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The Impact of Metalinguistic English Vocabulary Knowledge and Lexical Inferencing on EFL Learners' Lexical Knowledge Considering the Cross-Linguistic Issue of L1 Lexicalization

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Abstract

The present study endeavors to unravel the enigma of the psycholinguistic mechanisms underpinning bilingual mental lexicon by analyzing the issue of L1 lexicalization as a construct epitomizing an overarching framework. It involves 78 juniors at the Islamic Azad University, Roudehen Branch. The study inspects the impact of the interventionist/noninterventionist treatments on both sets of lexicalized and nonlexicalized items pedagogically. It further tries to bring the bilingual mental lexicon under scrutiny by investigating the cross-linguistic issue of L1 lexicalization psycholinguistically. The results, obtained through the independent *t*-test, indicate a significant difference between the two groups dealing with both sets of items. The paired *t*-test shows that the learners had a greater degree of familiarity with lexicalized items at pretesting, and they were more successful in learning lexicalized items at posttesting. However, no significant difference was found in gain scores in the two groups. The descriptive analyses indicate that the number of lexicalized words produced productively was approximately two times as many as the number of nonlexicalized items at the same level in the interventionist group. Moreover, the number of nonlexicalized items learned partially was much greater in comparison with their lexicalized counterparts. The results have implications for EFL methodologists and theoreticians.

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1. Introduction

Today a large body of research exists on L2 lexical acquisition due to the fact that the last decade has witnessed a resurgence of interest in vocabulary as a grossly undernourished field after a prolonged absence from center stage. In fact, the significance of grasping the psycholinguistic processes and mechanisms underlying the development of lexical competence is well-confirmed and enduring as a core issue involving cognitive perplexities in bilingual studies (Augustin Liach, 2011; Chacon-Beltran, Abello-Contesse & Torreblanca-Lopez, 2010; French & Jacquet, 2004; Jiang, 2004; Paribakht, 2005; Schwartz, Yeh, & Shaw, 2008; Stringer, 2008; Wesche & Paribakht, 1996; Wesche & Paribakht, 2010).

However, it comes somewhat of a surprise to learn that relatively few studies have been proffered to scrutinize the impact of the learners' native language on the process. In other words, recent empirical investigations reveal that transfer accounts have largely ignored the acquisition of the lexicon (Augustin Liach, 2011; Chacon-Beltran, Abello-Contesse & Torreblanca-Lopez, 2010; Schwartz, Yeh, & Shaw, 2008; Wesche & Paribakht, 2010). More important, most of the existing literature in the field of vocabulary acquisition is primarily descriptive and model free rather than coherent and model-driven (Meara, 1997; Stringer, 2008; Chacon-Beltran, Abello-Contesse & Torreblanca-Lopez, 2010; Augustin Liach, 2011). Only in the last few years, have researchers in adult psycholinguistics become enthusiastic to analyze lexical acquisition from the first and second language perspective with the intention of refining the existing mental models pertinent to word processing in its 'steady state' (Gaskel & Ellis, 2009).

Several attempts have been made by different scholars to devise explanatory models for vocabulary learning. However, the complexity of the underlying system of lexical acquisition, decoding and the functioning of the human brain has made it extremely difficult for researchers to provide conclusive evidence leading to the development of real breakthroughs in the last decade. In this regard, Meara (2005) pointedly argues that "the L2 research literature contains lots of examples of what might be broadly described as descriptive research on vocabulary acquisition, but very few examples of explanatory, model-based research, which attempt to account

for this learning" (as cited in Chacon-Beltran, Abello-Contesse, & Torreblanca-Lopez, 2010, p. 109).

The real crux of the issue is that the perpetual controversies mainly revolve around the most frequently brandished explication that the processes involved in L1 lexical acquisition simulate those occurring in L2, without providing any tangible formal justification leading to the formulation of a coherent theory (Stoller & Grabe, 1993; Augustin Liach, 2011). The cross-linguistic investigations related to L2 vocabulary achievement are primarily devoted to the analysis of the impact of various L1 and L2 orthographies on different facets of learners' lexical ability like lexical-processing modes, strategies, and styles as well as lexical choices (Chikamatsu, 1996; Ghahremani-Ghajar & Masny, 1999; Wade-Woolley, 1999). The effect of L1 syntactic features on L2 lexical inferencing has also been scrutinized by some scholars like Nagy, McClure, and Mir (1997). Other facets of the acquisition process have rarely if ever become the locus of attention.

The current study, however, is focused on a thorny issue referred to as L1 lexicalization which is worthy of investigation due to its cross-linguistic nature. The findings of some relevant studies in this field brought the issue to the fore. The study of native speakers of Hebrew versus Hebrew learners with various linguistic backgrounds conducted by Blum and Levenston (1979) demonstrated the idea that the learners in the second group tended to avoid nonlexicalized items in a cloze test. Likewise, the results of some other studies indicated that the existence of dissimilarities even in the semantic sub-features of L1 and L2 lexical items makes the acquisition process more complicated (Paribakht, 2005). Among those studies one can refer to the research carried out by Yu (1996a; 1996b, as cited in Paribakht, 2005) who compared the performances of Chinese and Japanese L2 learners of English with respect to the semantic components of the motion verbs. The Chinese learners outperformed their Japanese counterparts due to the existing cross-linguistic similarities between Chinese and English.

Having considered the existing vocabulary studies technically, we can finally come to grips with the idea that an overarching analysis which is experimental, explanatory, and theory-driven is indispensible. It is conceivable that L1 lexicalization, as a cross-linguistic issue stands as an area with profound implications for foreign language acquisition. It deserves deeper scrutiny as we refer to several theoretical explications like 'lexical quality hypothesis' stated by Perfetti and Hart (2001, as cited in Schwartz,

Yeh, and Shaw, 2008) and the lexicalization model illustrated by Jiang (2004).

Vocabulary acquisition could be elucidated in terms of the development of a high quality lexical representation which enables the learner to access lexical items efficiently and reliably (Schwartz, Yeh, & Shaw, 2008). The 'lexical quality hypothesis' was proposed by Perfetti and Hart (2001) which predicts that "words with high quality lexical codes have representations that are specific and redundant, and facilitate reliable retrieval" (as cited in Schwartz, Yeh, & Shaw, 2008, p. 311). On the basis of the assumption underpinning 'lexical quality hypothesis', the words not lexicalized in the learner's L1 are at risk due to the absence of any direct one-to-one mapping between lexical meaning in L2 and its nonlexicalized counterpart in the learner's L1.

1.1 L1 lexicalization: A cross-linguistic issue

The lexicalization model proposed by Jiang (2000) elaborates on the issue of L1 lexicalization through crystallizing the cognitive distinctions between L1 and L2 considering the source of knowledge accessible to adults and children. Children enjoy the benefit of the contextualized input available to them which facilitates the extraction and combination of lexical meaning. On the contrary, the amount of contextualized input available to the adult language learner is scarce. The second distinction lies in the fact that the child has simultaneous access to both form and its meaning, a process which makes the act of lexical acquisition effortless and straightforward. In contrast, the adult language learner needs to resort to the existing linguistic and conceptual system of his/her L1 that plays an intermediary role in L2 lexical acquisition. It seems beneficial to refer to the psycholinguistic model proposed by Jiang (2000) to graphically depict the lexicalization hypothesis. The model makes the description more tangible by crystallizing the stages and processes involved in adult L2 vocabulary acquisition (see Fig. 1).

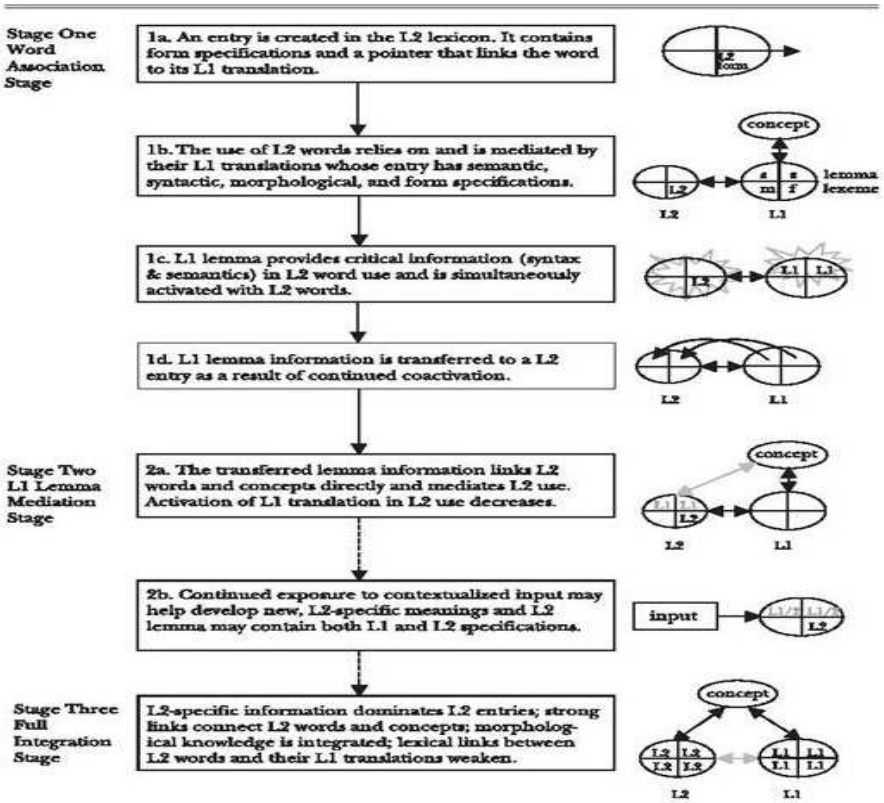

Figure 1. Lexicalization model

The model divides adult L2 vocabulary acquisition into three stages; namely, word association stage, L1 lemma mediation stage, and full integration stage. Stage one starts with the process of linking an entry in L2 lexicon to its translation in L1 directly. This process continues as L1 lemma provides critical information (including syntactic and semantic specifications) in L2 word use. It terminates with the process of transferring L1 lemma to an L2 entry as a result of continued co-activation. The second stage which is referred to as L1 lemma mediation from a processing view continues with the act of linking L2 words to concepts. Here, L1 lemma mediation has an intermediary role as it controls L2 use as well. This stage is referred to as the hybrid-entry stage from a representational perspective due to the fact that an L2 entry state in this phase is a combination of L2 linguistic and conceptual information and the L1 syntax and semantic system. Accordingly, it seems beneficial to evaluate such a theoretical stance experimentally with respect to nonlexicalized vocabulary items that

do not have any one-word or compound equivalents in the learners' L1. The third stage of lexical acquisition as 'full integration stage', could be shaped as a consequence of the reformulation of strong links connecting L2 words and concepts as a result of which the overarching effect of L1 on L2 weakens. However, as Jiang (2004) pointed out, ''many words may stop short of this third stage and L1 lemma mediation may become a steady state of lexical processing in advanced L2 learners'' (p. 417).

Likewise, Paribakht (2005) justifies the lexicalization hypothesis by providing a sharp distinction between the two processes of 'lemma recognition' and 'lemma construction' employed by learners dealing with lexicalized and nonlexicalized items. As learners attempt to infer the meaning of an unfamiliar concept, they become involved in the process of extracting syntactic and semantic components of the lexical item. Any success in accessing an appropriate or a partial lemma may encompass the learners' retrieval of the word's equivalent in their L1. From this perspective, it is plausible to assume that the task of encountering a nonlexicalized word becomes more complicated due to the absence of any exact replication or at least nearly overlapping L1 lexical translation or equivalent in the learners' mental lexicon. Consequently, the learners become engaged in a more complex process of meaning construction rather than meaning recognition.

In contrast, the process of inferring the meaning of a lexicalized item is considered to be more straightforward due to the reason that "once the lemma components are assembled, since an equivalent L1 lemma exists in the mental lexicon, the L2 lemma is recognized and its meaning is understood'' (Paribakht, 2005, p. 730). The task involves the less demanding process of meaning recognition rather than meaning construction. Paribakht (2005) examined the impact of first language lexicalization on second language lexical inferencing. The study demonstrated the idea that nonlexicalized words may deserve "a special treatment and focused instruction in EFL contexts with homogeneous student population'' (p. 731).

The results of the study conducted by Chen and Truscott (2010) served as a solid piece of evidence supporting the difficulty that second language learners may have in inferring nonlexicalized words. The study suggests that "increasing the number of exposures up to seven makes little contribution to the acquisition of meaning for nonlexicalized words, because these words

are too difficult to learn from even seven exposures'' (Chen & Truscott, 2010, p. 711).

Following the above-mentioned contentions, this study attempts to further expand on the issue of L1 lexicalization in two interventionist and noninterventionist environments. The interventionist treatment as morphological explicit instruction aimed to trigger the learners' metalinguistic awareness. The major rationale behind selecting the aforementioned interventionist procedure lies in the idea of 'noticing' presented by Schmidt (2001, as cited in Schmidt, 2010).

Accordingly, metamorphological treatment influences the learners' degree of awareness by empowering their metalinguistic ability as a general-word strategy in the context of their L2 which seeks the idea of noticing as a higher level of awareness referred to as understanding. The idea is rationalized in terms of the following quotation provided by Schmitt (2010) who believes that "Knowledge of rules and metalinguistic awareness of all kinds belong to this higher level of awareness'' (Schmitt, 2010, p. 6). He further stated the idea that noticing is regarded to be a necessary condition which serves as a prerequisite for learning while understanding as a higher level of awareness plays a facilitative role but not required.

Kuo and Anderson (2006) defined morphological awareness as the ability to utilize the knowledge of word formation rules and pairings between sounds and meanings. Broadly defined, there are two approaches to morphological analysis: analytic and synthetic. Analytic approaches rely on breaking words down into minimal units while synthetic approaches put emphasis on building words from minimal units (Aronoff & Fudeman, 2005).

A fairly large body of research is available concerning the role of metamorphological awareness in first and second language acquisition. In what follows, we aim at reviewing only research that is central to the present study in a selective manner. The role of morphology in different facets of L2 acquisition including lexical acquisition is well-accentuated by several scholars (e.g., Bellomo, 2009; Ferris, 2009; Koda, 2000; Markovic, 2002 as cited in Shaw, 2011; Morin 2006; Raymond, Matti, & Maria, 2000; Sandra, 1994; Wysocki & Jenkins, 1987). The study conducted by Raymond, Matti, and Maria (2000) showed the beneficiary impact of using morphological awareness in determining word meaning, and therefore in burgeoning lexical threshold (Wysocki & Jenkins, 1987; Sandra, 1994).

As Koda (2000) points out, "good readers have strong metalinguistic awareness because they understand that phonological and orthographic forms are connected, words can be divided into smaller, meaningful parts, and that meaning can be obtained from smaller parts'' (as cited in Shaw, 2011, p. 36). In other words, skillful readers know how to dissect the words into separate meaningful parts to discover meaning. Ferris (2009, as cited in Shaw, 2011) supports this idea and claims that teachers can utilize morphological instruction as a panacea for those learners who require assistance with academic reading. In the same way additional research has demonstrated that knowledge of derivational morphology supports reading ability and vocabulary growth (Markovic, 2002 as cited in Shaw, 2011).

Morin (2006) carried out an investigation to monitor the process of developing Spanish L2 vocabulary by building and using word families with respect to learners' depth and breadth of vocabulary knowledge. The findings indicated that morphological analysis in the form of explicit teaching may enhance learners' depth of vocabulary knowledge encompassing receptive and productive knowledge. However, it did not have a noticeable impact on the Spanish learners' breadth of lexical knowledge. Moreover, the effectiveness of morphological awareness as a fruitful vocabulary building tool was demonstrated in several studies related to first language acquisition (Hanson, 1993; Nagy & Anderson, 1984; Rispens, McBride-Chang, & Reitsma, 2007; White, Power, &White, 1989).

According to Bellomo (2009), words that are morphologically complicated could be dissected into their individualized meaningful constituents; therefore, learners can resort to the knowledge of one or more part as a word attack strategy or a mnemonic aid to facilitate the recall of previously acquired lexical units. The study conducted by Bellomo (2009) supported the utility of morphological analysis as a lexical enhancement activity dealing with college students regardless of language origin.

The current study aims to monitor the significance of the issue of L1 lexicalization in an experimental setting with respect to the psycholinguistic processes involved in the acquisition of particular lexical items considering the theoretical framework of 'noticing hypothesis' as the higher level of awareness (understanding). It was assumed that the intervention provided could have a more salutary effect on learners' lexical gains particularly with respect to lexicalized items in comparison with their nonlexicalized counterparts and that the noninterventionist control group would fail to have

the same results. The present study set out to seek answers to the following research questions:

1) Is there any significant difference between the interventionist group involved in a basic metamorphological treatment and noninterventionist group receiving an inferencing procedure dealing with L2 words lexicalized and not lexicalized in Persian?
2) How does metamorphological treatment in the form of explicit teaching affect the L2 learners' acquisition of target words considering the cross-linguistic issue of L1 lexicalization in the interventionist group?
3) How does the inferencing procedure affect the L2 learners' acquisition of the target items in the noninterventionist group?

2. Method

2.1 Participants

The participants comprised 78 female third year university students majoring in English Translation, studying at the Islamic Azad University, Roudehen Branch who were selected from four intact classes. The intermediate level learners were selected by referring to the results obtained from the 2000 level Version I of the Vocabulary Levels Test revised and validated by Schmitt, Schmitt and Clapham (2001). In this way, the learners whose mean score on the 2000 word level was 28 or more out of a possible 30, indicative of the mastery of intermediate level, were selected as the participants of the study. The mean score of the selected group on the 2000 word level of Version I of the VLT was 28.19 out of thirty. Two interventionist (N = 40) and non-interventionist (N = 38) groups were involved in this study.

2.2 Instruments

Generally speaking, three types of measurement devices were employed in this study. The instruments included Version I of Vocabulary Levels Test, a vocabulary test encompassing lexicalized and nonlexicalized items, and the revised version of the VKS (Vocabulary Knowledge Scale).

2.2.1 Vocabulary levels test

Nation's Vocabulary Levels Test, revised and validated by Schmitt, *et al*., (2001), was the first instrument utilized with the purpose of assessing the learners' receptive knowledge of vocabulary. The learners who passed the 2000 level with the score of at least 28 out of the possible 30 were selected

as the participants of this study. The reliability of the receptive section was estimated as .72 using the K-R21 formula.

2.2.1.1 Target words

The target words for the study included seventy six English words (38 lexicalized and 38 nonlexicalized items). The words were categorized into lexicalized and nonlexicalized ones, with an equal number of nouns, verbs, and adjectives in both groups (17 verbs, 17 nouns, 4 adjectives). The target items were selected from the TOEFL word lists to be comparable with the nonlexicalized ones with regard to their level of difficulty.

The nonlexicalized words were defined as those that can be paraphrased in Persian but do not have a fixed one-word or compound equivalent in Persian based on several bilingual dictionaries and the judgments of several educated bilingual native speakers of Persian. All target words including lexicalized and nonlexicalized ones were polysyllabic to satisfy the requirement of the treatment provided in the experimental group as morphological analyses. The final selection encompassed words which were considered to be morphologically analyzable and relatively difficult for intermediate students (e.g., confluence, surmount).

2.2.2 Lexicalized/Nonlexicalized vocabulary test

The lexicalized/nonlexicalized vocabulary test was devised by one of the present authors to examine the participants' knowledge of target words before and after the treatment. The test encompassed seventy-six items of lexicalized and nonlexicalized vocabulary items which were arranged randomly. The list of target words included some polysemous words. Therefore, the words were tested in the context of sentences to be able to assess the learners' knowledge with regard to the intended meanings. Three professors in TEFL were consulted in devising the test. The VKS developed by Paribakht and Wesche (1993) was employed to elicit information from the participants regarding their receptive and productive knowledge of both groups of lexicalized and nonlexicalized words. The reliability of this test was calculated by Cronbach's alpha as .84.

2.2.3 Vocabulary knowledge scale (VKS)

The learners' depth of knowledge regarding the target items in this study was assessed by the modified version of Vocabulary Knowledge Scale (VKS) at the time of pre and posttesting. In the revised version of the scale, the instruction related to the first level of the instrument was changed to the following statement representing total unfamiliarity with the contextualized words: 'I have not seen this word before and I do not know what it means.'

Such a change makes the task more straightforward for the learners who are dubious about selecting the available choices.

One of the major advantages of the VKS developed by Paribakht and Wesche (1993) is that it utilizes both self-report and performance data, which provides information about the participants' level of awareness ranging from total unfamiliarity to the capability to use the target word with semantic and syntactic accuracy in a sentence.

In the present study the learners' degree of familiarity with the intended lexicalized and nonlexicalized words (contextualized in sentences) was assessed based on their performances related to the five elicitation categories. The results were shown in six scoring categories including total unfamiliarity with form and meaning as (1), familiarity with form but not with meaning as (2), partial knowledge (knowing at least one of the basic constituents of the words) as (3), receptive knowledge at the levels of meaning and form as (4), productive knowledge at semantic level as (5), and productive knowledge at semantic and syntactic levels as (6).

2.3 Procedure

The study included the following distinct phases regarding the two interventionist and noninterventionist groups:

1. The receptive version of the Vocabulary Levels Test was administered to evaluate the performance of the learners on 2000 word level of the VLT. Subsequently, the intermediate-level learners whose mean score on the 2000 word level was 28 or more out of a possible 30 were selected as the participants of the study.
2. The second stage involved pretesting the learners in terms of their performances on two sets of English words with the first set lexicalized and the second set not lexicalized in Persian. To accomplish such a task the students were provided with a vocabulary task devised and evaluated by referring to the VKS scale developed by Paribakht and Wesche (1993). The pretest measured learners' receptive knowledge (including the translation, synonym, or definition of the words) and initial productive knowledge of the target words by using the modified version of the VKS which measured the learners' familiarity with the selected words ranging from total unfamiliarity to the ability to employ the target words in the context of sentences with semantic and syntactic accuracy.

   It is important to note that the vocabulary treatments in the two groups of the study including the control group were similar with respect to the

length of the instruction, the number of lexicalized and nonlexicalized target words, the number of exposures to each individual target word, the order of presenting the receptive and productive output activities considering their level of difficulty, and the oral corrective feedback recommendations provided by the instructor.

3. The learners in the control group were provided with a noninterventionist instruction which was primarily based on the process of inferring the meanings of both groups of words from the contextualized sentences. The learners in this group were initially involved in an activity resembling selective attention in which they were expected to read sentences including bold-faced target lexical items attentively to ensure they noticed the selected vocabulary items. In other words, the participants, in each class session, were involved in a semantic processing activity regarding the target words as they tried to infer the meanings of the words from the context of sentences. In fact, the vocabulary exercise in this group was circumscribed to selective attention, lexical inferencing, a pushed output practice which was not regarded to be obligatory, and some oral corrective feedback provided by the teacher on the students' performance.
4. On the basis of the crystallization provided for the noninterventionist control group, it should be noted that the learners in the experimental group were engaged in exactly the same vocabulary-building activities as the control group; however, they were additionally involved in an individual activity with a focus on the derivational morphology of English. In fact, the participants in this study were the students of a course of morphology. Thus, the instructor provided the whole class with some explicit theoretical instruction regarding the basic morphological terminologies (e.g., roots, stems, combining forms, and the derivational/inflectional affixes). The theoretical technical description was followed by the practical teaching of the morphological constituents related to the target words. The students were actively involved in the process and brought some further examples of the words encompassing the selected morphological constituents each session. Subsequently, learners in this experimental group were provided with a manipulation exercise. Like the control group, the learners were initially expected to read sentences including bold-faced target lexical items attentively to assure they noticed the selected vocabulary. As a manipulation activity, the learners attempted to provide an overall meaning for each lexicalized

and nonlexicalized concept by resorting to their morphological knowledge.

5. The above-mentioned procedure was accompanied by practical output activities like reconstruction (reconstructing meaning through paraphrasing), and a sentence making task (demonstrating productive ability by writing original sentences) which was intended to challenge students' productive ability without overwhelming them.
6. The instruction in the interventionist group terminated with some oral corrective feedback provided on the learners' performance. In this way, the instructor attempted to provide some hints regarding the grammaticality of the produced sentences, semantic appropriateness of the target items in contextualized sentences, correct pronunciation, and issues related to the collocations of the selected words. Besides, the students were reminded that their active presence and contribution, although minimal, in the class are of vital importance to their learning and that their silence would be interpreted as an inability or lack of interest. All the participants were finally required to submit their papers for further analysis by the instructor. Perhaps, the assigned scores for each class activity did not have any effect on the students' final assessment. The assessment task was primarily used for monitoring the students' progress and performance in each session. The instructor returned the papers to the participants at the final session after analysis.
7. Ultimately, at the end of the course both the interventionist and noninterventionist groups were evaluated with respect to their degree of lexical achievement. To monitor the amount of knowledge gained, both groups were administered the same vocabulary test as pretesting. It is worth mentioning that, the tests at both pre and posttesting sessions assessed the learners' receptive and initial productive knowledge of the selected words before and after being exposed to different treatments based on different levels specified by the VKS.

3. Results

The descriptive statistics related to the interventionist and noninterventionist groups regarding lexicalized items is shown in Table 1.

Table 1. Descriptive statistics related to lexicalized items in the interventionist group as morphological and noninterventionist inferencing group in pre/post performance

Groups	*Pairs*	*N*	*Mean*	*SD*	*Std. Error Mean*
Morphological	lexicalized Pre	40	56.70	6.71	1.06
	lexicalized Post	40	141.70	33.71	5.33
Control	lexicalized Pre	38	58.08	4.33	.70
	lexicalized Post	38	74.76	5.03	.81

An independent *t*-test analysis was conducted to find out whether or not the mean differences between the two groups are significant considering the first research question of the study. The results of the *t*-test analysis between the interventionist group involved in the morphological treatment and the noninterventionist group involved in the process of lexical inferencing dealing with lexicalized items, are presented in Table 2.

Table 2. Results of the Independent t-test Analysis for Lexicalized Items

Variables	*Scores*	*Levene's test for equality of variances*		*t-test for equality of means*		
		F	*sig*	*t*	*df*	*sig*
Lexicalized Pre	Equal variances assumed	6.10	.016	- 1.07	76	.28
	Equal variances not assumed			-1.08	67.11	.28
Lexicalized Post	Equal variances assumed	76.34	.000	12.10	76	.000 **
	Equal variances not assumed			12.41	40.83	.000 **

** ($p < .001$)

As shown in Table 2, the independent samples *t*-test result with (df = 67.11) and (P = .28) regarding lexicalized items presents the fact that the participants in the two groups did not have any significant difference with regard to their knowledge of lexicalized vocabulary items at pretesting. However, the *t*-test result obtained at posttesting with (df = 40.83) and (P < .001) considering the same group of participants is representative of a significant difference between the interventionist and noninterventionist groups. Table 3 presents the descriptive statistics related to the two groups

for nonlexicalized items. An independent *t*-test analysis was conducted to find out whether or not the mean differences between the groups were significant.

Table 3. Descriptive statistics related to nonlexicalized items in interventionist group as morphological and the noninterventionist group as inferencing in pre/post performance

Groups	*Pairs*		*N*	*Mean*	*SD*	*Std. Error Mean*
Morphological	Nonlexicalized	Pre	40	52.58	5.65	.89
	Nonlexicalized	Post	40	134.25	26.53	4.19
Control	Nonlexicalized	Pre	38	53.55	4.88	.79
	Nonlexicalized	Post	38	70.00	4.82	.78

The results of the *t*-test analysis between the interventionist group involved in morphological analyses and the noninterventionist group involved in the inferencing procedure dealing with nonlexicalized items are presented in Table 4.

Table 4. Results of the independent t-test analysis for nonlexicalized items

Variables	*Scores*	*Levene's test for equality of variances*		*t-test for equality of means*		
		F	*sig*	*t*	*df*	*sig*
Nonlexicalized Pre	Equal variances assumed	.82	.36	-.81	76	.41
	Equal variances not assumed				75.33	.41
Nonlexicalized Post	Equal variances assumed	55.26	.000	14.69	76	.000**
	Equal variances not assumed			15.05	41.72	.000**

** ($p < .001$)

Table 4 demonstrates that the participants involved in the two groups did not have any significant difference regarding their degree of familiarity with nonlexicalized items at pretesting ($P > .05$). However, the *t*-test analysis with ($df = 41.72$) and ($P = .000$) at the time of posttesting shows that the difference between the two groups is significant in reference to the degrees of achievement regarding the nonlexicalized vocabulary items ($p < .001$). A *t*-test analysis was conducted after splitting the file to answer the second and the third research questions pertinent to the overarching issue of L1 lexicalization. The results are shown in Table 5.

Table 5. Results of paired t-test for lexicalized/nonlexicalized items in the interventionist and noninterventionist groups

Groups	*VKS scores*	*Paired differences*			
		Mean	*SD*	*t*	*p*
Morphological	Pretest	4.12	5.93	4.39	.000**
	Posttest	7.45	15.13	3.11	.003*
	Pre to posttesting difference	-3.32	15.63	-1.34	.18
Control	Pretest	4.52	4.61	6.04	.000**
	Posttest	4.76	5.87	5.00	.000**
	Pre to posttesting difference	-.23	7.40	-.19	.84

** ($p < .001$) *($p < .01$)

Table 5 indicates that the learners in both groups had a greater knowledge of lexicalized items compared to their nonlexicalized counterparts at pretesting ($p < .001$). The *t*-test results are also significant at posttesting. However, the measured rates of learning (pre to posttesting difference) are not significant in the two groups ($P > .05$). In other words, the learners' degree of achievement in the groups involved in the study was not significantly different regarding the two sets of lexicalized and nonlexicalized items.

A descriptive analysis was conducted to have a more vivid picture regarding the learners' performances in reference to lexicalized and nonlexicalized items and to demonstrate the learners' degree of familiarity with the two sets at different levels of the scale graphically. Table 6 shows the frequency distribution of pre and post vocabulary scores for lexicalized and nonlexicalized items in the interventionist group.

Table 6. Frequency distribution of pre and post vocabulary scores for lexicalized and nonlexicalized items, metamorphological as the interventionist group

Variable	*No. of words*	*Time*	1	2	3	4	5	6	Total group score
Lexicalized	38	Pre	54% (816)	42% (643)	3% (53)	0.52% (8)	- (0)	- (0)	1520
		Post	- (0)	35% (539)	3% (52)	35% (529)	4% (63)	22% (337)	1520
Nonlexicalized	38	Pre	63% (960)	35% (536)	1.51% (23)	0.06% (1)	- (0)	- (0)	1520
		Post	0.06% (1)	32% (490)	12% (179)	37% (569)	7% (104)	12% (177)	1520

(1) total unfamiliarity with form and meaning **(2)** familiarity with form but not with meaning **(3)** partial knowledge **(4)** receptive knowledge at the levels of meaning and form **(5)** productive knowledge at semantic level **(6)** productive knowledge at semantic and syntactic level

As is apparent from Table 6, all known categories (4-6) show quantitative gains for both groups of lexicalized and nonlexicalized items after the treatment. However, the percentage of words learned at the productive level as 22% is approximately two times as much as their nonlexicalized counterparts as 12%. The results for the unknown categories present a decrease in the number of words claimed to be not known at posttesting dealing with both groups of items. The percentage of target words known partially (knowing at least one of the basic constituents related to a word) is approximately similar dealing with lexicalized and nonlexicalized items at pretesting and it does not show any considerable change from pre to posttesting administrations dealing with lexicalized items. However, the percentage of nonlexicalized items known partially increased from 1.51% to 12% at the time of posttesting. Figure 2 depicts quantitative gains for both lexicalized and nonlexicalized items graphically.

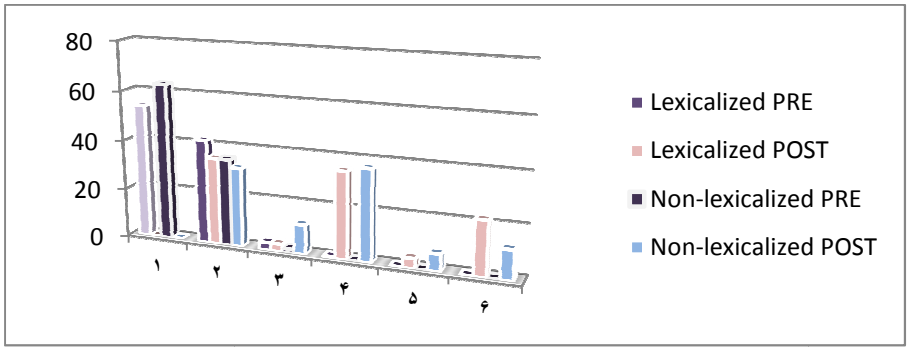

Figure 2. Score frequency distributions for the interventionist group

Table 7 presents the frequency distribution of pre and post vocabulary scores for lexicalized and nonlexicalized items in the interventionist group.

Table 7. Frequency distribution of pre and post vocabulary scores for lexicalized and nonlexicalized items, inferencing as the noninterventionist group

Variable	*No. of words*	*Time*	1	2	3	4	5	6	Total group score
Lexicalized	38	Pre	49% (709)	47% (672)	2% (29)	2% (32)	- (0)	0.13% (2)	1444
		Post	18% (255)	73% (1059)	4% (55)	5% (72)	- (0)	0.20% (3)	1444
Nonlexicalized	38	Pre	61% (888)	36% (513)	2% (32)	1% (9)	0.06% (1)	0.06% (1)	1444
		Post	27% (394)	63% (915)	8% (113)	1% (21)	- (0)	0.06% (1)	1444

(1) total unfamiliarity with form and meaning **(2)** familiarity with form but not with meaning **(3)** partial knowledge **(4)** receptive knowledge at the levels of meaning and form **(5)** productive knowledge at semantic level **(6)** productive knowledge at semantic and syntactic level

The results in Table 7 show that unlike the participants in the interventionist group, the learners in the noninterventionist group did not obtain any significant quantitative gain considering the two sets of words. The results obtained for the first category presenting total unfamiliarity demonstrates that the participants in this group reported that they had total unfamiliarity with 18% of lexicalized and 27% of nonlexicalized items at posttesting. The percentage of nonlexicalized words learned partially

(knowing at least one of the basic constituents related to a word) as 8% is two times as much as the lexicalized ones as 4% at posttesting. Additionally, the degree of gain knowledge at the receptive level is greater dealing with lexicalized items as 5% than their nonlexicalized counterparts as 1% in this group. Figure 3 displays quantitative gains of both groups of items graphically.

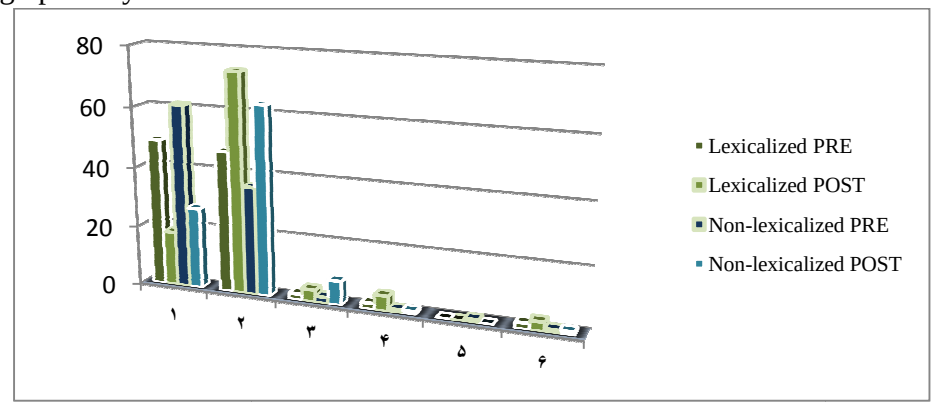

Figure 3. Score frequency distributions for the noninterventionist group

4. Discussion

The results considering the experimental group presented a significant difference between the degree of lexical achievement in this group and the control group dealing with both sets of words. Therefore, morphological awareness in the field of vocabulary acquisition as a general word strategy and as one of the facets of the learners' metalinguistic awareness which straddles different areas of language acquisition could be regarded as being beneficial. Accordingly, the effectiveness of such a treatment and the facilitative role it played dealing with both groups of target lexicalized and nonlexicalized words in this psycholinguistically-oriented study could be theoretically inspired by the noticing hypothesis proposed by Schmidt (2001; 2010).

As he suggests, noticing can be viewed as a necessary condition which acts as a prerequisite for learning while understanding as a higher level of awareness plays a facilitative role but not required. In other words, the results obtained from this study may confirm the idea that morphological awareness as a type of explicit knowledge that could be brought into awareness as a higher level of understanding has a facilitative role in

enhancing the learners' receptive and productive knowledge of target words (depth of vocabulary knowledge).

Regarding the control group little learning occurred in general with respect to both groups of words. The participants' gain was limited to a familiarity with the form of the words. In other words, the gain score was logically attributable to the practice effect of guessing experience during the course which led to a greater number of guessing circumscribed to a little success at the level of familiarity with the form.

The data related to the two sets of words were analyzed statistically to evaluate the effect of L1 lexicalization in the interventionist group. The *t*-test analysis presented a significant difference between the means of the two sets of words at pretesting. In other words, learners had a higher degree of familiarity with lexicalized items before being exposed to the treatment. Similarly, the analysis of the data obtained from pre and posttesting administrations showed a greater achievement in favor of lexicalized items at posttesting. However, the *t*-test analysis of the gain score (pre to posttesting difference) was not significantly different. The descriptive analysis of the quantitative findings related to different levels of the VKS showed quantitative gains for both groups of lexicalized and non-lexicalized items after the treatment in the interventionist group. However, the number of lexicalized words learned at the productive level as 22% was approximately two times as much as their nonlexicalized counterparts as 12% in this group. The percentage of target words known partially (knowing at least one of the basic constituents related to a word) was nearly similar dealing with lexicalized and nonlexicalized items at pretesting and it did not show any considerable alteration from pre to posttesting sessions dealing with lexicalized items. However, the percentage of nonlexicalized items known partially increased from 1.51% to 12% at posttesting. Such a case may imply the idea that the interventionist treatment as morphological awareness led the learners to grow their knowledge with respect to a larger number of selected words particularly the nonlexicalized ones to partial level. Such a finding could be justified in reference to the difference Paribakht (2005) makes between the two concepts of lemma recognition and lemma construction.

Wesche and Paribakht (2010) believe that "if the word has no lexical equivalent in the learners' L1 or other known languages, the process is necessarily more one of construction from existing concepts than identification and according to evidence presented for lexicalization

hypothesis by paribakht (2005) the word is unlikely to be successfully understood, or at least only parts of meaning will be identified in an initial lemma construction'' (Paribakht, 2005, p. 20). Accordingly, the results regarding the high rate of partial achievement dealing with the nonlexicalized items in this group might be related to the fact that the treatment provided as morphological awareness was facilitative in helping the learners to identify only parts of meaning in an initial lemma construction; furthermore, the idea of lexical quality hypothesis could be employed as another theoretical justification supporting the findings of this study regarding the issue of L1 lexicalization. Schwartz, Yeh, and Shaw (2008) believe that the presence of high quality lexical representations assists the learners to access lexical items in a more efficacious and reliable manner. Based on the above-mentioned speculation, nonlexicalized words are at risk due to the absence of a direct one-to-one mapping between lexical meaning in L2 and its nonlexicalized counterpart in the learners' L1.

The data pertinent to the two sets of words were analyzed statistically to evaluate the effect of L1 lexicalization in the noninterventionist group which acted as the control group in this study. The results relevant to the noninterventionist group were representative of the fact that the learners had a greater difficulty dealing with the meanings of nonlexicalized words at both pre and posttesting sessions. The findings appear to be justified in terms of the idea proposed by Paribakht (2005) regarding the comparative performances of learners with respect to the lexicalized and nonlexicalized unfamiliar words.

Learners inherently resort to different contextual cues as well as their background information to infer the meaning of the words. However, inferring lexicalized and nonlexicalized items may involve different procedures. In spite of the fact that inferring lexicalized words is limited to lemma recognition, their nonlexicalized counterparts may require a more complicated process of lemma construction as well. Accordingly, the students less success in the noninterventionist group regarding the nonlexicalized words at pre and posttesting sessions might be due to the fact that the inferencing procedure related to the two different sets of words may encompass different mental processes for the participants of this study.

However, the result of the *t*-test analysis comparing the gain scores obtained for lexicalized and nonlexicalized groups did not show any significant difference in this group. The findings stand in conformity with the results reported by Paribakht (2005). The absence of such a difference

could be justified with respect to the limited learning which occurred in the noninterventionist inferencing group dealing with both sets of words. The descriptive analysis of the study revealed the fact that the degree of learning in this group was limited to the familiarity with the form. Moreover, the quantitative analysis of the results presented that many participants reported total unfamiliarity with some of the words after being exposed to the selected items twice at the time of pretesting and inferencing procedures during the course of instruction. Such a finding could be justified in terms of the fact that learners require having several encounters with a word to be able to acquire it in noninterventionist situations (e.g., lexical inferencing or incidental vocabulary acquisition).

5. Conclusion and Implications

The findings of the study regarding the effectiveness of the explicit intervention as morphological awareness are in conformity with the results obtained by several scholars in the study of second language vocabulary acquisition like Morin (2006), Bellomo (2009), and Markovic (2002, as cited in Shaw, 2011) who worked on the same issue and obtained similar results. The findings presented by Morin (2006) demonstrated the fact that morphological analysis in the form of explicit teaching of derivational morphology may yield immediate benefits in the domains pertinent to receptive and productive knowledge of Spanish derivational morphology, but not in vocabulary size. Likewise, the results reported by Bellomo (2009) supported the utility of morphological analysis as a vocabulary acquisition strategy regardless of language origin. In the same way additional research has demonstrated that knowledge of derivational morphology could be effective in enhancing reading ability and vocabulary growth (Markovic, 2002 as cited in Shaw, 2011).

Moreover, the findings of the current study could be supported by the results reported by many scholars in favor of morphological knowledge in the field of first language acquisition. Accordingly, the learner's ability to use the morphological knowledge of his or her first language could be considered as an effective vocabulary-building tool (Nagy & Anderson, 1984; White, Power, & White, 1989; Hanson, 1993; Rispens, McBride-Chang, & Reitsma, 2007).

The *t*-test analysis of the study showed no significant difference between the two groups of words (lexicalized vs. nonlexicalized) in the two (non) interventionist groups. The findings in this regard appear to stand in

contrast with the results reported by Golaghaei and Sadighi (2013) who found a significant difference between the gain scores pertinent to the two groups of words in the interventionist group of their study. It is worthwhile to mention that unlike the L2-directed intervention provided in this study, the instruction in their study was primarily directed towards the learners' L1 in the form of glossing as direct contrasting with L1.

The above-mentioned contradictions regarding the two different interventions provided for the same groups of words imply the idea that the kind of explicit treatments used during an instructional period acts as a pivotal factor in recognizing the significance of L1 lexicalization in interventionist situations. In other words, the prominence of the issue primarily depends on the type of treatment provided during an instructional course. However, the results reported for the two groups of this study imply the idea that the importance of the issue of the cross-linguistic factor of L1 lexicalization increases as the learner glides towards higher levels in terms of the depth of lexical knowledge. In other words, the direct influence of the learners' L1 becomes more palpable in situations in which much more learning occurs in its deeper sense. The descriptive results of the study indicated that the number of words learned at the productive level as 22% was approximately two times as much as their nonlexicalized counterparts as 12%. It might nonetheless be argued that the stage or the level of the learners' depth of knowledge regarding the selected words is a decisive factor revealing the effect of L1 lexicalization particularly in interventionist situations.

Research like this may pave the way towards a more palpable understanding of the nature of the learners' lexical knowledge and might then prove to be helpful to pedagogy. It seems necessary to mention that any investigation that attacks vocabulary acquisition with respect to the underlying psycholinguistic processes involved in learning would have theoretical and pedagogical implications. The results of this study indicate that words not lexicalized in learners' L1 may require a particular type of focused instruction especially at productive levels within EFL contexts and with respect to homogeneous student populations. Another possibility would be to treat the issue in ESL contexts with heterogeneous student populations. It might also be informative to investigate which techniques are more helpful in enhancing the students' recall and retention of the selected words they have learned through different explicit interventions after a delayed period of time.

In a nutshell, it is our hope that this study will help to fuel the recent enthusiasm in understanding the complicated psycholinguistic processes involved in L2 lexical acquisition considering the hegemony of the learners' L1 semantic transfer phenomenon. The outcome may throw new light on the underlying processes involved in L2 lexical acquisition and provide an indication of its emergent debates and future trajectory.

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