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Examining the Role of Individual Differences in Lexical Inferencing

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Abstract: The present study aims to examine the effects of language proficiency, cognitive styles and gender on the inferencing ability of language learners. A language proficiency test, a Group Embedded Figures Test (GEFT) and two texts containing unknown words were administered to 112 learners of English as a Foreign language. The analysis of the results indicated that while language proficiency influences lexical inferencing, cognitive styles impact lexical inferencing only in extended contexts.

Key words: Cognitive styles, field dependence, field independence, lexical inferencing

INTRODUCTION

Comprehension of written and spoken discourse is crucial in second language processing; therefore, many studies have focused on teaching strategies to L2 learners in order to help them comprehend better. One widely used comprehension strategy is lexical inferencing. Lexical inferencing refers to a process whereby the meaning of an unknown word is revealed using the clues from the context. It refers to a process whereby readers drive the meaning of unknown words by using the context in which they appear (Frantzen, 2003).

Earlier studies have shown that the text related variables including word characteristics such as the part of speech, the degree of concreteness or abstractness, the transparency of word structure, the likelihood of interference, the degree of correspondence between the referential meaning of the foreign word and the word in the learners' L1, the resemblance between word form and word meaning, the frequency of the equivalent word in readers' L1 (Mondria and Wit-de Boer, 1991), text difficulty (Paribakht and Wesche, 1999; Frantzen, 2003), contextual factors (Paribakht, 2005) and topic familiarity (Kelly, 1990; Paribakht, 2004) influence accurate inferencing.

Reader related variables such as vocabulary knowledge (Sternberg and Powel, 1983), knowledge of grammar (Paribakht and Wesche, 1999; Paribakht, 2004), language proficiency (Barnett, 1989), attention to details (Laufer, 1997; Hulstijn *et al.*, 1996), cognitive and mental effort (Fraser, 1999; Paribakht and Wesche, 1999) and background knowledge, interest, familiarity with topic, previous learning experiences, procedural knowledge, the

inclination to use context effectively, perception about the meaning of a word and usefulness of previously known information impact learning process (Paribakht, 2005). The way readers attend to details is related to their cognitive style. Brown (1994) argued the way we learn things in general and the particular attack we make on a problem seem to hinge on a rather amorphous link between personality and cognition, this is referred to as cognitive style. Earlier studies have shown that one of the reader related variables that influence lexical inferencing is cognitive and mental effort (Fraser, 1999; Paribakht and Wesche, 1999).

Over the years, psychologists have identified a large number of styles. For example, Ausubel (1968) identified 18 different styles out of which only a few have received attention. One of these learning styles is field dependent/field independent. Having suggested that there are three field related cognitive styles: Field Independent (FI), Field Dependent (FD) and Field Neutral (FN), Witkin *et al.* (1971) argued that on the basis of each individual's way of distinguishing figures from the distracting surroundings, their learning styles can be detected. Hence, a FI person tends to perceive surroundings analytically and separates objects discretely from their backgrounds; (a) FD person tends to perceive things in a relatively global fashion and is easily influenced by a prevailing field or context. FI sees the forest for the trees. A person who can easily recognize the monkey in the jungle or identify a human face in a three dimensional poster tends to be a FI. FD, on the other hand, is the tendency towards "dependency" on the total field so that the embedded parts are not easily perceived and total field is perceived most clearly as a unified whole (Brown, 1994).

Cognitive style has been reported as one of the factors that impact students' achievement on school subjects and English achievement. Earlier studies of Abraham (1983), Frank (1984), Hansen (1984), Davis (1986), Carter (1988) and Davey (1990) highlighted the differences between FDs and FIs in different areas of language learning.

In one of the more recent studies Elliot (1995) investigated the relationship between FI/FD and subject attitude or concern for accuracy in pronunciation. The 43 learners comprised the experimental group and 23 learners made up the control group. The participants received GEFT, an attitude questionnaire for accurate pronunciation and a pronunciation pretest and posttest. The findings indicated that neither FI nor subject concern were predictors of improvement in pronunciation. The role of sex and intelligence in the relationship between learning styles and second language acquisition has also been examined. In a study by Tinajero and Páramo (1998) the participants received the Portable Rod and Frame Test (PRFT), Embedded Figures Test (EFT), Cattelle's culture fair intelligence test. The English proficiency was measured by mean grades in the previous year. The results showed that male and female FIs obtained higher grades in English than FDs. However, it was found that the difference between FD/FI was only significant for girls. Johnson *et al.* (2000) examined the relationship between measures of FD/FI and the amount of information conveyed by native English speakers and L2 learners in face to face condition. The results indicated that native speakers perform better than ESL learners on language measures. It was also found that more FD style was associated with better performance on second language communicative measures. In another study Jantarska (2006) investigated the relationship between FD/FI and reading comprehension test on the one hand and the relationship between FD/FI and age and sex on the other hand among 216 students. In this study, the GEFT and two reading comprehension tests that contained some unknown grammatical and lexical elements were distributed among the students. The analysis of the results showed a positive relationship between FD/FI and reading comprehension. It was also found that the more FI the learners are, the better they perform on reading comprehension tests. Old learners were reported as more FI and female participants were found more FD.

Given the impact of FI/D on L2 learning, in the present study, we attempted to investigate the influence of cognitive styles on lexical inferencing that requires processing of the context and attention to details. Having revisited previous research findings concerning the effect

of cognitive styles on learning outcomes, we expected to provide guidelines to apply our findings to the development of materials satisfying learners' diverse styles. To this end, the following questions were addressed:

- Is there any difference in EFL learners' lexical inferencing ability across proficiency levels?
- Is there any difference between FD and FI learners in terms of lexical inferencing ability in short and extended contexts?

MATERIALS AND METHODS

Participants: The present study was carried out in June 2007. A sample of 112 undergraduates (38 male, 74 female) aged 18-40 studying English language and literature at State and Open universities in Iran volunteered to participate in the study. All were native speakers of Persian who were considered literate in their first language.

Instrumentation: Four passages that were expected to contain some unknown lexical items were administered to 30 EFL learners whose score on the proficiency test were comparable to those of participants in the main study. They were requested to underline the words that were unfamiliar to them. They also read 60 sentences and identified the words that were unknown to them. On the basis of the examination of unknown words identified by the participants, two target passages about mushrooms and organic structure were selected and 15 words were underlined in each. The passages and short sentences were distributed among the participants who were instructed to read the texts and provide a synonym, antonym, translation, or explanation for each of the underlined words. They were instructed to demonstrate their knowledge of the meaning of the unknown words. To classify participants as FD/FI the Group Embedded Figures Test (GEFT) developed by Witkin *et al.* (1971) was employed. The psychometrical properties of the GEFT have been investigated in different settings. The test is designed to measure individuals' levels of field independency and requires learners to outline a simple form in the larger complex figure. The test consists of three sections with 25 items: the first section contains seven items for practice; the second and the third sections each contain nine items. The total score of participants is computed by the number of figures correctly traced in the second and the third sections; therefore, the possible maximum score is 18. On the basis of the performance on the test, learners who are able to outline a simple form in a more complex figure or

background field are regarded FI. These learners are more analytic. FD learners, on the other hand, are not as successful in detecting embedded figures and approach problems in a more global way. Participants whose score was below 6 were regarded FD, those whose score ranged from 6-12 were named FN (Field Neutral) and those whose score fell in the range of 13-18 were named FI.

A language proficiency test consisting 20 grammar, 20 vocabulary and 10 reading comprehension items was administered to the participants. The participants were awarded one point for each correct response.

Procedure: Data was collected at university context. Students were invited to participate in the study in exchange for 2 extra marks on the final exam; following this invitation, 189 students volunteered to take part in the study. However, in practice 112 students took all the tests. First, after being trained on how to trace a simple form in the GEFT, they completed the test. Second, they were requested to provide a synonym, a translation, or an explanation for the underlined words in the texts and in the 23 sentences in 60 min. After a 45 min break, the same group completed the proficiency test in 50 min.

RESULTS AND DISCUSSION

This study aimed to examine whether lexical inferencing that requires attention to textual details and identification of the links between textual elements is affected by learners' preference to perceive information in a particular manner; i.e., their cognitive style. We were interested in finding (1) whether success on inferencing of the meaning of unknown words from the context is influenced by cognitive styles and (2) whether language proficiency influences lexical inferencing in the short and extended contexts.

Participants were divided into three groups on the basis of mean score and standard deviation. The descriptive statistics for inferencing ability in the short and extended contexts across proficiency levels appear in Table 1. As it was expected the upper intermediate group performed better both on the short and extended contexts. It was also found that the performance of the upper intermediate group was better on the extended context. This finding supports the arguments endorsing the facilitative effects of context on lexical inferencing. (Nagy, 1997).

A one way ANOVA was run to see whether the level of proficiency affects performance on inferencing of EFL learners in the two contexts. The results as presented in

Table 1: Descriptive statistics on short and extended contexts across proficiency levels

Contexts	Grand				Minimum	Maximum
	Mean	mean	SD	SE		
Extended						
Low intermediate	11.90	13.45	2.75	0.61	8	16.0
Intermediate	12.18		2.64	0.38	7	18.0
Upper intermediate	16.29		3.50	0.52	10	23.5
Short						
Low intermediate	11.75	13.17	3.79	0.84	7	17.0
Intermediate	12.10		3.32	0.48	6	20.0
Upper intermediate	15.68		5.31	0.80	8	27.5

Table 2: ANOVA results for the effect of language proficiency

Contexts	Sum of squares	df	Mean square	F-value	Sig.
Extended					
Between groups	470.72	2	235.36	25.62	0
Within groups	1001.27	109	9.18		
Short					
Between groups	363.9	2	181.95	9.87	0
Within groups	2007.77	109	18.42		

Table 2 show that learners from the three proficiency groups perform differently when they attempt to infer the meaning of unknown words from context ($F_{(2, 109)} = 25.62$, $p < 0.000$; $F_{(2, 109)} = 9.87$, $p < 0.000$). The comparison of the means indicated that the more advanced the learners are, the more successful they are in lexical inferencing. This suggests that accurate inferencing is influenced by the level of language proficiency.

To examine the possible statistical differences between the performances of FD and FI learners in the extended and short context an independent samples t-test was performed. The results in Table 3 suggest that FIs outperformed FDs only in extended contexts. In other words, their performance on short context was similar to FDs.

When the performances of FI/FD learners were compared in the two contexts, it was found that while the difference between FI/ FD learners is significant in extended context $T_{(58)} = 3.19$, $p = 0.002$, the difference is not meaningful in the short context $T_{(58)} = 1.50$, $p = 0.138$. Although, FIs obtained higher scores in extended and short contexts than FDs, this difference was statistically significant only in the extended contexts.

A growing body of research in the past has investigated FI/FD from different perspectives. Cognitive skills are concerned with the ability to break up an organized field into its basic elements and provide structure for an ambiguous stimulus complex. Such capabilities are consistent with the idea that FIs display an active approach to learning (Frank, 1984). Therefore, FI/FDs are expected to treat linguistic data differently in order to infer the meaning of unknown words from the context.

Table 3: Independent samples t-test for the performances of FD/FI learners in the extended and short contexts

Contexts	Style	N	Mean	SD	t-test	df	Sig. (2-tailed)	Mean difference	STD ED
Extended	ED	48.00	12.91	3.37	-3.19	58	0.002	-3.66	1.14
	FI	12.00	16.58	4.25					
Short	FD	48.00	12.47	4.11	-1.50	58	0.138	-2.02	1.34
	FI	12.00	14.50	4.37					

The results of present study endorse the proposals concerning the relationship between FD/FI and processing preferences of individuals. The findings of the present study indicate that language proficiency has a significance effect on the lexical inferencing ability of EFL learners. The comparison of the means of the participants across proficiency levels indicated that the more advanced the learners, the more successful they are in inferencing.

When the difference between the inferencing ability of FI/FD learners were compared in the extended and short contexts, it was found that participants were different only in the extended context. In other words, it was found that FI is significantly associated with performance on the extended context but not with performance on the short context. This superior performance might be explained by the theories of FD/FI. Carter (1988), Chappel and Roberts (1986), Johnson and Rosano (1993) argued that the superior restructuring ability of FIs facilitates linguistic analysis. FIs are more successful at providing structure and linking unknown information to the known. Therefore, it can be argued that because FIs are superior in linguistic analysis of the texts they can easily locate the clues that might be used to disambiguate the meaning of unknown words. Also, this better performance might indicate that FIs easily separate key details from a complex background, while their FD peers have trouble doing this (Stansfield and Hansen, 1983; Chappel and Roberts, 1986). The superior performance of FIs may also be related to their memory. As Daneils (1996) argued, FIs are more efficient in retrieving items from memory. Hence, while the length of the text does not affect FIs performance, it is a serious threat to FDs who can not retrieve information from long term memory. When the texts become longer, it becomes more difficult for the FDs to establish a link between elements in the text and find out the meaning of unknown words.

The poor performance of FDs on extended contexts may be attributable to their lack of success in tasks needing reorganization. Daniels (1996) suggested that FDs tend to be less successful in activities such as reorganizing and reproducing information, recognizing salient cues and structuring information than FIs. Therefore, FDs are less successful than FIs in tasks such

as inferencing that requires focus on textual clues to uncover the meaning of unknown words. Also, as indicated in the literature, FD learners overlook details in order to get a better configuration of the problem. This may generate one big problem in tasks such as lexical inferencing that require attention to details. Inferring the meaning of unknown words requires processing context, attending to and using textual cues; therefore, if the context is not processed carefully, the result is wild guessing. This was demonstrated in the low performance of FDs in the present study. Their inferencing of the meaning of unknown words had no resemblance to the real meaning of the words.

CONCLUSIONS

The evidence that present study has produced suggests that a cognitive style approach can be applied with profit to different aspects of L2 learning. The present study suggests that FD learners should be placed in a group with FI learners in the learning contexts. This grouping can provide FD learners with an invaluable opportunity to receive feedback form their analytical FI classmates. In this way, processing contexts, paying attention to details and using textual clues helps language learners be more successful in lexical innferencing.

The results of this study indicated that FIs are superior to FDs in inferencing word meaning in extended contexts. The difference between two groups was not statistically significant when performances were compared in short contexts. This convinces language teachers to develop pedagogical tasks that help FDs focus on details. One way to achieve this focus is through consciousness raising. Textual clues can be made more salient through underlining or different type faces. In a long run, this can help FDs perceive details and realize how focus on details leads to a better comprehension.

Based on the obtained results, it is argued that providing FDs with support i.e., input enhancement techniques, might help their comprehension. It is also expected that explicit teaching of the text organization and making learners aware of the links between sentences and paragraphs might be beneficial because such awareness might help them notice the links that might be used in disambiguating the meaning of unknown words.

Cognitive styles theory according to Willimson and Watson (2007) can help educators focus on both their personal strengths and weaknesses in the classroom and how these strengths and weaknesses will connect with the variety of learners they face.

REFERENCES

- Abraham, R., 1983. Relationships between use of the strategy of monitoring and cognitive style. *Stud. Second Language Acquisition*, 6: 17-32.
- Ausubel, D.P., 1968. *Educational Psychology: A Cognitive View*. Holt, Rinehart and Winston, New York, ISBN-13: 978-0030696404.
- Barnett, M., 1989. *More than Meets the Eye: Foreign Language Learner Reading. Theory and Practice*, Prentice Hall Regents, Nigeria.
- Brown, H.D., 1994. *Principles of Language Learning and Teaching*. Prentice Hall, Nigeria.
- Carter, E.F., 1988. The relationship of field-dependent/independent cognitive style to Spanish language achievement and proficiency: A preliminary report. *Modern Language J.*, 72: 21-30.
- Chappel, C. and C. Roberts, 1986. Ambiguity tolerance and field independence as predictors of proficiency in English as a second language. *Language Learning*, 36: 27-45.
- Daneils, H.L., 1996. Interaction of cognitive style and learner control of presentation mode in a hypermedia environment. Unpublished Ph.D Thesis, University of Hull.
- Davey, B., 1990. Field dependence-independence and reading questions: Task and reader interactions. *Contemp. Edu. Psychol.*, 15: 241-250.
- Davis, M.F., 1986. Filed dependence and the solution of word and nonsense anagrams. *Personality individual Differ.*, 8: 269-270.
- Elliot, A.R., 1995. Foreign language phonology: Field independence, attitude and the success of formal instruction in Spanish pronunciation. *Modern Language J.*, 79: 530-542.
- Frank, B., 1984. Effect of filed-dependence and study technique on learning from a lecture. *Am. Edu. Res. J.*, 21: 669-678.
- Frantzen, D., 2003. Factors affecting how second language Spanish students drive meaning form context. *Modern Language J.*, 87: 168-199.
- Fraser, C., 1999. Lexical processing strategy use and vocabulary learning through reading. *Stud. Second Language Acquisition*, 21: 225-241.
- Hansen, L., 1984. Field dependence-independence and language testing: Evidence from six Pacific island cultures. *TESOL Quart.*, 18: 311-324.
- Hulstijn, J.H., M. Hollander and T. Greidanus, 1996. Incidental vocabulary learning by advanced foreign language students: The influence of marginal glosses, dictionary use and reoccurrence of unknown words. *Modern Language J.*, 80: 327-339.
- Jantarska, J., 2006. On the role of individual learner differences in the teaching/learning of foreign languages: The dimensions of field dependence/ field independence. *Respectus Philologus*, 9: 138-151.
- Johnson, J. and T. Rosano, 1993. Relation of cognitive style to metaphor interpretation and second language proficiency. *Applied Psycholinguistics*, 14: 159-175.
- Johnson, J., S. Prior and M. Artuso, 2000. Field dependence as a factor in second language communicative production. *Language Learning*, 50: 529-567.
- Kelly, P., 1990. Guessing: No substitute for systematic learning of lexis. *System*, 18: 199-207.
- Laufer, B., 1997. The Lexical Plight in Second Language Reading: Words you don't know, Words you Think you Know and Words you Can't Guess. In: *Second Language Vocabulary Acquisition: A Rationale For Pedagogy*, Coady, J. and T. Huckin (Eds.). Cambridge University Press, Cambridge, pp: 20-34.
- Mondria, J.A. and M. Wit-de Boer, 1991. The effects of contextual richness on the guessability and the retention of words in a foreign language. *Applied Linguistics*, 12: 249-267.
- Nagy, W., 1997. On the Role of Context In First and Second Language Vocabulary Learning. In: *Vocabulary: Description, Acquisition and Pedagogy*, Schmidt, N. and M. Mc Carty (Eds.). Cambridge University Press, Cambridge.
- Paribakht, T.S. and M. Wesche, 1999. Reading and incidental L2 vocabulary acquisition. An introspective study of lexical inferencing. *Stud. Second Language Acquisition*, 21: 195-218.
- Paribakht, T.S., 2004. The role of grammar in second language learning processing. *J. Language Teach. Res.*, 35: 149-160.
- Paribakht, T.S., 2005. The influence of First language lexicalization on second language lexical inferencing: A study of Farsi-speaking learners of English as a foreign language. *Language Learning*, 55: 701-748.
- Stansfield, C. and J. Hansen, 1983. Field dependence-Independence as a variable in second language cloze test performance. *TESOL Quart.*, 17: 29-38.

- Sternberg, R.J. and J.S. Powel, 1983. Comprehending verbal comprehension. *Am. Psychol.*, 38: 878-893.
- Tinajero, C. and F. Páramo, 1998. Field dependence-independence in second language acquisition: Some forgotten aspects. *Spanish J. Psychol.*, 1: 32-38.
- Williamson, M.F. and R.L. Watson, 2007. Learning styles research: Understanding how teaching should be impacted by the way learners learn. Part III: Understanding how learners' personality styles impact learning. *Christian Edu. J.*, 4: 62-77.
- Witkin, H.A., P.K. Oltman, E. Raskin and S.A. Karp, 1971. A manual for the Embedded Figures Test. Consulting Psychologist Press, Palo Alto, CA.