

## The Influence of Cross-linguistic Similarities on L2 Idiom Production

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### ABSTRACT

*Some idiomatic expressions are associated with concepts that are deeply interlaced in L1 and L2 cultures. This property motivates investigation of cross-linguistic similarities which could affect the storage, representation and production of L2 idioms. In a priming experiment, the response latencies of 27 competent Iranian learners of English were measured to determine how cross-linguistic similarities at both the conceptual and lexical levels can influence the production of English idiomatic expressions. The participants were exposed to auditory primes in Persian that share some degree of similarity between the L2 idiom and its L1 idiom counterpart. The study found that the Persian prime that is the shared lexical item in both the L1 and L2 idioms and the idiom key for the L1 idiom exhibited the shortest reaction time for the production of the L2 idiom. The Persian prime that was the shared concept for both the L1 and L2 idioms did not facilitate the production of the L2 idiom. It recorded the longest reaction time and statistical analysis showed no significant difference in the reaction time with the control condition which used Persian primes that were semantically and phonologically unrelated to both the L1 and L2 idioms. The results of this study suggest that the related primes that were concrete lexical units make a greater contribution in the recall of the L2 idiomatic expressions compared to the abstract shared figurative meaning.*

*Keywords: idiom representation; L2 idiom production; cross-linguistic similarities; priming; second language learning*

### INTRODUCTION

Knowing a language is more than just having the knowledge of the meaning of its morphemes, simple words, and the ability to comprehend and produce them. It is also the knowledge of the idiosyncratic properties of a language such as idiomatic expressions that penetrates deeply into the culture of its indigenous people, their way of thinking, feelings, and interactions (Makarova 2010). Thus, many scholars maintain that the knowledge of idiomatic expressions is essential in producing fluent and natural communication (Giora 2002, Sprenger, Levelt & Kempen 2006).

A considerable amount of idiomatic expressions has also appeared in the speech of second language (L2) learners (Oppenheim 2000). Many people prefer to use a few idiomatic

expressions to convey their meaning; though, they can express the same notions using non-idiomatic resources in the language (Buckingham 2006, Conklin & Schmitt 2008). The preference of using idiomatic over non-idiomatic resources to convey ideas appears to be a linguistic universal. According to Conklin & Schmitt (2008) and Buckingham (2006), there exist some common concepts in the form of idiomatic expressions that are deeply interlaced in the cultures of the first language (L1) and the L2. This interaction could ease the process of decoding and storing of the idiomatic expressions by motivating cross-linguistic comparisons at different levels of language processing (Buckingham 2006).

When learning a second language, the knowledge of the L1 (semantics and syntax) which already exists in the mental lexicon is connected in all aspects with the knowledge of the L2 that is being formed in the language learners' mind (Jiang 2000). Likewise, Buckingham (2006) argues that language learners can benefit from the comparisons between the L1 and L2 by not only morphosyntactic and lexical associations, but also the commonalities of the conceptual systems that underlie the idiomatic expressions universally. These views suggest that the use of shared knowledge in the L1 and L2 may facilitate L2 idiom processing in both speech comprehension and production. To understand how shared knowledge in the L1 and L2 may affect idiom production, the focus of this study, a review of current understanding on L2 mental lexicon, idiom representation and idiom production is presented below.

## L2 MENTAL LEXICON

The mental lexicon is the organization of lexical knowledge in the mind and it allows access to different types of linguistic information at different stages of the speech production process (Levelt 1989). In the speech production model proposed by Levelt (1989), the mental lexicon consists of interconnected nodes that encode lexical information at various levels of abstraction. Levelt, Roelofs and Meyer (1999) further assert that the mental lexicon acts as a mediator that connects lexical concepts to the syntactic and phonological representation constructed during language processing.

Studies show that the L1 and L2 lexicons function alike in nature and may share some basic preverbal concepts (Jiang 2000, Kroll & Stewart 1994). Jiang (2000) claims that the lack of sufficient contextualized input and the existence of already established semantic and lexical systems cause the lexical representation and development in the L2 lexicon to be effectively different from its L1 counterpart. He maintained that the L2 learners initially rely more on lexical associations between the L1 and the L2, when processing L2 words; however, as they become more competent in the L2, the shared concepts would mediate language processing (Jiang 2000).

Similarly, due to the less frequent use of and exposure to the L2 idiomatic expressions, the L2 mental lexicon of language learners may be smaller in terms of the amount of unitary idiom entries. Hence, the L2 learners may rely more on the literal meaning of the constituents comprising the idiom (constituents' lexical entries) and less on idiomatic entries as a unitary lexical concept (Kecskes 2000, Abel 2003) or the translation of their L1 equivalents (Bortfeld 2002) during the processing of L2 idioms. Sprenger et al. (2006) argue for a separate idiom entry in the form of a superlemma in the L1 lexicon, and similar findings were found in the L2 lexicon by Yeganehjoo & Yap (2012). However, Abel (2003) suggests that a separate idiom entry in the L2 lexicon may sometimes be nonexistent and its processing may only be possible through the integration of the conceptual representations of its constituent's lexical entries. It should be noted, however, that not all knowledge from the L1 can be integrated to or is compatible with the L2 concepts leading to possible disfluencies

and misinterpretations (Kecskes 2000). For example, although in American English it is common to say, ‘make money’, in Persian ‘take out money’ is the more common expression. Consequently, L2 learners’ language processing may be influenced by the L1 knowledge, for example the associative recognition between the L1 and L2 languages, the shared concepts and the cultural values of the two speech communities.

Kormos (2006) and Li and Sun (2009) claim that non-native speakers can process the L2 faster and more accurately when they have access to the shared knowledge between L1 and L2 which is stored in the mental lexicon. In addition, Pavlenko (1996) argues that a better development of L2 concepts could be achieved by having more exposure to the culture and the language itself. However, the effectiveness of cross-linguistic similarities between the L1 and L2 lexical entries during idiom production remains to be understood. Therefore, this study sought to investigate this matter.

### VIEWS ON IDIOM REPRESENTATION

In studies conducted on the cognitive process of L2 learners, Abel (2003) proposed Dual Idiom Representation Model in which two levels of representations, lexical and conceptual, are suggested for the L2 idiomatic expressions. The lexical representation is at the mental lexicon, while the conceptual representation is at the general cognitive level and is nonlinguistic. In her studies, the opaque idioms were mostly rated as decomposable by the L2 learners, meaning that the L2 learners tend to process the idioms literally by assigning meaning to their individual constituents to get to the figurative meaning of the idiom, even if it is incorrect (Abel 2003). Moreover, Matlock and Heredia (2002) stated that L2 learner’s proficiency level is an important factor that influences the representation and processing of idioms. Thus, the beginner L2 learners are likely to establish associations between the literal and the figurative meaning of an idiom by first literally translating the L2 idiom to L1 and then trying to make sense of it figuratively. This implies that there is no idiom entry at the initial stage of learning of these L2 idioms; only the literal constituent entries of the L1 translation equivalent are present. However, with increased proficiency, the L2 speakers will develop more idiom entries which could assist them in the processing of the L2 idioms in the same manner as they assisted L1 speakers in processing L1 idioms, without having to access the literal meaning of the idiom constituents first. Other factors such as familiarity and predictability were also found to facilitate recognition of the idioms over novel phrases (Jiang & Nekrasova 2007, Conklin & Schmitt 2008). As a result, the more familiar expressions are processed faster than the less familiar ones.

On the other hand, Cieslicka (2006) argues that the activation of the literal meaning of words is more salient than the activation of the figurative meaning during the course of L2 idiom processing. This is due to the fact that the L2 learners initially learn to make use of the words in their literal sense more frequently than in their figurative sense. In another study, Cieslicka (2010) maintained that literal analysis of the L2 idioms during speech production is obligatory. Consequently, the literal representation of the constituents of an idiom is claimed to be automatically available to the L2 learners during both speech production and comprehension.

On the whole, the dynamic representation of idiomatic expressions varies among L2 learners based on their familiarity with the idioms, the compositional nature of idioms and L2 learners’ proficiency level and the L1 knowledge. These factors could account for the variation found in the literature on L2 idiom representation and production.

## VIEWS ON IDIOM PRODUCTION

This study adopts the model of idiom representation in speech production, the superlemma model proposed by Sprenger et al. (2006) which merges the model of idiom production into contemporary models of language production. In this model, the superlemma is the unitary representation of an idiom at the lexical syntactic level which consists of the constituent lemmas of the idiom and their unique syntactic properties. The superlemma is connected to the idiom's unitary lexical concept as well as the simple lemmas of its constituents. During speech production, a preverbal concept can activate multiple superlemmas with similar meanings competing to be uttered, but when the appropriate superlemma is selected, the specific syntactic structure and its constituent lemmas become available. Due to the existence of the superlemma at the lexical-syntactic processing level, a higher fluency and a reduction in hesitations and errors in speech production are expected (Cutting & Bock 1997, Sprenger et al. 2006).

On the production of the L2 idiomatic expressions, several studies have argued in favor of the unitary representation of idiomatic expressions in L2 learners (Jiang & Nekrasova 2007, Conklin & Schmitt 2008). Underwood, Schmitt, and Gaplin (2004) used the eye-tracking method to investigate the recognition of formulaic sequences in texts. They claimed that fewer eye fixations are required for reading the last word of an idiom once it is recognized by the reader. They found that both native and non-native speakers have fewer fixations with shorter duration when reading the formulaic vs. non-formulaic phrases. Finding like those of Conklin and Schmitt (2008), and Frenck-Mestre (2005) revealed a considerable processing efficacy for formulaic sequences vs. non-formulaic ones among both L1 and L2 English speakers. Additionally, the online phrase judgment task used by Jiang and Nekrasova (2007) also supports the holistic representation of formulaic phrases. They maintained that the language processor recognizes a phrase as grammatical when its components are recognized and activated as a lexicalized formula, i.e. its entry is localized in the mental lexicon. Some studies, however, have found evidence for the compositional nature of idioms in L2 mental lexicon (Siyanova-Chanturia, Conklin & Schmitt 2011, Cieslicka 2010), and many have argued for the parallel existence of both idiom and constituent entries in the processing of L2 idiomatic expressions (Kecskes 2006, Giora 2002, Abel 2003).

The superlemma model which is adopted in this study assumes the existence of both unitary and compositional representations of the idiom in the mental lexicon of L2 learners. Production of L2 idioms is the task used to investigate how these idioms are represented in the mental lexicon of L2 learners. As discussed earlier, the representation of L2 idioms may be influenced by many factors, and one of these factors explored in the present study is the nature of influence from similarities shared between the L2 idiom and its L1 idiom counterpart.

## THE RESEARCH QUESTION AND PREDICTIONS

An approach to facilitate the retrieval of the idiomatic expressions in L2 is to use associative recognition to link up known words (Li & Sun 2009) and to integrate L1 and L2 knowledge (Kormos 2006). Yet, how facilitative the associations and shared knowledge in the two languages (e.g. lexical or conceptual similarities) are at different levels of L2 idiom processing during speech production have not been investigated. The major focus of the present experiment was to investigate the impact of cross-linguistic similarities on the representation and production of L2 (English) idioms by proficient Iranian EFL learners.

This experiment was founded on the following theories; L2 lexical representation theories (e.g. Kroll & Stewart 1994, Jiang 2000) and theories on the storage and retrieval of idioms during language production, as articulated in the superlemma model (Levelt 1989, Levelt et al 1999, Sprenger et al. 2006). Priming studies and reaction time experiments are much favoured in studies regarding lexical representation of idiomatic expressions during online speech comprehension and production (e.g. Cutting & Bock 1997; Sprenger et al. 2006, Kuiper et al. 2007, Cieslicka 2010, Yeganehjoo & Yap 2012) hence, they were used as methods for data collection in this study.

It is assumed that at least for common words, the semantic system is shared between the L1 and L2 which is connected to its corresponding lexical nodes (Kroll & Stewart 1994). In the retrieval of an L2 idiom for production, the highly activated semantic representation spread some of its activation to their related lexical nodes in the L1 or L2, depending on the strength of the created conceptual link between the L1 and L2. Very common and familiar L2 idioms can make a direct link from the concept to the mental lexicon of the L2 learners; however, less frequently used or heard L2 idioms may have to go through L1 mediation (i.e. concept  $\rightarrow$  L1  $\rightarrow$  L2), via the lexical links between the L1 and L2 mental lexicons. Thus, different mental pathways may be taken by L2 learners to retrieve the L2 idioms during speech production. Figure 1 illustrates how conceptual and lexical similarities in the L1 and L2 may lead to faster production of L2 idiomatic expressions in view of the superlemma model (Sprenger et al. 2006) and the staged process of word production (Levelt et al. 1999). This study predicts that sharing the same preverbal message ( $\theta$ , the figurative meaning) and an identical lexical concepts ( $\beta$ ) in idiomatic expressions between the L1 and L2 may bring about the integration of the L1 knowledge to the mental lexicon of the L2 learners in order to access and produce L2 idiomatic expressions faster. For instance, the first English idiomatic expression in the list of idioms in this experiment is ‘to be the apple of one’s eye’ which is identical to the Persian idiomatic expression: ‘نور چشم کسی بودن’ (*the eye’s light of one to be*), ‘to be the light of one’s eye’. The similarities in the L1 and L2 idioms are: the common preverbal concept: عزیز بودن <*aziz budan*> ‘to be dear’ and the identical lexical entity: چشم <*cheshm*> ‘eye’.

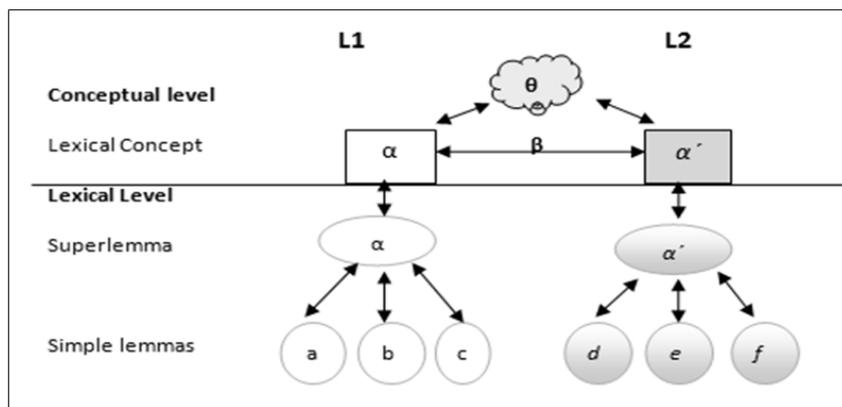


FIGURE 1. Activation links between the superlemma, lemma, lexical concept and concept for related idioms;  $\theta$  indicates a shared figurative meaning while  $\beta$  is a similarity function at the lexical conceptual level (adapted from Kuiper et al. 2007, pp. 58).

It is predicted that a faster production of the L2 idiom is expected by Iranian learners of English when primed with either the shared semantic concept or the shared identical lexical unit which is uttered in the participants’ L1 (Persian). Another prime that may influence the production of the L2 idiom is the idiom key of the L1 idiom counterpart (e.g. ‘light’= ‘*nour*

نور) which is related only to L1 knowledge. Based on the superlemma theory, it is assumed that the related conceptual prime and the lexical primes at the lexical-conceptual level could trigger the activation of the superlemmas at the lexical-syntactic level. This in turn could activate the constituent lemmas of the L2 idioms which will finally enable the target idiom to be recalled. It should be noted that the access to two separate language systems (L2: English vs. L1: Persian) was assumed in this experiment.

## METHODOLOGY

### PARTICIPANTS OF THE STUDY

The selected participants were a group of 27 Iranians, aged between 26 to 40 years (M=31). All were fluent and competent English language learners with moderately high score in different English proficiency tests (see Table 1). Following Rehak (2010), a score of 85 in MTELP (Michigan Test of English Language Proficiency), 79-80 in TOEFL iBT (Test of English as a Foreign Language, internet Base Test), and 6 in IELTS (International English Language Testing system) indicate a high command in the English language. The participants of this study had studied English professionally for more than 6 years (holding a Bachelor or a Master degree in English Language). The participants were selected based on their proficiency achievement as they were assumed to be more fluent and would probably be more familiar with the L2 idioms used in the study. Table 1 summarizes the Iranian participants' English learning background which was obtained via a questionnaire given out to them after the test.

TABLE 1. Participants' background in English language

n=27	Mean	Minimum	Maximum	SD
Age	31.21	26	40	4.44
English proficiency Test score				
*MTELP(N=12)	81.42	78	85	2.7
IELTS (N=12)	7.58	6	9	0.97
iBT(N=3)	95.66	78	106	15.37
Age starting English	11	6	12	1.58
Years of formal instruction	9.10	6	15	2.82
Years of residence in English speaking countries	0.71	0	6	1.54

\*High command in English: MTELP=85, IELTS =6.5, iBT=79 (Rehak 2010)

### INSTRUMENTS

As the study was an experimental study, the idioms were selected based on the theoretical interest in L1-L2 similarities which could give a straightforward ground to test the possibility of L1 influence. The materials used in this research were eight English idiomatic expressions selected from "Idioms and Metaphorical Expressions in Translation" by Tajalli (2005) and "Essential American idioms (2nd Ed.)" by Spears (1999). Each English idiom had a matched Persian idiom which shared not only an identical figurative meaning but also one identical lexical constituent. The matched Persian idioms were all very common conversational idioms with which participants were familiar. The selected English idiomatic expressions were verb phrases except for two: 'to be the apple of one's eye', and 'to have a big mouth'. They were all placed in unbiased sentences with the same length (See Appendix A).

Four types of prime words in Persian were chosen: L1 and L2 shared concept (e.g. عزیز: <aziz> ‘dear’), L1 and L2 related lexical unit (e.g. چشم: <cheshm> ‘eye’), L1 related lexical unit, the idiom key (e.g. نور: <noor> ‘light’), and unrelated control at both conceptual and lexical level, the control condition (e.g. خانه: <khaneh> = ‘house’). The selected prime words were nouns, except for a few verbs and adjectives. The primes were also controlled for the number of syllables of the prime words. Since this experiment aimed at discovering the effect of L1 knowledge on the recall of L2 idiomatic expressions, all these primes were verbalized in the participants’ mother tongue (Persian language). All prime words were recorded in one session by a Persian native speaker. The prompt words were the grammatical subjects of the idiomatic expressions. The prompt words were used to induce the production of the intended idiomatic expression (see Appendix B).

The experiment was conducted using *E-Prime version 2.0*, the software for constructing psychology experiments. A microphone connected to the Serial Response Box (SR-Box) was used to measure the participants’ reaction times when the phrases were produced. A post-idiom familiarity questionnaire was presented to the participants upon completion of the task to assess their knowledge of the tested idioms and to ensure all participants were familiar with the idioms and knew their meanings (see Appendix C). In addition, to check for the consistency in frequency and meaningfulness of the set of selected idioms, the participants were asked to rate the idioms based on a 7-point rating scale used in Titone and Connine’s (1994) study (see Appendix C).

#### DATA COLLECTION PROCEDURE

There were two phases in the experiment: a preparatory phase and the experiment phase. In the preparatory phase, the participants were given the list of eight English idiomatic expressions (see Appendix B) and were asked to memorize them. During the experiment phase, each participant was tested individually by the researcher to check, if they knew the meaning of the idioms and their equivalent Persian idioms; however, they were not aware of the fact that they would be primed using Persian cues. For the participants to proceed to the actual experiment, they were required to produce the idioms in the list accurately and fluently.

Figure 2 present the time course for each trial in the cued-recall task. Each trial began with the presentation of an asterisk on the computer screen. The prompt word was then presented on the computer screen as the visual stimulus. At the same time, the prime word (uttered in the L1) was presented via a headphone as the auditory stimulus. The participants responded by uttering the corresponding English idiomatic expressions which triggered a voice key in a SR-box, signalling the production onset latency and the reaction times were captured. Responses later than 4000 msec. were rejected automatically by the computer and a new trial began. Reaction time was measured from the time the visual and audio stimulus presentation took place (see Figure 2). Due to the sensitivity of the SR-box to sounds and also in order to increase accuracy in the task, the participants were asked not to make unnecessary noises. All participants completed the task individually in a quiet room. The participants’ knowledge of the idiom was tested using a follow-up idiom familiarity test given after the completion of the experiment. The participants were asked to write down the meaning of the idiom and its equivalent Persian idiom, and to rate the idioms based on their frequency and familiarity (see Appendix D).

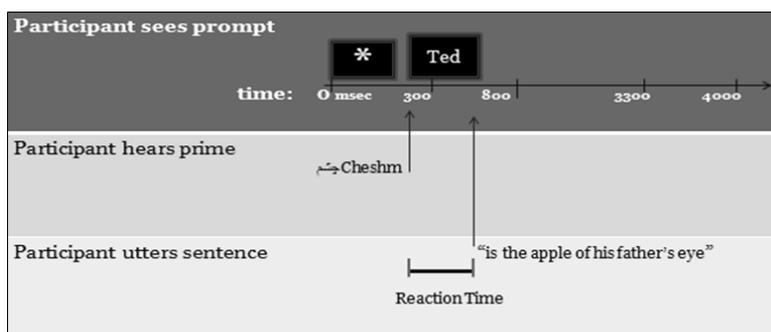


FIGURE 2. Time Course of the Priming Experiment

### EXPERIMENT DESIGN

This experiment has a within-subject repeated measures design. In this design, the repeated measures variable, Prime Type, was manipulated at different levels of language processing, i.e., conceptual and lexical levels to determine its effect on the participants' response latencies. Four prime conditions were developed: L1 and L2 shared concept, L1 and L2 related lexical unit, L1 related lexical unit (L1 idiom key), and unrelated control (see Table 2). Each participant was examined over all four conditions of the experiment, with each condition being repeated 4 times to obtain more accurate results. Thus, a block consisting of 128 trials (8 idioms  $\times$  4 conditions  $\times$  4 repetitions) was designed and presented pseudo randomly so as to ensure the consistency of priming and the repetition effects across the phrases.

TABLE 2. Example of prime words for each condition for one example L1 idiom: 'نور چشم کسی بودن' (the eye's light of one to be) 'to be the light of one's eye'. L2 idiom: Ted is the apple of his father's eye.

	Experimental Conditions			
	1	2	3	4
Prime Type	L1 & L2 Shared Concept	L1 & L2 related lexical unit	L1 related lexical unit	Unrelated Control
Prime words	عزیز: <aziz> 'dear'	چشم: <cheshm> 'eye'	نور: <noor> 'light'	خانه: <khaneh> 'house'

### RESULTS

The sound files were checked for missed answers or wrong use of words or the idioms. The percentage of errors made by participants in producing the target sentences was recorded for all four conditions. The response latencies for each condition were pooled for each participant. Descriptive statistics were obtained and the repeated measure (within-subject) ANOVA test was conducted to analyse the data. The results revealed how similarities between L1 and L2 idioms at both conceptual and lexical levels may influence the production of L2 idiomatic expressions.

A total of 4.57% error was found for the whole group. Error percentage per condition is: L1 & L2 shared concept (0.98%), unrelated control (1.37%), L1 & L2 related lexical unit (0.98%) and L1 related lexical unit (1.24%). The erroneous responses were excluded from further analysis. The results of the follow-up questionnaire showed that some participants had wrong interpretation for a few idioms in the list, that is, about 26.7 % of participants provided

the wrong answer for idiom # 4 and 16.6% for idiom #5 (see Appendix A). In addition, the results of the participants' rating of the idioms on their frequency and meaningfulness showed that although idioms were mostly meaningful to the participants (M= 5.7), they were less frequently used or heard (M= 3.1) (see Appendix A for more details). Taken together, the low error rates and the follow-up idiom test suggested that materials chosen for the experiment and the cued-recall task were appropriate for the purpose of this study.

The average means on the rest of data (see Figure 3) indicate that a shorter reaction time was obtained when subjects were primed with the lexical primes compared to the shared concept primes. The shortest reaction time was obtained for the related L1 lexical primes, which were the L1 idiom keys. The L1 and L2 related lexical primes exhibited the second shortest reaction time, and the longest reaction time was obtained for the L1 and L2 shared concept primes. The results indicate that the underlying shared L1 and L2 concepts were weak stimuli to trigger the L2 idiomatic expressions suggesting possible inhibitory effects, compared to the lexical cues. The L1 related lexical primes had the strongest stimulation, because these lexical primes, in spite of being unrelated to L2 idioms, were related to their L1 idiom counterpart. In fact, they were the L1 idiom keys that could stimulate the configuration of the L1 idioms.

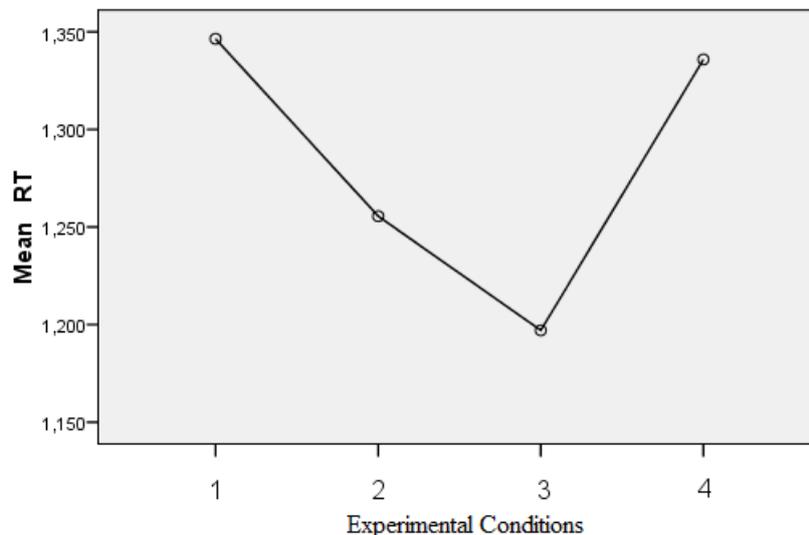


FIGURE 3. Mean Reaction Time (RT) for each experimental condition

Condition 1: Shared Concept

Condition 3: L1 Related Lexical Unit

Condition 2: L1&L2 Related Lexical Unit

Condition 4: Unrelated Control

TABLE 3. Results of the Bonferroni post-hoc pair-wise comparison test

(I) Experimental Conditions <sup>a</sup>	(J) Experimental Conditions	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>c</sup>	
					Lower Bound	Upper Bound
1	2	92.36*	12.45	.00	56.81	127.91
	3	150.04*	21.92	.00	87.44	212.63
	4	5.08	25.21	1.00	-66.9	77.06
2	1	-92.36*	12.45	.00	-127.91	-56.81
	3	57.67*	19.81	.04	1.11	114.24

Continued



Sharing a concept could mean that the concept referred to by an L2 idiom is already established in the L1 mental lexicon. So, the shared concept as a prime can stimulate the retrieval of the related L2 idiom in two ways; either by linking directly to the L2 idiom or by linking to its L1 counterpart. As the connection between the concept and the L1 idiom was primarily established, the conceptual link from the L1 concept to L1 idiom is very strong, but based on the revised hierarchical model (Kroll & Stewart 1994), the lexical link from L1 to L2 is weak due to a richer L1 mental lexicon compared to the L2 mental lexicon which is relatively poorer in storage for idioms, which could slow down the retrieval of L2 idioms. Similarly, the established links from the shared concept to L2 lexical concept to L2 idiom seems to be weak due to lower use of and exposure to L2 idioms. Therefore, the retrieval and production of the L2 idioms were not facilitated by the presentation of conceptual primes.

Furthermore, shorter reaction times were obtained for both types of the lexical primes compared to the conceptual primes. The shortest reaction time was obtained for the lexical primes which were the idiom key of the L1 idioms. Following Cacciari & Tabossi's (1988) Configuration Hypothesis, the idiom key is the constituent in the idiom that causes the strongest activation of the whole configuration of the idiom compared to the other constituents. The results suggest that the L1 idiom key provides the strongest activation of the shared L1 and L2 idiom concept as well as the L2 idiom superlemma. The second shortest reaction time was obtained from the L1 and L2 related lexical prime. Since the lexical prime is only a constituent of the idiom and not the idiom key, the activation of the L1 and L2 idioms was not as strong.

Based on Kroll and Stewart's (1994) Revised Hierarchical Model of bilingual memory and Jiang's (2000) model of L2 lexical development, it is assumed that the L2 idioms may be connected to the idiom concept representation in two ways. First, by means of either its matched L1 translation along with its linguistic features (semantic, syntactic, and morphological information) from L1 concept → L1 lemmas → L1 word → L2 word, when the idiom's semantic information is not an integrative part of the L2 mental lexicon and second, directly through the L1 lemma within the idiom's entry (i.e., from L1 concept → L1 lemmas → L2 word) as stronger associations are developed between the L2 word and its L1 translation via repeated exposure (Jiang 2000). Since this study deals with proficient language learners, the latter route which is more direct and advanced may be the default route enabling the L2 learners to use the L2 route directly. The former route that goes from the L1 translation of the figurative meaning to the L2 idiom may be more laborious as the working memory would be overloaded with more information when generating the L2 idiom; hence, it may result in slower retrieval of the L2 idiom.

Anchored in Levelt et al.'s (1999) model of lexical access in speech production and the superlemma theory (Sprenger et al. 2006), the network of the activated nodes at the conceptual and lexical levels in language processing in this experiment can be depicted further as shown in Figure 4. The network distance in case of shared conceptual and lexical primes does not vary in the number of links: 7 links for the conceptual prime and 7 links for the lexical prime. For instance, the audio prime <aziz> 'dear', the shared concept in L1 → L1 lemma: <aziz> → L1 concept: AZIZ → L1 idiom lexical concept:  $\alpha'$  → L2 idiom lexical concept:  $\alpha$  → L2 idiom superlemma → L2 lemmas: abcde → L2 idiom articulation: "apple of one's eye" (arrows indicate the potential mental links). Conversely, for the lexical prime related to both the L1 and L2, we have the following links: <cheshm> 'eye' → L1 lemma: h → L2 Lemma: e → L2 concept 'EYE' → L2 idiom lexical concept:  $\alpha$  → L2 idiom superlemma → L2 lemmas: abcde → L2 idiom articulation: "apple of one's eye". Therefore, it was expected that there would be no significant difference in the reaction time for these conditions. But the results of this experiment did not meet the predicted expectation; lexical primes facilitated production of the L2 idioms but conceptual primes did not. The results

imply that EFL learners were positively influenced by the cross-linguistically similar lexical cues to access the L2 idioms, but were not influenced by the cross-linguistically identical conceptual cues to produce the L2 idioms.

Another explanation that could be offered to account for the results obtained is that the information that is contained in the sensory input (lexical and conceptual primes) stimulated different levels of idiom production in an EFL context. The shared concepts activated the higher level nodes tapping on the long-term memory for semantic and syntactic information. This information is then used in a top-down direction to activate lower level nodes enabling the lexical access and production of the relevant L2 idioms. The lexical primes, on the other hand, activated the lower level nodes using the information which came directly from the sensory input. This information is then used bottom-up to activate higher level nodes (the idiom concept), enabling the retrieval of the L2 idiom as a holistic entity. The information from bottom-up processing which was gained from the sensory stimuli directly could have a greater stimulating effect compared to the top-down information that came from long-term memory.

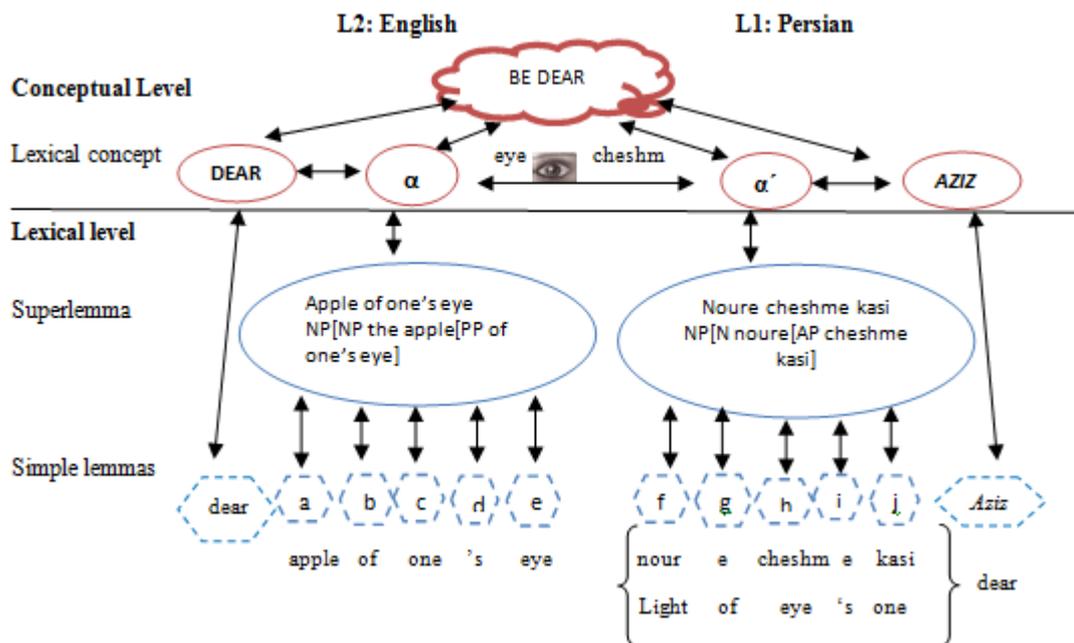


FIGURE 4. Related Concept and Lexical Nodes at the Conceptual Level (dear, eye) and the Production of Idioms in L1 and L2 According to the Superlemma Model (Adapted from Sprenger et al. 2006; p.176).

Furthermore, words of a language can be abstract or concrete. Abstract words refer to concepts or ideas with no physical referent, so different perceptions can easily occur. Abstract concepts are learned via their use in the sentence, thus may exhibit a variety of meanings depending on the context. Concrete words, on the other hand, refer to physical reality such as objects or events which are available to the senses and have fixed meanings (Noppeney & Price 2004). In this experiment, since the shared concept as primes were abstract entities, it could be inferred that it took longer for them to be analysed compared to the lexical primes which were concrete entities and were easier to process. Hence, the abstract concepts had a less facilitative role in the production of the English idioms. This is in line with studies reported in Levelt et al. (1999), for example Weiss and Rappelsberger (1998) on L1 processing which claim that concrete nouns could trigger all sensory

perceptions which could relate to the lexical concepts during speech comprehension, but abstract nouns are not capable of initiating such percepts.

## CONCLUSION AND SUGGESTIONS FOR FURTHER RESEARCH

This experiment was conducted to investigate how cross linguistic conceptual and lexical similarities between Persian and English influence the production of English idioms. The results showed a facilitative factor from the L1 knowledge at the lexical level for retrieval of English idioms for competent Iranian EFL speakers. In addition, the abstract L1 conceptual route was less efficient compared to the concrete L1 lexical routes to mediate the L2 idiom representation. In other words, the L1 conceptual primes which possibly activated top-down processing functioned weakly compared to the L1 lexical primes which activated bottom-up processing to stimulate the retrieval of the L2 counterparts of L1 idioms. The findings also suggest that not all constituents of an idiom have equal potential to bring about an idiom configuration. The primes which were identified as the idiom key had a strong facilitative effect on the production of the L2 idioms.

This study was conducted among competent Iranian L2 learners. Future studies can address different levels of language proficiency with a larger number of participants, or a larger number of idioms to learn more how the L2 mental lexicon functions when idiomatic expressions are produced. These studies can further improve our understanding of the unconscious mental processes involved in adult L2 learning. It would also be interesting to compare and contrast the idiomatic expressions used in the L1 and L2 to see if they relate to ease of acquisition.

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APPENDIX A  
LIST OF IDIOMS AND THE SELECTED PROMPTS AND PRIMES

Prompt	Related L1 & L2 Lexical prime L1 & L2 Shared Concept prime	Related L1 Lexical prime Unrelated L1&L2 Primes	English idiomatic Expression Persian Idiomatic Expression Word-for-word gloss (Equivalent Persian Translation)	Participants' Mean Frequency **(1-7 scale)	Participants' Mean Familiarity (1-7 scale)
Ted	Chesm چشم 'eye' N(1)	Nour نور 'Light' N(1)	Ted is the apple of his father's eye.  تد نور چشمی پدرش است.	4.45	6.9
<i>Continued</i>	Aziz عزیز 'Dear' Adj. (2)	Khaneh خانه 'House' N (2)	Ted the light of his father's eye is. (the light of one's eye)		
Jack	Hava هوا 'Air' N (2)	Doud دود 'smoke' N (1)	Jack vanished into thin air.  جک دود شد و هوا رفت.	2.85	5.15
James	Naapadid ناپدید 'disappearing' Adj. (4)	Daftar دفتر 'notebook' N (2)	Jack smoke become and air go into. (become smoke and go into air)		
	Goush گوش 'ear' N (1)	Zang زنگ 'bell' N (1)	James keeps his ear to the ground.  جیمز گوش به زنگ است.	2.3	5.75
	Houshyari هوشیاری 'Consciousness' N (2)	Doust دوست 'Friend' N (1)	James ear to bell is. (To keep one's ear to the bell)		
Eve	Dahaan دهن 'Mouth' N(2)	Lagh لق 'Loose' Adj.(1)	Eve has a big mouth.  ایو دهن لق است.	4.05	6.5
	Sokhan chin سخنچین 'chatterbox' Adj. (3)	Ax عکس 'picture' N (1)	Eve mouth loose has. ( To have a loose mouth)		
Mary	Charb kardan چرب کردن 'To grease' Infinitive (2)	Sibil سبیل 'Moustache' N (2)	Mary greased his palm.  مری سبیل او را چرب کرد.	2.9	5.5
	Reshve رشوه 'Bribe' N (2)	Mashin ماشین 'car' N (2)	Mary his mustache greased. (To grease one's mustache)		
Kate	Gereftan گرفتن 'to catch' Infinitive (3)	Moch مچ 'Wrist' N (1)	Kate caught them red-handed.  کیت مچ آنها را گرفت.	4.5	6.7
	Rosvai رسوایی 'scandal' N(3)	Roya رویا 'Dream' N (2)	Kate wrist them caught. (To catch one's wrist)		
Rose	Dar raftan در رفتن 'To fly off' Infinitive (3)	Koureh کوره 'furnace' N (2)	Rose flew off the handle.  رز از کوره در رفت .	2.35	3.95
	Khashmnaak خشمناک 'angry' Adj.(2)	Baazi بازی 'game' N (2)	Rose from furnace flew off. (To fly off the furnace)		
Sam	Raah raftan راه رفتن 'To walk' Infinitive (3)	Abr ابر 'Cloud' N(1)	Sam walks on air.  سم روی ابرها راه می رود.	3.55	5.15
	Shaadi شادی 'Happiness' N(2)	Ketaab کتاب 'book' N (2)	Sam on clouds walks. (To walk on the clouds)		

\*Parts of speech: N (noun), V (verb), Adj. (adjective). The number of syllable is shown in parenthesis.

\*\*The likert scale 1-7 for the frequency test: 1 (Never heard) to 7 (very frequently heard).

For meaningfulness: 1 (have no idea of the meaning) to 7 (certainly sure of the meaning).

APPENDIX B  
IDIOM LIST

Dear participants,

I appreciate your being part of this experiment. First, you are required to remember the English idiomatic expressions below based on their grammatical subjects. Later in the actual experiment, you should be able to produce them accurately and flawlessly at the allotted time.

1. Ted is the apple of his father's eye.
2. Jack vanished into thin air.
3. Kate caught them red handed.
4. Rose flew off the handle.
5. James keeps his ear to the ground.
6. Eve has a big mouth.
7. Sam walks on air.
8. Mary greased his palm.

APPENDIX C  
FOLLOW-UP IDIOM FAMILIARITY QUESTIONNAIRE

*Purpose:* This questionnaire is designed to gather information on demographics, prior knowledge of the intended English idioms such as amount of exposure, their meaningfulness and their exact meanings.

I. Demographic Characteristics

Questions 1-8 ask about your background.

1. Name: .....
2. Your age: .....
3. Gender:  Male,  Female
4. Age at beginning English instruction: .....
5. Years of formal instruction in English: .....
6. How much time have you spent in an English speaking country? .....
7. How fluent are you in English?  
Native Fluency,  Near-native Fluency,  High Fluency,  Average Fluency,  Some Fluency
- How do you rate your ability in four English skills of: (from 1-10)  
Speaking.....; Listening.....; Reading.....; Writing.....

II. Frequency Judgment

Decide how frequently you have seen, heard, or used these idioms independent from whether or not you know what they mean.

IDIOMS	Never 1	Seldom 2	Sometimes 3	Moderately Often 4	Usually 5	Frequently 6	Very frequently 7
To be the apple of one's eye							
To vanish into thin air							
To catch someone red-handed.							
To fly off the handle							
To keep one's ear to the ground							
To have a big mouth							
To walk on air.							
To grease one's palm.							

III. *Meaningfulness Judgment*

Decide how well you know the meaning of these idiomatic expressions and could easily put them into your own words.

% 100 certain	No idea		moderately certain				
	1	2	3	4	5	6	7
IDIOMS							
To the apple of one's eye							
To vanish into thin air							
To catch someone red-handed.							
To fly off the handle							
To keep one's ear to the ground							
To have a big mouth							
To walk on air.							
To grease one's palm.							

IV. *Definition of Idioms*

Please write down the Persian meaning and the equivalent Persian idiom of each English idiom in the space provided below:

1. *Ted is the apple of his father's eye.*
2. *Jack vanished into thin air.*
3. *Kate caught them red handed.*
4. *Rose flew off the handle.*
5. *James keeps his ear to the ground.*
6. *Eve has a big mouth.*
7. *Sam walks on air.*
8. *Mary greased his palm.*