

مجله علوم اجتماعی و انسانی دانشگاه شیراز
دوره هیجدهم، شماره اول، تابستان ۱۳۸۱ (پیاپی ۳۵)
(ویژه نامه زبان انگلیسی و زبانشناسی)

نقش رویکردهای ارتباطی در پردازش واژگان زبان دوم

دکتر رضا بیریا
دانشگاه شیخ بهایی

دکتر محمد حسن تحریریان
دانشگاه اصفهان

چکیده

زبان آموزان در کاربرد و فهم واژه های زبان خارجی بطور چشمگیری با یکدیگر فرق دارند. صاحب نظران معتقدند تفاوت های ناشی از استفاده این مهارت های ویژه که به تعامل و تقابل فعالیت های شناختی ذهن و عوامل محیطی بستگی دارد، غالباً نادیده گرفته شده است. مقاله حاضر با توجه به کثرت عوامل مؤثر در پردازش واژگان زبان دوم و سازماندهی معانی آنها، بنا دارد تا دو سؤال اساسی را مورد تحقیق و تفحص قرار دهد:

الف - چه رابطه علمی بین نظام های واژگانی زبان اول و زبان دوم وجود دارد؟

ب - آیا سطح دانش زبانی و شناختی زبان آموز بر میزان تعامل موجود بین این دو نظام نقش مؤثری دارد؟ یافته های تجربی این تحقیق اثبات نمود که رابطه موجود بین نظام های واژگانی زبان اول و زبان دوم به تشابه و تفاوت حیطه های معنایی و شناختی مربوط به واژه های دو زبان بستگی دارد و میزان این رابطه و نوع شیوه های کاربرد و فهم معانی کلمات یک زبان خارجی تحت تأثیر مستقیم سطح دانش زبانی و شناختی زبان آموزان می باشد.

The Functional Role of Linking Strategies in Processing L2 Words

Dr. H. Tahririan*
Isfahan University

Dr. R. Biriya**
Sheikh Bahaie University

ABSTRACT

EFL learners greatly differ in the way they use and comprehend L2 words. This variation, though taken for granted, results from the cognitive nature of L2 lexical processing and the environmental factors dominating the acquisition process. Consequently, such interactions evoke certain methodological and conceptual issues that make research in the area of L2 lexical studies complicated.

The number of factors influencing L2 lexical processing and acquisition are multivariate. The present study was designed (a) to investigate the functional role of linking strategies in processing L2 words, and (b) to discover the nature of interaction between EFL learners' language proficiency, educational background, and the conceptual demands associated with different word types.

Key Words: 1. EFL 2. Linking strategies 3. Language acquisition 4. L2

1. Introduction

In the past three decades, the necessity of lexical knowledge across the whole spectrum of foreign language learning activities has been emphasized. Research into the learning and processing of L2 words, both on theoretical and practical fronts, has confirmed that the development of L2 lexical knowledge is to a large extent influenced by the interaction between the mental lexicons associated with the learner's available languages (Kelly, 1991; Laufer, 1992; Laufer & Nation, 1995; Ridley, 1997, and Green, 1998).

According to Ellis (1995), EFL learners have different cognitive strategies for inferring the meaning of L2 lexical items and for enmeshing them into the semantic network of the words they have already acquired. However, Stoffer (1996) is of the opinion that learning L2 vocabulary triggers the strategies essential for creating mental linkages. To process the L2 words, the learners refer to the lexicon of L1 as a consultative and comparative compiler (DeGroot, 1992).

Kroll and Stewart (1994) postulate that linking strategies may be classified into two distinct, but interrelated categories; namely, lexical association and conceptual mediation strategies. While the former is used to provide lexical links, the latter evokes conceptual links between L1 and L2. The theoretical and functional plausibility of the linking strategies have unequivocally been substantiated via the findings in research into communication strategies. Many writers (for example, Tarone, 1980; Poulisse, 1987; Bialystok, 1990; and Kellerman, 1991) have described the interconnection between L1 and L2 mental lexicons delineating that the informational transitions due to L2

* Professor of English Language and Linguistics

** Assistant Professor of English Language and Linguistics

vocabulary learning necessitates the application of linking strategies.

It is well to note here that the learner's use of linking strategies may be affected, both qualitatively and quantitatively, by two different factors. The first and perhaps the most important is the conceptual demands associated with various word types. It is now quite common to categorize words comprising the lexicon into core, non-core, and subject specific lexical items (Carter, 1998).

Clearly, Core words are L2 lexical items whose semantic domains are semantically transparent and identical to those in L1. These words usually activate the lexical association strategy to be processed and their processing time is short. In contrast, non-core and subject specific lexical items are semantically opaque and have specific semantic domains which have been shaped and developed through experiences which are unique to the target language (Johnson-Laird, 1993). In particular, in early encounters of EFL learners with such words, the imaginal consequences evoked by them may trigger the conceptual mediation strategy which requires a longer processing time (cf. Shallice, 1988; Bialystok, 1990).

The second factor affecting linking strategies concerns the learner's level of proficiency. According to Singleton (1997), as the EFL learners L2 lexical proficiency increases, L2 mental lexicon becomes less dependent on L1 (Roufča, 1992). As a result, compared with novice L2 learners, the more proficient learners, who through practice have acquired and assimilated the peculiar new L2 semantic mappings between concepts and L2 words, make less use of conceptual mediation strategy.

On this basis, the present study aims at investigating two different but complementary questions:

(1) What is the relationship between the typology of L2 words and the linking strategies used for processing them?

(2) How does EFL learners' level of language proficiency and educational background interact with the conceptual demands associated with different word types?

2. Methodology

2.1. Subjects

Sixty students (male and female) were selected from among the 127 freshman and 134 senior undergraduate student populations studying English translation in the 1999 fall semester of Khorasgan Azad University (KAU). Age, educational background, and proficiency level served as the criteria for selection. The proficiency level of the students was measured by a local proficiency test (LPT), comparable to the TOEFL in terms of components and distributions of test elements. The LPT was validated against a standard TOEFL test: The correlation was .85 and the reliability of the test, checked by KR-21 formula, was .78.

To sensitize the samples to the requirements of the study, it was necessary to do two things. First, the freshman subjects whose scores on LPT were below 60% of the total possible score were excluded, and from those remaining, twenty subjects with scores between 60% and 80% were nominated as Freshman Intermediate Group (FIG) and another twenty with scores above 80% were labeled as Freshman Advanced Group (FAG). The rationale for the exclusion was based on Dulay and Burt's (1980) conception of limited English proficiency (LEP).

As such, these subjects, being below the survival, could not satisfy the objectives of the study and were therefore excluded.

Second, only 20 senior subjects with score above 80% were chosen and identified as Senior Advanced Group (SAG). This limitation was essential because the goal was to examine the performance of the subjects with a higher educational level on specific

lexical tasks such as inferring the meaning of specialized words.

2.2. Design

A condescriptive task was used to identify the performance behavior of FIG, FAG and SAG subjects on different lexical tasks. Then, a combination or hybrid methodology was employed to make sure whether results produced by lexical tasks were consistent. Since it is suggested that the procedure provides a parallel means of checking the same behavioral, the performances of the subjects on different tasks were further evaluated through error analysis and oral interview.

Moreover, a 2×3 factorial design was worked out to determine the extent of interaction between proficiency level and type of vocabulary. The first variable, proficiency, involved two levels: (1) Linguistic and (2) Linguistic/ Educational. Clearly, the FAG subjects were behaviorally different from the SAG subjects in that they had not restructured and modified their L2 conceptual systems in terms of subject-specific vocabulary items. The second variable, vocabulary type, comprised three levels: (1) core vocabulary, (2) non-core vocabulary and (3) subject-specific vocabulary. These levels were differentially marked with respect to the conceptual demands they evoked.

2.3. Data Collection Procedure

The study, by principle, required carefully planned instrumentation and measurement techniques. In other words, discovering valid links between a person's performance on some specific task and the postulated cognitive/affective systems underlying that performance would be impossible without taking advantage of appropriate data collection methods. To ensure the validity of data collection, a procedure known as triangulation was utilized. In this procedure, the researcher's a priori experience and perspectives on what takes place during lexical acquisition by EFL learners were combined with observation and introspection.

Translation task, which enjoys a long history in SLA research, was used for observing the learners' performances. The validity of translation as a method of eliciting data cannot be denied (Snodgrass, 1993), because it encourages a word for word rendition, forces the learners to check across both L1 and L2 lexicons, and provides a natural means of studying word meaning (cf. Garnham, 1985).

To this end, three lexical knowledge tests (LKT) served as the data gathering devices. The LKT tests were designed in a multiple choice format, each containing 40 items. Each test item consisted of a syntactically simple sentence with a minimum amount of context and an underlined test word. The sentence served as a prompting cue to prime and activate the intended meaning of the test word by inhibiting its other meaning possibilities.

The test words in each LKT test were typologically different. The first test, core vocabulary (CVT), used only core words. Since L1 and L2 semantic domains for core words overlap, it was presumed that such test words would not involve conceptual mediation and the learners only needed to use lexical association to interpret them. In contrast, non-core and subject-specific LKT (i.e., NCVT& SSVT) contained test words whose interpretation of meanings required conceptual mediation.

The subjects were required to translate the stimulus sentence into Farsi, and at the same time, to match the test words within the test items with one of the four Farsi equivalents listed below each item. To encourage the subjects, reliance on the L1 lexicon, the intended option and the distracters were chosen from the inventory of lexical errors which the subjects had made in their writing class during the term. The tests were administered in one sitting and for the sake of clarity the test instructions were given in Farsi.

The LKT was validated based on logic and specialist opinion. However, this can be true only if the tests under question are reliable. The LKT was, therefore, correlated with the vocabulary sub-test which was part of LPT used in the beginning of the study, using KR-21 formula, the reliability index was 0/ 71.

The scoring procedure was error count method. Failure to match a test word with one of the four Farsi equivalent options was regarded an error; i.e., the subjects lost points for incorrect answers. The null answers were also treated as errors because considering the time of each test, which was two hours, a null answer most likely reflected the absence of the concept or inability to match the concept with its related word. The sentence translation was not considered for scoring; it simply provided a means for double-checking the selected responses.

As a measure to enhance validity and to ensure generalizability, the subjects with the lowest performances were asked to participate in an oral interview (cf. Mann, 1982), because in second language acquisition research, applying multiple elicitation techniques are highly recommended because they can provide a better stability of performance. Koveceses and Szabo (1996), in particular, maintain that systematic interview is a reliable method for studying mental linkages between L1 and L2.

3. Results and Discussion

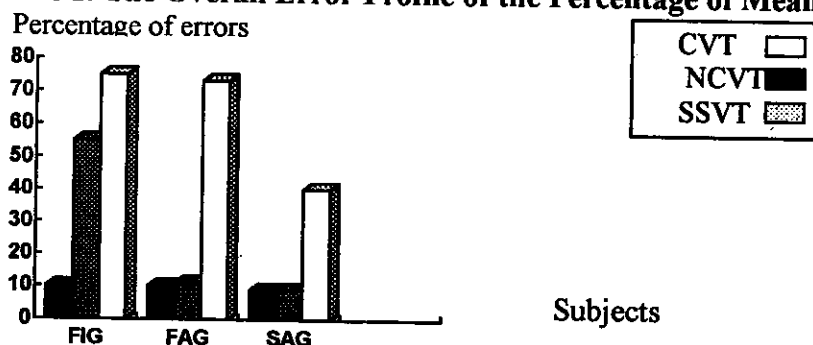
Descriptive statistics were computed to provide a preliminary analysis of the scores obtained on different LKT tests, the results of which appear in Table 1. It was observed that all the three groups had performed equally well on CVT test. However, the group performance on NCVT and SSVT tests was substantially different.

Table 1: Descriptive Statistics Representing Subjects, Performances on Different LKTs

Test Subjects	Test Type	Mean	SD
Freshman	CVT	17.75	1.49
Intermediate	NCVT	08.6	1.84
Group (FIG)	SSVT	04.9	1.29
Freshman	CVT	17.75	0.78
Advanced	NCVT	17.55	1.19
Group (FIG)	SSVT	05.2	1.39
Senior	CVT	18.15	0.81
Advanced	NCVT	18.2	1.15
Group (FIG)	SSVT	12.15	1.26

The overall error profile of the percentage of mean scores for group performance was also revealing (Diagram 1)

Diagram 1. The Overall Error Profile of the Percentage of Mean Scores



It was observed that the highest percentage of lexical errors belonged to the FIG on NCVT and SSVT tests. Comparatively, the FAG group performed better than the FIG since they had achieved the highest rate of error on SSVT only. Interestingly, the error profile on all tests was the lowest for the SAG group.

Based on Wesche and Paribakht (1996), oral interviews were then administered to identify the learners' strategies in the interpretation of the non-core and subject-specific lexical items. This procedure was a kind of delayed retrospective procedure during which the FIG with the highest rate of errors and those of FAG and SAG with the lowest performances were asked to verbalize their reflections about the nature of the errors they had made on LKT.

The protocols thus obtained were compared with the subjects, actual performances on the tests. The result was that the lexical association and conceptual mediation strategies would be ineffective for those L2 words whose corresponding concepts are either nonexistent in the L1 lexicon or are socioculturally idiosyncratic.

To understand the exact nature of the interaction between vocabulary types, learners, language proficiency level, and educational level, a mission values task definition step was used to exclude the FIG since the descriptive data and the error profile indicated that they did not possess an adequately developed conceptual system for processing the target words. Then a factorial analysis (see section 2.3) was performed.

As summarized in Table 2, both main effects and interaction were significant at $p < .05$, for CVT and NCVT, the group difference was small or non-existent. However, for SSVT, the difference between group for educational background resulted in a substantially different behavioral evidence. In other words, there existed an Educational Background (EB) by vocabulary type (VT) interaction.

Summary Table 2:
Sources of Variability Revealed by Factorial Analysis ($p < .05$)

Source	df	ss	ms	f
Educational Background(EB)	1	563.33	563.33	443.57*
Vocabulary Type (VT)	2	1210.61	605.31	476.62*
EB×VT	2	870.32	435.16	342.62*
Error	114	144.2	1.27	
Total	119			

The calculation of simple effects proved that linguistic proficiency and educational background totals for CVT, NCVT, and SSVT vocabulary types has a differential effect. From these simple effects, it was observed that language proficiency does suffice for processing core and non-core lexical items. Indeed, there were no significant differences between FAG and SAG for CVT and NCVT. However, it was seen that the interaction between vocabulary Type (VT) and Educational Background (EB) was significant. In other words, the contribution of training and educational experiences in the interpretation of specialized lexical items were definitely effective.

4. Theoretical Implications

Research in L2 lexical processing and acquisition is intrinsically more complex than L1 lexical studies (Grosjean, 1997). This complication is to some extent related to the nature of second language learning, which is regarded as seeing the world from a different perspective. This has made the integration of L2 vocabulary a special undertaking, which cannot be equated with such activities as memorizing, learning

definitions or using L2 words in context. Rather, learning meaning involves noticing the similarities and differences which categorize the realities of the world in certain respects. The identification of such relations presupposes the construction of cognitive representations which form the learner's conceptual system.

This system, however, undergoes change throughout life (Karmiloff-Smith, 1994). In other words, the knowledge structures of the learner's concept- his / her theories of the world--is continually enriched and refixed by the environmental factors. Consequently, the second language brings with it certain linguistic and cultural peculiarities which do not agree with the learner's previously organized knowledge structure and beliefs about the outside world.

As an illustration, the learner's use of false extensions in comprehension and production of L2 words reflects the deviant instances which trespass the boundaries of the concepts in question. As a result, the EFL learners may use their knowledge of L1 in order to fill in gaps in their knowledge of L2 words, and very often, lack of proper background information may lead to the creation of erroneous conceptual circuits. Therefore, the functional role of L1 in the learning of L2 words is considered as one of the natural functions of the learning process in which the learners employ the past experiences as a "knowledge base" for coping with new situations.

Although experts may not agree about the nature of the relationship existing between L1 and L2 lexicons, current research has revealed that for the languages acquired in different cultural settings and at different times, the L1 and L2 lexicons are somehow interrelated (DeGroot & Kroll, 1997). This position was supported by the findings of the present study.

The findings also revealed that the interrelation between L1 and L2 semantic systems is coordinated and monitored by the type of vocabulary and the learner's level of linguistic proficiency and educational background (Zattorre, 1989). The results were equally consistent with pedagogical hints suggested by cross-linguistic studies which emphasize the effectiveness of language awareness and of explaining those areas where the strategic transfer between the learner's languages will not work (Ellis, 1994).

Though indirectly, the findings further indicated that the provision of negative evidence could contribute to the learning of L2 vocabulary (Sharwood-Smith, 1993). One consequence of adopting such conscious approach is that it can modify the learners' conceptual system for coping with overtones that some L2 words carry.

Finally, it was found out that this type of proficiency is essential for manipulating or reflecting upon the specific domains of technical words. Naturally, this is possible only if the learners have already acquired the shared, common knowledge, which characterizes the specific domain in question.

In closing, it should be reiterated that L2 lexical research is a more challenging enterprise than research in L1 processing and acquisition, simply because the learner's previously established system of concepts interacts with the newly acquired knowledge about L2 lexical items. This study showed that the interaction between L1 and L2 mental lexicons is real and can be brought under control by helping the learners to improve their language proficiency and educational background.

References

- Bialystok, E. (1990). *Communication Strategies*, Oxford, MA: Basil Blackwell.
- Carter, R. (1998). *Vocabulary*, New York: Routledge.
- DeGroot, A. M. B. (1992). *Bilingual Lexical Representation: A Closer Look at Conceptual Representations*, In R. Frost and L. Katz (Eds.), *Orthography, Phonology and Meaning*, (pp. 389-412), Amsterdam: Elsevier.

- DeGroot, A. M. B., & Kroll, J. F. (eds.). (1997). **Tutorials in Bilingualism: Psycholinguistic Perspectives**, Mahwah, NJ: Lawrence Erlbaum Associates.
- Dulay, H. , & Burt, M. (1980). **Aspects of Bilingual Education**, Edited by California State Department of Education. Sacramento: California State Department of Education.
- Ellis, N. (1994). *Conscious Processes in Vocabulary Acquisition*, In J. Hulstijn and R. Schmidt (Eds.), *Aila Review*, 11, 37-56.
- Ellis, N. (1995). *Consciousness in Second Language Acquisition: A Review of Field Studies and Laboratory Experiments*, *Language Awareness*, 4(3), 123-16.
- Garnham, A. (1985). **Psycholinguistics: Central Topics**, London: Methuen.
- Green, D.W.(1998). *Mental Control of the Bilingual Lexicon-Semantic System*, **Bilingualism: Language and Cognition**, 1(2), 67-81.
- Grosjean, F. (1997). *Processing Mixed Language: Issues, Findings and Models*, In A. M. B. DeGroot & J. F. Kroll (Eds.), **Tutorials in Bilingualism: Psycholinguistic Perspectives**, (pp. 225-254). Mahwah , NJ: Lawrence Erlbaum Associates.
- Johnson-Laird, P. N.(1993). **Human Machine Thinking**, Hillsdale, NJ: Lawrence Erlbaum Associates.
- Karmiloff-Smith, A. (1994). *Precise of beyond Modularity: A Developmental Perspective on Cognitive Science*, **Behavioral and Brain Sciences**, 17, 693 -706.
- Kellerman, E. (1991). *Compensatory Strategies in a Second Language: A Critique, a Revision, and Some (non-) Implications for the Classroom*, In R. Phillipson, E. Kellerman, L. Selinker, M. Sharwood -Smith, & M. Swain (Eds.), **Foreign/ Second Language Pedagogy Research**, (pp. 142-161), Clevedon: Multilingual Matter.
- Kelly, P. (1991). *Lexical Ignorance: The Main Obstacle to Hastening Comprehension with Advanced Foreign Language Learners*, **IRAL**, 29, 135-49.
- Kovecses, Z., & Szabo, P.(1996). *Idioms: A View from Cognitive Semantics*, **Applied Linguistics**, 17(3), 326-56.
- Kroll, J. F., & Stewart, E. (1994). *Category Interference in Translation and Picture Naming: Evidence for Asymmetric Connections Between Bilingual Memory Representations*, **Journal of Memory and Language**, 33, 149-174.
- Laufer, B., & Nation, P. (1995). *Vocabulary Size and Use: Lexical Richness in L2 Written Production*, **Applied Linguistics**, 16, 307-22.
- Laufer, B. (1992). *How Much Lexis is Necessary for Reading Comprehension?* In P. Arnaud & H. Bejoint (Eds.), **Vocabulary & Applied Linguistics**, 126-32, London: McMillan.
- Mann, S. J. (1982). *Verbal Reports as Data: A Focus on Retrospection*, In S. D. Wall & S. J. Mann (Eds.), **Methods and Problems in Doing Applied Linguistics Research**, (pp. 87- 104), Lancaster, England: University of Lancaster.
- Poulisse, N. (1987). *Problems and Solutions in The Classification of CS-Use*, **Second Language Research**, 3, 141-153.
- Ridley, J. (1997). **Reflection and Strategies in Foreign Language Learning**, Frankfurt: Peter Lang.
- Roufca, P. (1992). **A Longitudinal Study of Second Language Acquisition in French**, Unpublished honors thesis, Mount Holyoke College, South Hadley, MA.
- Shallice, T. (1988). **From Neuropsychology to Mental Structure**, Cambridge: Cambridge University Press.

-
- Sharwood-Smith, M. (1993). *On Explicit and Negative Data Effecting Competence and Linguistic Behavior*, **Studies in SLA**, 15(2), 147-63.
- Singleton, D.(1997). *Learning and Processing L2 Vocabulary*, **Language Teaching**, 30, 213-25.
- Snodgrass, J. G. (1993). *Translating Versus Picture Naming*, In R. Schreuder & B. Weltens (Eds.), **The Bilingual Lexicon**, Amsterdam: John Benjamins.
- Stoffer, I.(1996). **Vocabulary Learning Strategies as Related to Individual Difference Variables**, Paper Presented at the Thirtieth TESOL Convention, Chicago.
- Tarone, E. (1980). *Communication Strategies, Foreigner Talk, and Repair in Interlanguage*, **Language Learning**, 30, 417-31.
- Wesche, M. & Paribakht, T. S. (1996). *Assessing Second Language Vocabulary Knowledge: Depth vs. Breadth*, **The Canadian Modern Language Review**, 53,13-40).
- Zattore, R.(1989). *On the Representation of Multiple Languages in the Brain: Old Problems and new Directions*, **Brain and Language**, 36, 127-147.