Jostarnameh Comparative Literature
Year sixth/ Number twenty-first[th]/ Fall 2022

The Retroactive Effect of L2 on L1 in Word Recall and Lexical Activation

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Abstract

The present study aimed to investigate if learning English as an L2 has an effect on word recall and lexical activation among Iranian EFL learners. For this purpose, a sample of 45 male and female EFL learners was selected and they were classified into two experimental and one control group, 15 each. Word recall and oral time-limited tests were conducted within the three groups; they had to listen to 16 non-cognate Farsi words, each by 2 seconds, remember and recall them to resay. For lexical activation, an experiment was carried out by asking them to memorize and retell words shown to them through a computer screen. Outcomes of the word recall test revealed that the mean score of participants with low exposure to English was higher than lower and upper intermediate. Results exhibited that the participants in the first group surpassed those in the experimental group in word recall test. In the lexical activation test, the control group who were participants with low exposure to English performed better than the participants in the other two groups. Results revealed no meaningful difference among the mean scores of the three categories in lexical activation test, though. The results of the present study have some implications for language teachers, material developers and students. In fact, language teachers can provide a link between learners' vocabulary knowledge of two languages, and this way help their students to activate their L2 vocabulary knowledge more easily and with less cognitive load.

Keywords: cognitive load hypothesis, lexical activation, word recall, Iranian EFL learn

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فصل‌نامۀ علمی جستارنامۀ ادبیات تطبیقی
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بررسی اثر پس‌کنشی زبان دوم بر زبان اول در یادآوری کلمه و فعال‌سازی واژگان

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تاریخ دریافت: 1400/12/13، تاریخ پذیرش: 1401/2/31
صص(207-185)

چکیده

هدف تحقیق حاضر بررسی تاثیر یادگیری زبان انگلیسی به عنوان زبان دوم بر یاداوری و به کارگیری لغات در بین زبان آموزان ایرانی بود. به این منظور یک نمونۀ آماری که شامل 45 زبان‌آموز مونث و مذکر بود، انتخاب شدند و به دو گروه آزمایش و کنترل تقسیم شدند. هرکدام شامل پانزده داوطلب. به منظور آزمون یاداوری لغات یک آزمون با زمان محدود در بین سه گروه اجرا شد. آن‌ها باید به شانزده کلمۀ فارسی غیر هم‌خانواده گوش می‌دادند. هرکدام در 2 ثانیه باید آن‌ها را به یاد می‌آوردند و بازگو می‌کردند. برای فعال‌سازی واژگان، یک آزمایش انجام شد که طی آن شرکت کنندگان باید لغاتی را که بر روی صفحه می دیدند، بازگو کنند. نتایج نشان داد که شرکت‌کنندگانی که در معرض آموزش زبان نبودند نسبت به گروه زبان آموزان با سطح متوسطه یا پایین عملکرد بهتری داشتند. همچنین نمرات گروه اول در آزمون یادآوری لغت از دوگروه دوم بالاتر بود. در آزمون یادآوری کلمه، میانگین نمرات گروه کنترل از دو گروه دیگر بالاتر بود. اگرچه نتایج تفاوت معناداری بین سه گروه را در این آزمایش نشان نداد، نتایج تحقیق حاضر نکاتی برای مدرسان زبان انگلیسی و گردآورندگان مطالب آموزشی دارد. مدرسان می‌توانند، ارتباطی بین دانش واژگان دو زبان پیدا و بیان کنند و از این طریق به زبان آموزان کمک کنند تا دانش لغوی خود را با بار شناختی کمتری فعال کنند.

کلیدواژگان: فرضیۀ بارشناختی، فعال‌سازی واژگان، یادآوری کلمه ، فراگیران ایرانی زبان انگلیسی.

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1. Introduction

Lexicon shapes the fundamental structure of any language (Nemati, 2013; Ramos & Dario, 2015). As regards both L1 and L2, words play the foremost imperative part within the setting of the learner (Nemati, 2013). Moreover, "lexical competence can be considered as the center of communicative competence" (Meara, 1996a, p. 35). Accordingly, no serious communication happens without a rich and powerful vocabulary (Alothman, 2014). At long last, knowledge of lexicon is the most seminal unit in evaluating context meaningfulness and is considered as the primary indicator of reading comprehension (Nation, 2013; Nemati, 2013). Despite the importance of vocabulary learning, grammar received more noteworthy consideration over vocabulary. Traditionally, some researchers (e.g., Zhao & Macaro, 2016) believed that because of its colossal size, its open-ended nature, need of pertinent governing rules and the huge number of implications of lexical items, L2 vocabulary is considered problematic.

Most studies on cross-linguistics impact have centered on the impact that the learners' first languages have on the extra ways of communication they obtain (El-Dakhs, et al., 2018; Liu, 2008, Nakatsukasa & Loewen, 2015). Investigating the possible effects of L1 on L2 shows that negative transfer is more commonplace for syntactic, lexical and/or phonological sections (Agheshte, 2015).

On the other hand, according to Kecskes, (2008), regarding examining possible effects of L2 on L1, usually positive impacts are predicted to be found. Effects of L2 on L1 are cognitive and pragmatic not grammatical and lexical; and it is a mere potential and possible effect instead of being a need. In fact, all types of L2 learning does not necessarily cause the development of multi-competence. To cause changes within the monolingual system, the process of learning a language must be strong in content and must be highly motivational and inspirational for a learner. This was the case of the classical contrastive analysis and study of transfer, and also of the later work on interlanguage. However, the effect of L2 on L1 vocabulary recall has not been investigated thoroughly.

A main query in investigation on processing bilingual vocabulary information is how bilinguals make terminologies active in two languages. According to the language-selective view, bilinguals make only those vocabularies active from the language that matches with the language of the information in understanding and comprehension or with the language that is in the process of generation. On the other hand,

according to the nonselective view, the vocabularies from both languages are activated. Research conducted in more than a decade has found that activation of words in the memory of a bilingual acts in a nonselective way, even when one language is just needed for the social and linguistic context (Kroll, et.al, 2008).

As suggested by Cunningham and Graham (2000), the impact of L2 on L1 could be manifested in "vocabulary knowledge and the errors are without difficulty distinguishable to L2 due to the existence of the resembled features of L2" (p. 23). Knowledge of a second language can be effective on the first language in various perspectives like words recalling and activating the words which time can be a factor in it, and there are numerous variables that contribute to this topic. Accordingly, in the present study it was tried to examine the possible effects of L2 vocabulary knowledge on L1 lexical knowledge among Iranian EFL learners.

2. Literature Review

Theoretical Background

Contrastive Analysis Hypothesis (CAH) was the endeavor for clarifying interference complications in Second Language Acquisition (SLA). The theory and method were focuses mainly concurrently. CAH believes that the challenges that learners encounter can be anticipated with considering the differences between the NL (Native Language) and TL (Target Language). Robert Lado is considered as the pioneer of the theoretical basis of this approach. Two versions exist for CAH. They were "recognized as the a priori versus the aposteriori view or the strong view contrary to the weak one or the predictive versus the explanatory view" (Gass & Selinker 2008, p. 60).

In the early 1970s, CAH played no more the leading role it had already played owing to some disapprovals, which attached its theoretical basis, its unrealistic assertions, and its practicality. Therefore, CAH lost its power and was abandoned because of the nonexistence of empirical authentication. The idea of Error Analysis (EA) substituted CAH. EA is defined as a method in which liberated and neutral explanation of the TL, the learners' IL (Interlanguage), and a comparison of the two is conducted to discover differences. Leather and James (1996, p. 5) represents the idea of EA as following: The innovation of EA, differentiating it from CA, was that the native tongue was not assumed to enter the picture. The given assertion was that errors could be entirely well-defined as the TL, and referring to the L1 of the

learners was not required. A related term to CA and EA is the concept of transfer.

Linguists have illustrated the term 'transfer' from a particular perspective, which has led to sundry arguments. There is a claim by many linguists that the term transfer should be left or "that it comes to use in a more limited way" (Odlin 1989, p. 25). According to Sajavaara (1986), the word transfer is in use "to point to the extension of prior information into new knowledge; for a case, when preceding information of a specific thing affects acquisition of another issue" (p. 60). It is by and large assumed that "the influence of the learner's MT might not be utterly come to account for considering habit formation" (Ellis, 2008, p. 350).

According to Chunpeng and Hee-Don (2017), one of the following five phenomena can come to existence because of the impact of L2 on L1: (a) transfer of borrowing, or adding of L2 features to L1 (e.g., lexical borrowing through which vocabulary range is increased by new items); (b) convergence, or formation of a unitary system, different from both first language and second language (e.g., production of consonants that are placed at the midpoint between L1 and L2 standards). In some earlier studies this occurrence is at times stated as shift; this term is unsatisfactory to me as a shift might be a movement away from one system toward another, as observed in following; (c) shift, or a transfer from L1 arrangements or standards to approximate L2 structures or values (e.g., semantic addition whereby vocabularies in L1 are conferred with the meanings of their L2 equivalents in translation); (d) restructuring transfer, or incorporation of L2 components into L1 causing some changes or switches, or a relative shift (e.g., syntactic rearrangement while L2 rules are combined with L1 grammar); (e) L1 attrition, explained as loss of (or incapability to produce) some L1 elements owing to L2 impact (e.g., approval of syntactically unusual L1 sentences under the impact of L2 restrictions).

As with L1 attrition of bilinguals in comparison with monolinguals, researchers established that L2 learning had positive impact on L1 development in terms of vocabulary knowledge (Cunningham & Graham, 2000), L1 writing (Kecskes, 2000) and L1 reading (Yelland, et al., 1993). Furthermore, the influence of L2 on L1 in meaning processing (Cook, 2003), pragmatics (Cenoz, 2003) and interrogative structure (Dewaele, 1999) has also been shown. According to Hansen (2001), attrition is "the slow failing to recall a language by individual attriters, persons who are having an experience of attrition" (p. 61). Gross (2004b, p. 3) stated that L1 attrition is "the process in which L1 is (gradually)

substituted by L2 in all spheres of usage. First language attrition refers to the restructuring linguistic system of L1 based on outlines established by the L2" (p. 3). During the process of L1 attrition, the L1 is substituted by another language, which influences the rate of replacement. Cross-linguistic hypothesis by Sharwood Smith's (1983a) asserts that the reconstruction of the L1 system under the effect of the L2 can explain the phenomenon of language loss.

So far, the influence of L2 on L1 is best studied in the fields of bilingual vocabulary and phonology (e.g, Chunpeng & Hee-Don, 2017; Dostert, 2009). One important aspect of L2 learning which may affect L1 is vocabulary learning. Vocabulary should be kept in long-term memory (Arias, 2003) and this needs to establish links between lexicon. Research in the field of shows some principles such as repetition and retrieval (Nation, 2001). These rules and ideologies are shown in memory tactics "such as organizing in order, making association, and having a review" (Oxford, 1990, p. 39). Through following these strategies, students can learn vocabulary in a meaningful way. Language learning is not possible without the brain. Learners permanently learn new words, by using these words, we are able to communicate about new concepts. Mastering these new words is not easy at the cognitive level, and includes various elements, including a word matching to a referent (Hawkins, 2015). In order to produce a word, on should be able to recall.

As indicated by Higby, et al., (2020), during the cycle of language creation, numerous prototypes of language creation accept that vocabulary choice includes competition from other lexical competitors. The preverbal note of the speaker (communicative aim) enacts a bunch of reasonable highlights that relate to the ideas the speaker needs to communicate. This enactment is extended automatically from the applied to the lemma level and on to the phonological degree of word portrayals (e.g., Navarrete & Costa, 2005).

Empirical Background

So far, a number of studies have investigated word recall and activation as well as the role of L1 on l2 and vice versa. In this section, a glimpse is taken to some of these studies. El-Dakhs, et al., (2018) investigated the effect of word type on L1 language use to back L2 vocabulary acquisition. The participants were 130 Arabic-speaking females who were learning English and 24 unfamiliar English words were taught to them. The participants were classified into three sets,

including a group which were exposed to the use of equivalents in translation, a group in which only L2 meanings were exposed and a control group. It was discovered that two experimental groups performed better than the control group. Better vocabulary learning was observed in terms of long-term retrieval for L1 use.

In another study, Chunpeng and Hee-Don (2017) investigated the impact of L2 Korean on L1 Chinese verbal diversity and syntax. The results represented that the cross-linguistic impacts of L2 on L1 were distinguishable and significant, and this effect was mutual. There existed altogether more syntax error and longer retrieval time by the bilingual group, which suggested negative L2 effect on L1. In addition, L2 exhibited a positive impact on lexical variety as there existed no decrease in lexical diversity.

Agheshteh (2015) researched the impact of L2 English on Iranian Bilinguals' L1 writing capacity. A number of 61 participants including 30 bilinguals and 31 monolinguals were investigated using a writing test in their L1. The bilinguals performed better compared to the monolinguals on their L1 writing demonstrating the beneficial outcomes which bilingualism could impose on L1 writing, which gives additional proof to cross-linguistic impact.

Moreover, Navarro and Nicoladis (2005) researched how much L1 transfer happens in oral narrating of Spanish with English educators as L1. The study centered on the kinds of action words the attendees use and the outcomes displayed that the learners tracked the example of their L1 different features of spoken use. Moreover, the research by Phillips (2007) had comparable outcomes in regards to the utilization of action words.

Considering word recall, Karpicke and Roediger (2008) showed that when individuals who speak English needed to acquire 40 sets of words of English Swahili, their acquisition was improved for things they needed to remember during a test comparative with things they had simply restudied. After several weeks, the contributors could recall 80% of word sets they were more than once tried on, however just 33-36% of word sets they had restudied.

Additionally, several studies have not identified the impact of L2 on L1. In Porte's (2003) investigation, three expatriated instructors, with English as their first language dwelling in Spain no less than 15 years, signed up for the study. Just code-blending and code-manipulation were recognized in their discourse, which cannot adequately use as L2 impacts proof. While the study by Dewaele and Pavlenko (2003) showed

no distinction between Russian-English bilinguals and Russian monolinguals on efficiency and word variety.

The influences of L2 on L1 have been documented in various aspects of language including phonology (Andrews, 2004), morph syntax (Pavlenko & Jarvis, 2000), lexicon and semantics (Van Hell & Dijkstra, 2000); pragmatics (Latomaa, 1998), and rhetoric (Kecskes & Papp, 2000). These effects not only appear to be prevalent, but they might also seem relatively early in process of L2 learning. In a research about oral narrating of Russian L2 users of English, Pavlenko and Jarvis (2000) scrutinized tales created by 22 contributors, whom all had picked up their English prior to puberty and there was an expose to English for a period between 3 and 8 years. The scholars realized that 17 out of 22 participants displayed L2 impact in using Russian and that five members of them were who had stayed in the United States for only three years. This research supports the theory of interference on L1 by using L2 (negative transfer), but it could also be enhanced by L2 (positive transfer).

Investigating the possible effects of L1 on L2 shows that negative transfer is highly common in relation to linguistic and grammar, lexical and/or phonological ranges. However, it seems that this issue has been underestimated among Iranian L2 learners. Thus, in accordance with the previous studies, the current study was conducted to investigate if learning English as an L2 have an effect on L1 regarding word recall and lexical activation among language learners. Accordingly, questions as follows were posed in the present work:

RQ1: Does English as an L2 have an effect on Persian as L1 regarding word recall?

RQ1: Does English as an L2 have an effect on Persian as L1 regarding lexical activation?

3. Methodology

Participants

Forty-five individuals were included in this investigation. The attendees of this study were purposefully a selection of a population with both genders. The individuals who participated were classified into three categories, two experimental and one control group, 15 each. The participants were from Iran and none had the experience of living abroad. Control group participants had low exposure to English as an L2 earlier. In fact, their mother tongue was Farsi, and they used English as their foreign language. The participants' level of general English

proficiency was set to be lower and upper intermediate based on Oxford Placement Test (OPT). The population in the first experimental group were lower intermediate users of English as an L2, and the contributors in the second experimental group were Upper-Intermediate users of English as an L2 (almost fluent in the English language).

Instruments

With the purpose of evaluating the level of English proficiency of each participant, OPT was employed. In addition, a Lexical Activation Test and a word recall test were utilized.

English Proficiency Test

To ascertain language proficiency of those who participated in the experimental group, Oxford Placement Test (OPT) (Allen, 2004) was employed to measure their language proficiency and to check their homogeneity before the treatment. As shown in Appendix A, the test consisted of 60 items. Each grammar test item is given in a fill-in-the-blank format in which three options are provided for the test takers. The main reason for using OPT as the students' measure of proficiency by the researcher of this study, was due to the fact that the test is a standard placement test, and its validity and reliability were believed to be acceptable. In order to be more objective, a pilot study was administered, and through Cronbach alpha the reliability index was established to be 94. Analyzing the taken tests, a number of 30 L2 learners whose overall level of proficiency was identified to be lower and upper intermediate were carefully picked as the chief members of the study.

Lexical Activation Test

Another instrument used in the present research was lexical activation test which was the visual modality for us. The original format of the test was taken from *Psycholinguistics: A Resource Book for Students* (Field. J, 2003, pp. 113, 114) with some minor modifications in the allocated time and number of words on the basis of the pilot study and previous investigation. The intention of this test was to identify the speed with which the participants activated the words that they heard. Throughout this test, in order to investigate lexical activation, some pictures were presented to the test-givers on the computer screen. The pictures were quite clear and distinguishable. In order to choose the words, a pilot study was administered through which at first, a number of 24 pictures were shown to the participants, and they were requested to tell the names of what they saw. The images referred to concrete, daily objects.

Word Recall Test

By word recall it means the time which lasts for learners to remember a word after they have heard it in the list of words and it is the oral modality for us in the present study. In order to investigate word recall among L2 participants, the words that were selected were played for the participants through an audio program on laptop. In so doing, at first 16 words were played to the participants in a 32 seconds time limit, and they had a time limit of one minute to retell the words to the researcher that they were exposed to. Based on the number of words that could remember, they were scored. The original format of the test was taken from *Psycholinguistics: A Resource Book for Students* (Field. J, 2003, pp. 113, 114) with some minor modifications in the allocated time and number of words with regard to the pilot study and preceding research. The reason which can be counted as a factor for having a significant effect in word recall can be change of modality.

Time Measuring device/ Stopwatch

In order to calculate and determine the time for recalling the words, also deciding the time limit of each participant for lexical activation, a stopwatch was utilized to calculate the precise and exact time for the test. The data was scored by another rater to obtain more reliable and valid data.

Pilot Study

A pilot study was accomplished for which a number of people were selected. The two tests were presented to them to verify the needed time for playing words and recalling them, and cognate words were omitted. Working memory of the participants was ascertained through an online service with result which was conducted in the institute with their presence, https://practicalpie.com/free-memory-test/. Then the main participants were chosen among them according to their results between 110 and 112 scores with a minor difference.

Data Collection Procedure

To reduce the effect of response bias and to choose appropriate participants, the objective of the research and details of data collection were explained to the participants. Considering lexical activation test, at first the pictures which were chosen for the trial, were shown to the members, and the participants were requested to name the images which they saw. At the same time another rater recorded the time which it

lasted for each individual to tell the name of the pictures which they saw. Considering word recall criterion, an oral time-limited test was done within the three groups; they had to hear 16 non-cognate Farsi words, each in 1 second, remember and recall them to resay. For the case of lexical activation, an experiment was done by asking them to memorize and retell words shown to them through a screen. Then the participants were requested to give the name of objects that they saw on the screen. Their responses were evaluated based on the time that they spent to tell the names. The research was conducted at a language institute in Yazd, Iran. The accumulated data were coded and analyzed by SPSS software (Statistical Package for Social sciences). Descriptive statistics (frequency distribution, percentages, means, and standard deviation) were computed. Assumptions of distribution normality was checked through a One-Sample Kolmogorov-Smirnov. One-way Analysis of Variance (ANOVA) and Post-hoc Test were run to investigate the effect of L2 on L1 word recall and lexical activation.

4. Results

Effect on L1 Regarding Word Recall

Based on the number of words that they could remember, they were scored out of 16. Analysis of the data was conducted and the results are presented in the succeeding section.

Table 1

Descriptive Statistics of Performance of the Three Groups in the Word Recall Test

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Low exposure To English	15	10.4667	1.84649	.47676	9.4441	11.4892	6.00	13.00
Lower intermediate	15	8.4000	1.99284	.51455	7.2964	9.5036	6.00	13.00
upper intermediate	15	8.3333	1.44749	.37374	7.5317	9.1349	6.00	12.00
Total	45	9.0667	2.00454	.29882	8.4644	9.6689	6.00	13.00

Recall Test

Considering the statistics shown in Table 1, the mean score of the word recall test, among the participants in the group who were not exposed to English language was 10.46, which was higher than the other groups including the participants in the lower and upper intermediate groups which were 8.40 and 8.33, respectively. In order to ascertain that the mean difference between the writing scores of the three groups, was (in)significant, One-way Analysis of Variance (ANOVA) was run on the obtained scores. Table 2 offers the results of the ANOVA.

Table 2

Results of ANOVA on the Mean Scores of the Word Recall Test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	44.133	2	22.067	6.986	.002
Within Groups	132.667	42	3.159		
Total	176.800	44			

As the results in Table 2 show, the observed level of significance (.002) was smaller than the identified level of significance (p< .05>); therefore, a significant variance was detected in the performance of the three groups which were given the word recall tasks. In the case of the present research, it did not identify which group completed the task better than the other groups. Consequently, to expand the issue more and identify the difference, a post-hoc test was conducted. The outcomes are accessible in Table 3.

Table 3

Results of Post-hoc Test on Scores of Word Recall Test

(I) groups	(J) groups	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low exposure To English	Lower intermediate	2.06667*	.64897	.011	.4198	3.7136
	upper intermediate	2.13333*	.64897	.008	.4864	3.7802
Lower intermediate	Low exposure To English	-2.06667*	.64897	.011	-3.7136	-.4198
	upper intermediate	.06667	.64897	.995	-1.5802	1.7136
upper intermediate	Low exposure To English	-2.13333*	.64897	.008	-3.7802	-.4864
	Lower intermediate	-.06667	.64897	.995	-1.7136	1.5802

*. The mean difference is significant at the 0.05 level.

As perceived, Table 3 compares the performance of the individuals participating of the three groups in the word recall test, that is a multiple comparison given here. The significant difference exists between the participants with low exposure to English and the upper and lower intermediate group, that is the applicants in the former group were more successful than those in the latter groups, with the significance level of .011 and .008, respectively which were smaller than .05 ($p < .05$). Finally, what is noticeable is that the participants in the control group, performed better than those in upper and lower intermediate groups.

L2 Effect on L1 Regarding Lexical Activation

The results of the descriptive statistics of lexical activation test are accessible below.

Table 4

Descriptive Statistics of Scores of Lexical Activation Tests

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Low exposure to English	15	16.0667	4.52717	1.16891	13.5596	18.5737	9.00	22.00
Lower intermediate	15	14.0000	3.96412	1.02353	11.8047	16.1953	8.00	20.00
upper intermediate	15	13.4000	3.85079	.99427	11.2675	15.5325	8.00	21.00
Total	45	14.4889	4.19210	.62492	13.2294	15.7483	8.00	22.00

The mean scores of three groups' scores in the lexical activation test is illustrated in Table 4. As shown, the mean score of the participants in the control group who were participants with low exposure to English was higher than those attendees in the other two groups. The mean score of the lower intermediate group was the next (X=14). The mean score of the upper intermediate group was found to be 13.40.

Whether the difference is significant or not is not clear. An ANOVA was run, and the Table 5 presents the results.

Table 5

Results of ANOVA on the Mean Scores of the Lexical Activation Tests

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	58.711	2	29.356	1.726	.190
Within Groups	714.533	42	17.013		
Total	773.244	44			

As shown in Table 5, the observed level of significance is higher than the identified level of significance (.05<.190); hence, it could be determined that there was no significant difference among the mean score of the three groups in their lexical activation test.

Discussion

The significant impact of L2 on L1 found in the existing study can be attributed to attrition; because, attrition according to Hansen (2001) is the gradual forgetting of a language. In the current research, the participants were exposed to an L2 so their L1 was affected. Moreover, attrition is referred to as a result of the developing L2 system. In the present study L2 learners experienced a period of language learning; therefore, they developed an L2 system. In the process of language learning, L1 linguistic system is replaced by L2 patterns (Gross, 2004b), which is a result of attrition. In the process of L1 attrition, the L1 is generally replaced by another language, which is supposed to impact the rate of replacement. In fact, in learning a language L1 is substituted with L2. Considering the perspectives of L1 attrition of bilinguals compared with monolinguals, the findings of the present work are comparable with some research which recognized that L2 learning showed positive influence of L2 on development of L1 vocabulary (Cunningham & Graham, 2000), L1 reading (Yelland, Pollard & Mercuri, 1993), L1 writing (Kecskes, 2000). Moreover, research correspondingly discovered the impacts of L2 on L1 in grammatical processing (Cook, 2003), pragmatics (Cenoz, 2003), interrogative structure (Dewaele, 1999).

Moreover, the effect of English on word recall among the participants of the present article can be justified in light of Sharwood Smith's (1983a) cross-linguistic hypothesis according to which the restructuring of the L1 system under the impact of the L2 appears to be the most probable candidate for clarifying the phenomena of loss. In this regard, the results are supported by most studies that found evidence for attrition in adult bilinguals. In those studies, the authors attributed attrition impacts to interference from the L2. For example, Hutz (2004) and Dostert (2009) among others, all reports on syntactic calques and lexical/semantic overextensions as an outcome of the impact of the L2 on the L1.

The results of the current study as with the significant impact of English as an L2 on L1 word recall, can be justified in light of some theories. Theoretically, according to Kroll and Stewart's (1994) Revised Hierarchical Model (RHM), L2 lexemes access pertinent concepts through L1 mediation at early steps of L2 acquisition owing to the strong relations between L1 lexemes and the abstract store. The model claimed that with increase in L2 proficiency, links between L2 lexemes and their meanings becomes stronger and this reduces the need for L1 mediation in L2 lexical access. Thus, the use of L1 with L2 beginning learners may be advantageous. In the present study, the general proficiency of the

learners had improved, and this might have led to weakening of the links between L1 lexemes and the conceptual stores. Similarly, De Groot's (1993; 1992) Distributed Feature Model (DFM) states that a bilingual's languages have some common conceptual representations with different degrees depending on the activation levels of common elements of L1 and L2 lexemes.

Furthermore, the findings considering the significant effect of learning English on L1 word recall are in line with another theory, namely, Interference Theory. This theory deals with interference and memory recall. According to word recall theory, recovery of formerly encoded information is slowed down by lately encoded material, (Rieber & Salzinger, 1998). In the present study, the newly encoded information was English as a foreign language which affected retrieval of words in L1 which was the previously learned material.

Considering L2 effect on L1 vocabulary, the findings of the current research are in line with two prominent models of bilingual lexical selection. One of these models is The Inhibitory Control model (Green, 1998) according to which after bilinguals retrieve certain words in their L2 language, it will be slower for them to retrieve words in their L1, which indicates that they have withdrawn from the leading language when generating vocabularies in non-dominant language due to intervention (Misra et al., 2012). In the present study, the participants' learning of L1 led to inhibition in retrieving their mother tongue.

Studies from language switching exhibits that bilingual people exhibits longer reaction times when shifting from their non-prevailing language to their predominant way of communication than from dominant language to non-dominant language (e.g., Meuter & Allport, 1999), which has additionally been understood as reflecting restraint of the predominant language.

On the other hand, the findings considering the insignificant effect of learning English on L1 word recognition lend support to another theory, namely, Decay Theory (Thorndike, 1914). According to this theory, failure in information retrieval is not due to the newly acquired information, and failure in word recognition can be attributed to other reasons. Another variable which can be taken into account is working memory that shows considerable debate is within the complex-span task of working memory, where a complex task is alternated with the encoding of to-be-remembered items. It is either argued that the amount of time taken to perform this task or the amount of interference this task involves cause decay. A time-based resource-sharing model has also

been proposed, stating that temporal decay occurs once attention is switched away from whatever information is to be remembered, and occupied by processing of the information. This theory gives more credit to the active rehearsal of information, as refreshing items to be remembered focuses attention back on the information to be remembered in order for it to be better processed and stored in memory. As processing and maintenance are both crucial components of working memory, both of these processes need to be taken into account when determining which theory of forgetting is most valid.

Considering the perspectives of L1 attrition of bilinguals compared with monolinguals, the findings of the present thesis as with lexical activation are in line with some previous research in which it was recognized that L2 learning showed positive impacts of L2 on development of L1 vocabulary (Cunningham & Graham, 2000), L1 reading (Yelland, Pollard & Mercuri, 1993), L1 writing (Kecskes, 2000). Moreover, research also found the influences of L2 on L1 in grammatical processing (Cook, 2003), pragmatics (Cenoz, 2003), interrogative structure (Dewaele, 1999). The findings also lend support to the study by Chunpeng and Hee-Don (2017) in which the influence of L2 Korean on L1 Chinese lexical diversity and grammar in written words by Chinese bilinguals proficient in Korean was investigated. More grammar inaccuracies dramatically existed and longer retrieval time was committed by the bilingual group which implied negative L2 transfer to L1. Finally, it can be claimed that learning an L2 can affect learners' L1 in different aspects.

5.Conclusion

This research was designed to concentrate on L2→L1 effects as most of the studies thus far were centered on L1→L2 effects. Learning an L2 is considered a multidimensional issue which can affect language learners' mother tongue. The focus on individuals who are bilingual and learning two languages has become a central debate throughout the world. In 1996 it had been expected that two thirds of the world's children grow up in a bilingual environment (Crystal, 2004).

The study was in fact an endeavor to examine the impact of English as an L2 on L1 regarding the word recall and lexical activation. The findings of the study revealed that English as an L2 has a significant effect on word recall but not word recognition among Iranian EFL learners. All in all, inspired by the results of this study, more attention should be given to the effects that L2 may have on language learners' mother tongue.

The present research can be useful in giving insights to language instructors and material developers on the effect of L2 on L1, either positive or negative, and how L1 can be affected by different effects or side effects of L2 learning; it can give cognitive insights to different people in this regard. Based on the obtained data from this work and the statistics presented, it is clear that learning English as an L2 has a significant effect on L1 regarding the word recall. In addition, the results of an ANOVA revealed that no significant difference was observed among the mean scores of the three groups in lexical activation test. Images and pictures can be retained for a longer time in the memory and it was one of the reasons that the difference in lexical activation was not meaningful and significant since the inner voice may get activated and give the name and word of the desired picture by watching it or remember the name of it. We can come to this conclusion that use of modality for visual or oral one can affect the retrieval part. It is noteworthy mentioning that in order to have pedagogically valid and applicable findings of this study, first of all, they must be exposed to replication and empirical validation among native speakers of other languages who are learning English as their foreign language. It is then and only then that the results and findings can be generalized to other populations.

Furthermore, teachers or material developers may be benefited by the discoveries of the present study, and include techniques which help L2 learners activate their word knowledge more easily by this implication that pictures can have an effect on working memory and learning an L2. In fact, incorporating various tasks such as picture description tasks can help learners learn better. It should also be mentioned that in terms of neuroscience and psychology of language it can have some implications.

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