

Cognitive Strategies Employed in Tackling Lexical Problems in Second Language Learning: A Psycholinguistic Study

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Abstract—This study sheds light on the lexical choice difficulty encountered by advanced learners of English by analyzing the lexical choice errors committed by a group of Jordanian students majoring in English. A task was set for 40 students to translate from Arabic into English several sentences including lexical items whose specific senses restrict their use and applications in a particular context and within certain collocational patterns. The sources of the errors were identified and categorized. In backtracking the sources of the errors in each category, the study attempts to deduce the possible cognitive strategies employed by the students in dealing with a lexical choice difficulty. Hence, the study provides psycholinguistic empirical evidence on the lexical retrieval processes and strategies employed by second language (L2) learners in tackling lexical choice problems. Results of the study revealed that the students employ a range of first language (L1)-based and L2-based lexical retrieval strategies such as semantic association, semantic analogy, approximation and derivations.

Index Terms—lexical choice errors, lexical retrieval strategies, error sources, interlingual errors, intralingual errors

I. INTRODUCTION

Lexical knowledge plays an integral role in second language (L2) acquisition. No doubt, vocabulary (lexes) is an essential part in L2 acquisition. Harley (1996) maintains that lexical knowledge plays a fundamental role in developing L2 proficiency (p.150). Such knowledge constitutes the “cornerstone” with which learners commence in acquiring such vocabulary. Accordingly, lexes are the “building blocks” of a language and one cannot think that language acquisition whether first, second, or foreign could take place without considering its vocabulary (Naba'h, 2011; Shormani, 2014; Khuwaileh, 1995). It is a fact that language acquisition begins with words as they are simply the first thing learners acquire (Llach, 2005, p. 46). In addition, as far as the communication process is concerned, it is the vocabulary knowledge and the ability to use them successfully that makes a particular learner more proficient than another. Hatch (1983) emphasizes the crucial role of vocabulary in communication as they are the fundamental linguistic elements that “will make communication possible” (p.237). Moreover, within academic settings vocabulary knowledge is crucial in effective writing (Manchon et al., 2007, p.150). However, among the many studies conducted on L2 acquisition, the vocabulary research has been a neglected area. Many researchers maintained that the main emphasis in L2 acquisition study has been on grammar and phonology (Richards, 2015; Ellis, 1997; Taylor, 1990, cited in Naba'h, 2011, p. 50). Moreover, the studies that are particularly concerned with lexical errors are still relatively limited in scope and number. Shormani (2012) attributes this to “the fact that semantic knowledge is difficult to assess” (p. 43).

Despite the great efforts exerted in research on the acquisition of L2 vocabulary and more specifically lexical errors L2 learners commit, there are some issues and questions to be explored. Only relatively few studies have investigated L2 lexical errors; however, such studies are not satisfactory as they addressed only “a relatively limited number of lexical errors categories” (Hemchua & Schmitt, 2006, p. 3). Moreover, there are even fewer studies that have tackled the sources of such errors. Thus, the present study attempts to probe deeply into the possible sources of lexical errors and explore the cognitive processes involved in dealing with a lexical choice difficulty.

II. OBJECTIVES

This study aims at investigating the possible sources of lexical errors committed by advanced learners majoring in English. In other words, the study tries to identify what makes a learner commit a particular error. In fact, the study more specifically attempts to answer the questions: (1) Is it the first language (L1; Arabic) that causes errors related to the lexical choice or L2 (English)? and (2) What strategies are employed in retrieving a suitable lexical item? Do learners adopt L1-based or L2-based lexical retrieval strategies?

III. DEFINITIONS OF TERMS

Lexical error

A lexical error within this study is defined as a deviation committed at the lexical choice level due to a violation of the lexical rules particular to English (Naba'h, 2011, p. 44).

Interlingual errors (L1 errors)

Interlingual errors are related to the interference in the native language. Such errors occur when the learner's L1 (patterns, systems, or rules) are transferred to L2. In this way, learner's L1 influences the production of L2. The influence will be on any aspect of language: vocabulary, grammar, culturally appropriate language use and so on (Grassi & Barker, 2010, p. 257).

Intralingual errors (L2 errors)

Intralingual errors are attributed to L2, independent of the native language. They are errors that take place due to the misuse of a rule or a faulty generalization of a rule in the target language. The learner in this case tries to generalize a rule that does not apply to the target language (Richards, 2002, p. 267).

Lexical retrieval strategy

Lexical retrieval is an essential process in both native language (L1) and second language (L2) oral and written production. Lexical retrieval processes refer to the access and selection of the relevant lexical items needed to express one's intended meaning in language production activity (Manchon et al., 2007, p.150).

IV. METHODOLOGY

A. *Participants*

The present study intends to analyze the lexical choice errors committed by some Jordanian university students majoring in English language and literature and probe deeply their possible sources. In the same vein, in tracking back the sources of such errors, the study intends to deduce the possible cognitive strategies employed in dealing with a lexical choice difficulty.

In academic settings, it is widely held that a learner can learn a word easily, but it is difficult to use it in an appropriate context unless he/she has practiced using it recurrently. Consequently, to study lexical errors and lexical choice difficulty, the participants should be of an advanced level having a high level of proficiency. Thus, a task was set for 40 university students to translate from Arabic into English several sentences including lexical items whose specific senses restrict their use and applications in particular context and within certain collocational patterns and hence might constitute a lexical choice difficulty for learners (see appendix 1). To elicit simultaneous responses from the students, some simple sentences with simple lexical items were inserted between the target sentences in order not to draw their attention to the lexical items in question (those confusing items). The age of the participants ranged from 18-24 years. They were all female. They had studied English for about sixteen years (12 at school and four at university). They had studied several courses like those of a practical nature (skills) such as reading, writing, and speaking, those of theory such as syntax, semantics, and sociolinguistics, and literature courses such as novel, drama, and short story.

B. *Procedure*

The students interpreted the sentences without an aid of a dictionary. All the errors committed by students in this test were spotted and collected. Errors on the syntactic, spelling, and lexico-grammatical were all excluded. To investigate the source of lexical choice errors, a classification of the errors was made. The classification was developed on the base of an amalgam of classifications taken from Shormani (2014), Shormani and Sohmani (2012), Naba'h (2011), and Abisamra (2003) in addition to the researcher's own classification into categories based on the corpus of study. Errors exemplifying each category (errors sources) were analyzed to find out what strategies (lexical retrieval strategies) were followed in the interpretation of such lexical items, i.e., retrieving the relevant suitable lexical items. In doing so, the study provides psycholinguistic evidence of the factors and processes involved in tackling lexical choice problems.

V. CLASSIFICATION OF LEXICAL CHOICE ERRORS

An analysis of the collected errors derived five categories in which the identified lexical errors were classified. The categories are listed below in table 1:

TABLE 1
SUMMARY OF LEXICAL CHOICE ERROR CATEGORIES

1.	Assumed Synonym
2.	Analogy
3.	Lack of Vocabulary Knowledge
4.	Paraphrase
5.	Literal Translation

As Table 1 above shows, there are five categories in which the lexical errors identified in this study were classified. Error frequency, category, and source's frequency and percentage for each of the following categories. It should be noted here that every example presented below involves only one single lexical error though in its original form (as written by the participant), it might have more than one error and of different type(s) (see Appendix 2)

TABLE 2
LEXICAL ERRORS

Category	L1-interference		L2-influence		Total	
	F	%	F	%	F	%
Assumed Synonymy	15	17	24	28	39	45
Analogy	1	1	18	21	19	22
Lack of Vocabulary Knowledge	--		12	14	12	14
Paraphrase	4	5	6	7	10	9
Literal Translation	4	5	3	3	7	8
Total	24	28	63	72	87	100

As presented in Table 2 above, the errors identified in the corpus are analyzed in terms of the abovementioned five types of sources, source's frequency and percentage for each of the following categories. It should be noted here that every example presented below involves only one single lexical error though in its original form (as written by the participant), it might have more than one error and of different type(s) (see Appendix 2).

A. Assumed Synonymy

Synonymy is a lexical phenomenon that exists in all languages. For instance, the words 'large' and 'big' are synonymous; they both describe the general size of something. However, the former is used with clothing and food while the later not, e.g., a blouse can be a large size but not a big size or when ordering coffee, it can a large coffee but not a big one (Wehmeier, 2005). As far as the process of L2 is concerned, the existence of such a phenomenon will be a source of confusion and difficulty for learners leading to what is called *assumed synonymy* which is the main concern of this study. This simply implies that L2 learners assume that two or more words are synonymous and so can be used interchangeably in an L2. An analysis of the data shows that L1-interference and L2-influence are the cause of the errors committed due to assumed synonymy. Assumed synonymy scores the highest number of errors with 39 errors accounting for 45% and was distributed as follows: L1-interference with 15 errors (17%) and L2-influence 24 errors (28%). These different sources are exemplified below and supported by examples from the corpus of the study.

- (1) *Where is the English section? (department)
- (2) * The main components of a short story. (elements)
- (3) * Toys section. (department)
- (4) * The branch of the ICU. (section)
- (5) * The department of history book. (section)

In (1) to (5), the learner uses 'section' for 'department', 'department' for 'section', and 'components' for 'elements'. These errors are ascribed to different sources. For instance, in (1), the error is ascribed to Arabic which is caused by hypothesizing a one-to-one correspondence between English and Arabic because 'department' and 'section' have the same equivalence in Arabic, i.e., '**qism**'. The error in (2) is ascribed to L2-influence. In English the words 'components' and 'elements' are applied in different context. Though both words refer to 'part of something', there are subtle differences between them in use. The word 'component' is commonly used to describe parts of concrete objects (especially a machine parts) while 'elements' describe abstract items. Thus, in retrieving the appropriate lexical item, the learner here seems to approximate the meaning of 'elements' (**ʕanas'ir alqis'ah**/elements of a story) by opting for the word 'components'. One can claim the learner uses **meaning approximation** as an L2-based lexical retrieval strategy. One could think that this error can be ascribed to Arabic; however, the Arabic equivalent of 'components' '**azza?**' is not applied to describe 'elements of a story'. The Arabic word '**ʕanas'ir**' is used instead (**ʕanas'ir alqis'ah** not **azza?**). Thus, an L1-interference seems not to be possible here.

B. Analogy

This category scored the second highest rank in error accounting for 19 errors (22%). Analogy is considered a learning strategy which indicates that the learner plays an active role in the learning process (not a passive interlocutor in the learning process) as he/she sometimes indulges in analogical thinking in dealing with a particular difficulty. However, in most of the cases, it becomes an error. This category included 19 errors (22%) distributed as follows: L1-interference with 18 errors (21%) and L2-influence with 1 error (1%). Consider examples (6) - (10) exemplifying this issue.

- (6) * The tittles of the army. (divisions)
- (7) *The deepest place of the lake. (part)
- (8) * The materials of this pie. (ingredients)
- (9) * We need a resolution for this typewriter (repair)

In example (7), the learner uses the word 'place' for 'part'. It seems that the error is ascribed to Arabic because the learner analogizes the use of 'place' for 'part'. The participant uses the adjective 'deep' (**ʕami:q**) in connection with 'place' influenced with Arabic semantics where it is possible and acceptable to use these words together as in '**almakan alaʕmaq**'. Errors in (6), (8), and (9) are ascribed to English. In (6), the learner draws an analogy between 'tittles' and 'divisions' of an army. It seems that the semantic association between army and tittles is more persistent in the mind of the learner than it is with the actual divisions of army. Thus, it seems that in trying to retrieve the appropriate relevant lexical item in this context (divisions) the learner has had an easier access to the word 'tittles' as it is more semantically

persistent with the word 'army'. In (8), the learner analogizes the use of 'materials' with 'ingredients' as the former refers to 'substance that things/cloth can be made of'. Similarly, the learner in (9) uses 'resolution' for 'repair'. It seems that there is analogy made between the problem involved in the given situation in the sentence (a problem with a typewriter) and the word 'resolution' that is used in association with a problem. Considering the type of strategy followed by the students, it seems that semantic relatedness/association seems to be at play here. The students in trying to retrieve the relevant lexical items make a kind of cognitive semantic associations or connections. This kind of strategy is based on making analogies and associations between the words in the learners' repertoire.

C. Lack of Vocabulary Knowledge

Some of the examined errors indicate a lack of English vocabulary knowledge. This category scores 12 errors (14%). Examples (10) and (11) illustrate the point in question.

(10) * What are the instructions of this pie. (ingredients)

(11) *We need to demand this typewriter. (repair)

The learners committing such errors might lack the simplest basic knowledge of English vocabulary. The lexical difficulty encountered when interpreting some of the sentences seems to be dealt with passiveness. No specific active strategy can be deduced from the errors. For instance, the learner uses 'instructions' and 'demand' for 'ingredients' and 'repair' respectively. No strategy of semantic analogy or association can be deduced from such errors. For instance, in (10) and (11), there seems to be no connection in terms of semantic senses between the words 'instructions' and 'ingredients' and 'demand' and 'repair' in English or in Arabic. Thus, one can claim that this seeming passiveness with which such lexical difficulty is dealt with can be attributed to a lack of vocabulary knowledge.

D. Paraphrase

Shormani (2012a) defines paraphrase as a restatement of a word, phrase, or sentence in different words. In this study, paraphrase is confined only to the word and phrase levels. In fact, paraphrase is considered one of the most fundamental language learning strategies. However, what happens sometimes is that the L2 learners cannot find the exact word/phrase to be used in a context, so they try to exploit a paraphrasing strategy but the outcome is not as expected, hence resulting in an error. This category scores the fourth highest number of errors. It scores 10 errors (9%) distributed as follows L1-interference includes 4 errors (5 %) and L2-influence includes 6 errors (7%). Examples (12) – (15) illustrate this point.

(12) *The obligatory parts of the English sentence in syntax. (constituents)

(13) *I want the big one of the spaghetti. (portion)

(14) *I want the big shot of the spaghetti. (portion)

(15) * I want the lion meal of the spaghetti. (portion)

In (12), the learner substitutes 'obligatory parts' for 'constituents'. In (13) - (15), 'big one', 'big shot', and 'lion meal' are used as a substitute for 'the biggest portion'. The error in (12) is ascribed to L1-interference where the learner having Arabic as a knowledge base has used 'obligatory parts' ('**alʕanaʕir alasasiah liljumlah**'). This is not accurate and acceptable in this English sentence where the word 'constituent' is the adequate equivalent. In fact, there is no exact one lexical item substitute/equivalent for this word in Arabic. The exact meaning which this word designates in English is captured by a phrasal paraphrase in Arabic rather than one single substitute, and this might have contributed to such a lexical choice difficulty. Hence, substitution is used here as an L1-based lexical retrieval strategy. The examples (13) – (15) are ascribed to L2-influence simply because the exact equivalent of the Arabic word '**his's'ah**' (**al his's'ah alʔakbar min almaʕkarownahunah**) does exist in English (portion). However, being unable to retrieve this relevant lexical item, the learner uses the English phrases 'big one', 'big shot', and 'lion meal' as a substitute. As far as the error in (15) is concerned, it seems that the learner confuses the phrase 'the lion meal' with the 'lion share'. Accordingly, the L2-based lexical retrieval strategy is at work here.

E. Literal Translation

As shown in Table 1 above, this category scores 7 errors (8%). In fact, literal translation is considered a learning strategy (compensatory strategy) which a learner uses when he/ she fails to express himself/herself (Kroll & Groot, 2005, p.138). This category includes both L1-interference errors and L2-influence errors distributed as 4 errors (5%) and 3 errors (3%) respectively. The errors in (16) - (19) exemplify such a category.

(16) * Where is the ICU unit? (section)

(17) *I want the biggest lesson of this spaghetti (portion)

(18) * What are the makers of this pie? (ingredients)

(19) * What are the containings of this pie? (ingredients)

The errors in (16) and (17) are ascribed to L1-interference where the learner uses the words 'unit' and 'lesson' for 'section' and 'portion', respectively. Here, the learner is influenced by Arabic as the word 'unit' '**wihdah**' is used in connection with 'ICU Section' as in '**wihdah alʕinajah almurakkazah**' 'وحدة العناية المركزة'. Similarly, the word '**his's'ah**' in Arabic has two meanings; it means 'class/lecture' and 'share'. It seems that in trying to deal with the difficulty of retrieving the adequate lexical item here, the learner has relied on the literal translation of the word '**his's'ah**' from Arabic into English. Thus, the learner employs an L1-based lexical retrieval strategy here. The errors in

(18) and (19) could be ascribed to L2-influence. It seems that the learner, through the strategy of derivation, has employed the literal senses of the English words 'makers' and 'containings' to encapsulate the meaning of 'ingredients' in the given sentence. The insufficient knowledge in L2 lexes to distinguish between 'ingredients' and 'containings' leads the learner to exploit the English sense of 'contain' and apply it through the process of derivation as a substitute for the word 'ingredients'. Hence, the learner here applies the process of derivation as an L2-based retrieval strategy to deal with such a lexical choice problem.

VI. CONCLUSION

The study highlights the importance of lexical knowledge in the L2 acquisition process. As presented in Table 1 earlier, where the frequency of total errors committed was 87 errors, lexical errors will constitute a barrier for advanced learners in the learning and communicative process. The collected data showed two main categories of errors: interlingual and intralingual errors. Interlingual errors accounted for 28% and intralingual errors accounted for 72% of the total number of errors. This could be related to the fact that most of the participants of the study are advanced learners and so the possibility of L1-inteference is limited. A thorough analysis of the errors revealed that the students employ a range of L1-based and L2-based lexical retrieval strategies such as semantic association, semantic analogy, approximation, and derivations. However, in some instances where there is insufficient knowledge of the lexis in L2, the learners seem to act passively when dealing with a lexical choice problem. This is revealed in the random arbitrary lexical choices under the category of lack of vocabulary knowledge where the errors do not indicate any kind of active retrieval strategy.

APPENDIX 1

Age	Year of Study						
	18-20	22-24	25-30	First	Second	Third	Fourth
Circle your evaluation (overall average) at the university:							
Excellent	Very Good	Good	Fair				
Please translate the following sentences from Arabic into English							

أعطني قطعة من الكعك من فضلك (cake)	ما هي مكونات هذه الكعكة؟
أين قسم العناية الحثيثة (ICU)؟	نحتاج الى إصلاح هذه الآلة الطابعه
انظر فوق	كيف حالك؟
أين قسم الألعاب؟ (toys)	اريد الحصه الاكبر من المكرونه
أين كتابي؟	قسم كتب التاريخ في المكتبة
هذا الجزء من يدي يؤلمني	ما هي اجزاء هذه الآله الحاسبه؟
الاجزاء الاساسيه للجملة في علم النحو (Syntax)	هذا هو الجزء الاعمق من البحيرة
عدد لي عناصر القصة القصيره	أين قسم اللغة الانجليزيه؟
تم اصلاح السيارة	جميع فروع البنك موجوده في الاردن
	التقسيمات في الجيش

APPENDIX 2

Literal Translation	
Responses	Frequency
What are the <u>parts</u> of this calculator? (components)	5
Where is the ICU <u>unit</u> ?	3
What are the <u>containings</u> of this pie?	1
What are the <u>makers</u> of this pie?	2
We need to <u>reform</u> this typewriter	1
The care was <u>reformed</u>	1
I want the <u>biggest lesson</u> of this spaghetti	1
Analogy	
Responses	Frequency
I want the biggest <u>share</u> of this spaghetti	1
<u>Titles</u> of the army	1
This is the deepest <u>fraction</u> of this lake	1
This is the deepest <u>segment</u> of this lake	1
This is the deepest <u>place</u> of this lake	1
The <u>portion</u> of the lake	2
What are the <u>most parts</u> of an English sentence	1
What are the <u>materials</u> of this pie	2
We need a <u>resolution</u> for this typewriter	1
What are the <u>units</u> of this calculator?	1
The <u>segment</u> of the calculator	1
What are the <u>equipments</u> of this calculator?	1
The <u>tools</u> of this calculator	1
What are the <u>main parts</u> of the English sentence in syntax	2
I want the <u>lion meal</u> of this spaghetti	1
I want the <u>lion share</u> of this spaghetti	1
Mention the <u>themes</u> of a short story	3
Mention the <u>parts</u> of a short story	1
Mention the <u>features</u> of a short story	1
We need to <u>maintain</u> this typewriter	1
Separated <u>parts</u> of history books in the library	1
<u>Divid</u> of history books	1
The ICU <u>station</u>	1
The deepest <u>point</u> of a lake	1
The deepest <u>place</u> of a lake	1
We need to <u>improve</u> this typewriter	1
<u>Titles</u> of the army	1
<u>Ramifications</u> of the bank	1
<u>Subdivisions</u> of the bank	1
<u>Apportionments</u> of the Army	1
Army <u>segments</u>	1
Assumed Synonymy	
Responses	Frequency
Where is the English <u>section</u> ?	5
Mention the main <u>components</u> of a short story	1
We need to <u>fix</u> this typewriter	5
What are the <u>parts</u> of this calculator?	7
The <u>constituent</u> of this calculator?	1
The <u>sections</u> of the army	2
The <u>branches</u> of the army	1
The <u>portions</u> of the army	1
The <u>departments</u> of the army	2
Where is the <u>branch</u> of the ICU	1
ICU <u>department</u>	4
I want the largest <u>segment</u> of this spaghetti	1
The <u>constituent amount</u> of this	1
The biggest <u>piece</u> of spaghetti	3
The biggest <u>part</u> of spaghetti	2
Toys <u>section</u>	15
Toys <u>branch</u>	1
The car was <u>repaired</u>	3
The <u>portions</u> of the bank	4
<u>Department</u> of history book	1
<u>Branch</u> of history books	1
Lack of Vocabulary Knowledge	
Responses	Frequency
All of the <u>parts</u> of the bank are in Jordan	1
All of the <u>section</u> of the bank are in Jordan	1

The <u>places</u> of the bank	1
We need to <u>demand</u> this typewriter	1
The car was <u>demande</u> d	1
The <u>part</u> of history books in the library	3
Where is the English <u>part</u> (department)	1
Where is the toys <u>part</u> ?	2
This <u>segment</u> of my hand hurts me	1
Mention the <u>parts</u> a short story	1
Mention the <u>factors</u> of a short story	1
Where is the ICU <u>part</u>	2
What are the <u>instructions</u> of this pie?	1
Toys <u>part</u>	2
The car was <u>corrected</u>	1
The <u>Part</u> of the bank	1
This <u>portion</u> of my hand	1

Paraphrase	
Responses	Frequency
What are the <u>main parts</u> of the English sentence in syntax	4
What are the <u>main categories</u> of the English sentence in syntax	1
The <u>obligatory parts</u> of a sentence	1
The main <u>elements</u> in a sentence	1
The main <u>components</u> of a sentence	1
What are the <u>basic parts</u> of the English sentence in syntax?	5
I want the <u>big one</u> of the spaghetti	1
I want the <u>big shot</u> of the spaghetti	1

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