistic understanding of each passage, and then answer the questions, they outperform their analytic counterparts on the true-false task.

The findings are obviously in consonance with the one by Brown (2000) explaining that the cognitive style of FD is a style in which an individual tends to look at the whole of the learning task containing many items, and accordingly, the

FD individuals have difficulty studying a particular item when it occurs within the field of other items. FI, on the other hand, refers to a cognitive style in which an individual is able to identify and focus on particular items or events.

However, different L2 learners apply various strategies, albeit with a preference for one and their preferred strategies match the aspects of their cognitive styles. The results suggest that L2 learners with different cognitive styles process conceptual metaphors in different ways. FI L2 learners seem to involve the projection of structures across distinct domains resulting in a better performance regarding metaphor recognition, and accordingly, FD L2 learners perform on metaphor tests through conceptual integration of source and target domains and outperform in text-based tests of metaphor, respectively.

APPENDIX METAPHOR TESTS

Recognition Test of Metaphor
Code: …….   Time: 15 min
Directions: *Please read the following sentences and choose the best choice. Tick (√) your choices on the answer-sheet.*

1. When you start negotiating, let the other person make the first offer. Never ….. too early.
   a. set your sights on   b. open your eyes
   c. show your hand   d. swing a cat
2. I feel sick today because I ….. last night.
   a. hit the spot   b. porked out
   c. got the picture   d. saw through
3. It will be a(n) ….. before I see her again.
   a. old hand   b. early bird
   c. bad apple   d. cold day in hell
4. Mary is very moody: One minute she is …..; the next she is very depressed.
   a. at the drop of a hat   b. against all the odds
   c. on top of the world   d. in the nick of the time
5. My sister is a dreamer. She goes through life ….. .
   a. at the end of her rope   b. at her fingertips
   c. in her heart of hearts   d. with her head in the cloud
6. How is it going, Betty? I haven't seen you ….. . How is your father?
   a. on cloud nine   b. for the birds
   c. out of the woods   d. for donkey's years
7. Even if you are going to have some bad luck, it isn't the …..! Why worry before it happens.
   a. end of the world   b. luck of the draw
   c. spice of life   d. black sheep of the family
8. My grandmother died last night, and I will receive all her wealth. I guess I have ….. .
   a. called the shots   b. rocked the boat
   c. hit the jackpot   d. seen the point
9. Tom: I need someone to write a short report of meeting. Can you write it?
   Tim: Ok, I will ….., but I don't promise.
   a. smell a rat   b. have a shot at it
   c. horse around   d. feel fragile
10. I wish you'd tidy your flat up! It is like a ….. .
    a. cross-fertilization   b. dead-end
    c. tongue-in-cheek   d. pig-sty
11. Mr. Smith was tired, so he ….. over to Mr. Brown to speak for the audience.
    a. cost an arm and a leg   b. let the cat out of the bag
    c. handed the baton   d. played it by ear
12. My father's company in Tehran is a(n) ….. of his main company in Isfahan.
    a. pig-sty   b. off-shoot
    c. up-rooting   d. short-sighted
13. We didn't tell anyone the news because it was a secret. But she ….. and now everyone knows.
    a. let the cat out of the bag   b. had the world by the tail
    c. went to the dogs   d. call it a day
14. I think the boss is in a bad mood. Just get on with your work and ….. .
    a. keep your head down   b. show your hand
    c. be a drop in the ocean   d. be on the cards
15. I knew all Justin's stories were exaggerated. I ….. him the first time I met him.
    a. played it by ear   b. went to the dogs
    c. faced the music   d. saw through

Text-Based True-False & Scriptally Implicit Tests of Metaphor
Name: ……………………   Booklet No: …...
                                                                                          Time: 40 min
Directions: *Please read the following passages and choose the best choice in Parts Ⅰ and ⅠⅠ. Tick (√) your choices on the answer-sheet.*
Passage 1
When Mark started work, he was at the very bottom of the career ladder. He had quite a dead-end job doing run-of-the mill tasks. He stayed there for a couple of years, but then decided that he had to get out of a rut. He pulled out all the stops and managed to persuade his manager that he should be given more responsibility. The deputy manager got the sack for incompetence and Mark stepped into his shoes. For several months, he was rushed off his feet and he had something very difficult to do to keep on top of things. As a result, he was soon recognized as an up-and-coming young business man and he was headhunted by a rival company for one of their top jobs and so he climbed to the top of the career ladder. He had difficult days at work. He was all snowed under because their company had some important visitors. So, Mark put long-term tasks on hold and took rest for a short time.

Part Ⅰ :
1. Mark was up to his eyes because their company had a lot of visitors.
    a) True   b) False   c) Not Given
2. Mark was certainly on the go and he thought of a short break.
    a) True   b) False   c) Not Given
3. Mark didn't find his feet in other companies.
    a) True   b) False   c) Not Given
4. Companies suggested him a project in the pipeline.
    a) True   b) False   c) Not Given
5. Mark got the sack and the company took on extra staff.
    a) True   b) False   c) Not Given
Part ⅠⅠ :
6. Mark was headhunted by a rival company and ……… .
    a. went over his head   b. took on extra staff
    c. got the sack   d. was a drop in the ocean
7. Mark ……… at work and couldn't take rest.
    a. was at a loose end   b. was up to his ears
    c. didn't lift a finger   d. didn't burn a candle at both ends
8. Because Mark's tasks were ………., he put long-term tasks on hold.
    a. short-sighted   b. down-and-out
    c. run-of-the mill   d. out-and-out
9. Mark was really busy in his company and ……… .
    a. swanned around   b. horsed around
    c. put a face to a name   d. had enough on his plate
10. Because Mark was really busy, he didn't have time to just sit at his desk and ……… .
    a. twiddle his thumbs   b. put a face to a name
    c. be a drop in the ocean   d. be on the cards
Passage 2
Dear Paula, I'm 22 and work in a theater. I have been going out with a boy for the last 6 months, but lately it has all gone wrong. In fact, it was love at first sight. When I first saw him, he just took my breath away. I could hardly speak; he was so attractive and intelligent. We started going out. I have always had a soft spot for penniless artists like him. I didn't know whether he is keen on me or not. Then, I realized he had fallen for a good friend of mine. They had fallen head over heels in love. The news was so terrible that upon its hearing I started to cry. I just didn't know what had hit me. I asked him about it, but he got angry and told me that side of his life had nothing to do with me. I have mixed feelings about this news, and I don't know which way to turn. What should I do?
Part Ⅰ :
11. According to the passage, she is feeling down in the dumps.
    a) True   b) False   c) Not Given
12. Her boyfriend was in his bad books when she asked him about his new girlfriend.
    a) True   b) False   c) Not Given
13. According to the passage, we can infer that she and her boyfriend are on the same wavelength.
    a) True   b) False   c) Not Given
14. She and her boyfriend can get on like a house on fire.
    a) True   b) False   c) Not Given
15. When she saw her boyfriend for the first time, she took a shine to him.
    a) True   b) False   c) Not Given

Part I I :

16. When she understood her boyfriend had fallen for a good friend of her, she ………. .
    a. had it out with him   b. kept himself to himself
    c. got on like a house on fire   d. took a shine to him

17. Her boyfriend ………. her because he had fallen for one of her friends.
    a. was up-rooting   b. was two-timing
    c. was short-sighted   d. was dead-end

18. She has written a letter to Paula because she is ………. .
    a. shillyshallied   b. tongue-in-cheek
    c. short-cut   d. dead-end

19. She wrote the letter to Paula because she ………. .
    a. paid through the nose   b. had the world by the tail
    c. was a drop in the ocean   d. needed a shoulder to cry on

20. She didn't know which way to turn because she ………. .
    a. came from a broken family   b. played her cards right
    c. got off on the wrong foot   d. knew the ropes

Passage 3

My father had been feeling under the weather and he was at death's door. If you had seen him, you would have thought the same: He looked like death warmed up. He was in hospital for a couple of weeks, and then he came to stay with us for a week while he was on the mend. When he seemed as right as rain, we told him to go away for a few days to recharge his batteries. After one day beside the sea, he no longer felt off-color and by the second day he knew he was on the road to recovery. He sent us a post card and we were all glad to learn that he was alive and kicking again. By the end of the week, he returned to work as fit as a fiddle.

Part I :

21. My father practically had one foot in the grave.
    a) True   b) False   c) Not Given

22. When he was in the hospital, doctors told him that he had a new lease of life.
    a) True   b) False   c) Not Given

23. In order to sugar the pill, we asked him to go on a trip.
    a) True   b) False   c) Not Given

24. My father had a screw loose.
    a) True   b) False   c) Not Given

25. Finally, he kicked the bucket.
    a) True   b) False   c) Not Given

Part I I :

26. My dad's feeling much better. He is well ………. .
    a. on the way to recovery   b. in a rut
    c. at stake   d. against all the odds

27. There is nothing to worry about. He was given ………. .
    a. all in the same boat   b. a clean bill of health
    c. a bone of contention   d. a sore point

28. After one day beside the sea, he was ………. .
    a. at a drop of a hat   b. in a flap
    c. in a rut   d. in the picture of health

29. After coming back from his trip, he is ………. .
    a. black sheep of the family   b. down in the dumps
    c. back on his feet   d. left, right, and center

30. Because he has been feeling under the weather, we infer that he was ………. .
    a. dragging his feet   b. going down with something
    c. playing his cards right   d. paying through the nose

REFERENCES

[1] Alderson, J. C. (1991). Language testing in the 1990s: How far have we come? How much further do we have to go? In S. Anivan (ed.), *Current developments in language testing*. Singapore: SEAMEO Regional Language Center, 1-26.
[2] Alderson, J. C. (2000). Assessing reading. NY: Cambridge University Press.
[3] Altun, A. & Cakan, M. (2006). Undergraduate students' academic achievement, field dependent/independent cognitive styles and attitude toward computers. *Educational Technology and Society* 9.1, 289-297.
[4] Amanzio, M., Geminiani, G., Leotta, D. & Cappa, S. (2007). Metaphor comprehension in Alzheimer's disease: Novelty matters. *Brain and Language* 107.1, 1-10.
[5] Anivan, S. (Ed.). (1991). Current developments in language testing. Singapore: SEAMEO Regional Language Center.
[6] Blasko, D. (1999). Only the tip of the iceberg: Who understands what about metaphor? *Journal of Pragmatics* 31. 1675-1683.

[7]   Boers, F. & Littlemore, J. (2000). Cognitive style variables in participants' explanations of conceptual metaphors. *Metaphor and Symbol* 15.3, 177-187.

[8]   Brown, H. D. (2000). Principles of language learning and teaching (4th edn.). White Plains, NY: Addison Wesley Longman.

[9]   Charteris-Black, J. (2000). Metaphor and vocabulary teaching in ESP economics. *English for Specific Purposes* 19. 149-165.

[10]   Charteris-Black, J. & Ennis, T. (2001). A comparative study of metaphor in Spanish and English financial reporting. *English for Specific Purposes* 20, 249-266.

[11]   Chiappe, D. L. & Chiappe, P. (2007). The role of working memory in metaphor production and comprehension. *Journal of Memory and Language* 56,172-188.

[12]   Cohen, J. W. (1988). Statistical power analysis for the behavioral sciences (2nd edn.). Hillsdale, NJ: Lawrence Erlbaum Associates.

[13]   Daniels, H. L. (1996). Interaction of cognitive style and learner control of presentation mode in a hypermedia environment. Unpublished doctoral dissertation, Blacksburg, Virginia.

[14]   Delfino, M. & Manca, S. (2007). The expression of social presence through the use of figurative language in a web-based learning environment. *Computers in Human Behavior* 23, 2190-2211.

[15]   Fauconnier, G. & Turner, M. (1994). Conceptual projection and middle spaces (Tech. Rep. No. 9401). San Diego: University of California.

[16]   Fauconnier, G. & Turner, M. (1995). Conceptual integration and formal expression. *Metaphor and Symbolic Activity* 10, 183-204.

[17]   Fauconnier, G. & Turner, M. (1998). Conceptual integration networks. *Cognitive Science* 22, 133-187.

[18]   Fauconnier, G. & Turner, M. (2002). The way we think: Conceptual blending and the mind's hidden complexities. NY: Basic Books.

[19]   Fowler, W. S. & Coe, N. (1978). Nelson English language tests (Book 2, Intermediate). London: Butler & Tanner Ltd.

[20]   Ford, N. & Chen, S. Y. (2001). Matching/mismatching revisited: An empirical study of learning and teaching styles. *British Journal of Educational Technology* 32, 5-22.

[21]   Gibbs, R. W. Jr. (1994). The poetics of mind: Figurative thought, language, and understanding. Cambridge: Cambridge University Press.

[22]   Gibbs, R. (2006). Metaphor interpretation as embodied simulation. *Mind and Language* 21, 434-458.

[23]   Harris, R. J., Friel, B. M. & Mickelson, N. R. (2006). Attribution of discourse goals for using concrete- and abstract-tenor metaphors and similes with or without discourse context. *Journal of Pragmatics* 38, 863-879.

[24]   Jensen, D. F. N. (2006). Metaphors as a bridge to understanding educational and social contexts. *International Journal of Qualitative Methods* 5.1, 1-17.

[25]   Kang, S. (1999). Learning styles: Implications for ESL/EFL instruction. *Forum* 37, 132-140.

[26]   Kaiser, H. (1970). A second generation Little Jiffy. *Psychometrika* 35, 401-415.

[27]   Kaiser, H. (1974). An index of factorial simplicity. *Psychometrika* 39, 31-36.

[28]   Kövecses, Z. (2002). Metaphor: A practical introduction. NY: Oxford University Press.

[29]   Kövecses, Z. & Szabo′, P. (1996). Idioms: A view from cognitive linguistics. *Applied Linguistics* 17.3, 326-355.

[30]   Lakoff, G. & Johnson, M. (1980). Metaphors we live by. Chicago: University of Chicago Press.

[31]   Lakoff, G. & Turner, M. (1989). More than cool reason: A field guide to poetic metaphor. Chicago: University of Chicago Press.

[32]   Lankton, S. R. (2002). Foreword. In R. Battino (ed.), *Metaphoria: Metaphor and guided metaphor for psychotherapy and healing*. Williston, VT: Crown House, 5-15.

[33]   Leavy, A. M., McSorley, F. A. & Bote′, L. A. (2007). An examination of what metaphor construction reveals about the evolution of preservice teachers' beliefs about teaching and learning. *Teaching and Teacher Education* 23, 1217-1233.

[34]   McCarthy, M. & O□ Dell, F. (2002). English idioms in use Cambridge: Cambridge University Press.

[35]   Oxford, R. L. & Anderson, N. J. (1995). A cross-cultural view of learning styles: State of the art article. *Language Teaching* 28, 201-215.

[36]   Pallant, J. (2007). SPSS survival manual: A step by step guide to data analysis using SPSS for windows (3rd edn.). England: Open University Press.

[37]   Palmquist, R. A. (2001). Cognitive style and users' metaphors for the web: An exploratory study. *Journal of Academic Librarianship* 27.1, 24-32.

[38]   Riding, R. J. (1991). Cognitive styles analysis. Birmingham, England: Learning and Training Technology.

[39]   Roberts, R. M. & Kreuz, R. J. (1994). Why do people use figurative language? *Psychological Science* 5, 159-163.

[40]   Salmani-Nodoushan, M. A. (2006). Is field dependence or independence a predictor of EFL reading performance? *TESL Canada Journal* 24.2, 82-108.

[41]   Salmani-Nodoushan, M. A. (2009). Identifying sources of bias in EFL writing assessment through multiple trait scoring. *The Modern Journal of Applied Linguistics* 1.2, 28-53.

[42]   Tendahl, M. & Gibbs, R. W. Jr. (in press). Complementary perspectives on metaphor: Cognitive linguistics and relevance theory. *Journal of Pragmatics*.

[43]   Thurstone, L. L. (1947). Multiple factor analysis. Chicago: University of Chicago press.

[44]   Turner, M. (1996). The literary mind. NY: Oxford University Press.

[45]   Watson, D. (1991). Practicing idioms. Hong Kong: Thomas Nelson and Sons Ltd.

[46]   White, M. (2003). Metaphor and economics: The case of growth. *English for Specific Purposes* 22, 131-151.

[47]   Witkin, H. A., Rastkin, E., Oltman, P. k. & Karp, S. A. (1971). *Group embedded figures test manual*. Palo Alto, CA: Consulting Psychologist Press.

[48]   Wright, J. (1999). Idioms organizer: Organized by metaphor, topic, and key word. UK: Thomson Heinle.

Mahmood Hashemian is an assistant professor at Shahrekord University. His area of research includes cognitive-semantic linguistics, sociolinguistics, and applied linguistics. He has published articles in academic journals such as IJAL, IJLS, JALS, Linguistik-Online, JLTR, TPLS, Iranian EFL Journal, and International Journal of Social Sciences. Also, he has given lectures in several national and international conferences such as TELLSI (4, 7, 8, & 9), LDP2010 (Ahvaz, Iran), ELT in the Islamic World (Tehran, Iran), 2nd International Language Conference 2011 (Malaysia), and the 1st Thammasat ELT International Conference: Voices in ELT (Thailand).

Ali Roohani is an assistant professor at Shahrekord University. His area of research includes emotional intelligence, affective variables in L2 learning, language learning strategies. He has published articles in academic journals such as IJAL, Asian TEFL, and JTLS. Also, he has published three books on affect, applied linguistics, and vocabulary learning. Moreover, he has given lectures in several national and international conferences.

Batool Fadaei got her B.A. in English translation from Shahrekord University and is now an M.A. TEFL student at the same university. Her areas of interest include psycholinguistics, sociolinguistics, and cognitive linguistics. And, she has been teaching English at various language institutes for more than three years.