Cross-language Processing of Persian and English Noncognates in Contextualized and Decontextualized Conditions

[1] Dr. Sahar Najarzadegan , [2] Zohreh Karami
1-Department of English, Isfahan Branch, Islamic Azad University, Isfahan, Iran
Academic E-mail: snajarzadegan@khuisf.ac.ir
Personal E-mail: snajarzadegan@gmail.com
2-Department of English, Isfahan Branch, Islamic Azad University, Isfahan, Iran
E-mail: zohrehkarami99@yahoo.com

ABSTRACT
Similarities and differences of form and meaning between two related words have been focus of attention in many recognition experiments for many years. This study was conducted to investigate the recognition of noncognates in L1-L2 and L2-L1 directions and contextualized and decontextualized conditions. The study was an empirical research. Sixty female pre-intermediate Persian-speaking students, falling between the age range of 16-18, in a high school in Isfahan were examined by means of a Solutions Placement Test (SPT), language background questionnaire, and noncognate recognition test. The data were then analyzed via independent samples t test for the SPT and Mann Whitney U Test for the recognition test. Noncognates indicated no facilitation effect in either of directions, and facilitation effect was more in the contextualized condition than the decontextualized one. The results suggest that in languages with different scripts, young unbalanced bilinguals process noncognate words the same in each direction, and the facilitatory effects are more in the contextualized condition. No facilitation effect can be ascribed to low level of L2 proficiency, overreliance on phonology, and absence of orthographic similarity. The results have noteworthy contributions for high school EFL learners, English teachers, material developers, and syllabus designers for high school course books.

Keywords: *cognates, noncognates, facilitation effect*

1. *INTRODUCTION*

Bilingual lexical and conceptual access has been under investigation for years in many studies to discover the nature of their connections in a bilingual's mind. Based on their lexical or conceptual representations in the bilingual's mind, words have been categorized in several groups, namely cognates, false friends, and noncognates. Cognates are words with the same form and meaning (phonological, sometimes orthographical, and semantic overlaps) between two languages, such as door in English and dar/در in Persian. False friends have the same form and different meanings, such as machine in English and mashin/ماشین in Persian (Brenders, van Hell, & Dijkstra, 2011). Noncognates are words with different forms and the same meaning, such as blue in English and abi/آبی in Persian (Nakayama, Sears, Hino, & Lupker, 2013; Siyambalapitiya, Chenery, & Copland, 2009).

These words have been assessed in many recognition studies with the same or different script languages in order to investigate their mental representations and facilitatory effects. Generally, facilitation effect is more recognition of cognates compared to false friends or noncognates in offline tasks or paper tests (Perez, Pena, & Bedore, 2010; Petrescu, Helms-Park, & Dronjic, 2017). In assessing these words in computerized testing, this facilitation effect is called priming effect, which is more reaction time (RT) to a pair of related words with form and meaning overlaps (Fotovatnia & Taleb, 2012b). One such assess is masked priming paradigm, in which the prime is followed by its target stimulus separated by a forward mask to prevent the prime to be identified by FEL learners.

A number of studies have explored the magnitude of priming effect for cognates over noncognates (de Groot & Nas, 1991; Fotovatnia & Taleb, 2012b; Gollan, Forster, & Frost, 1997; Hoshino & Kroll, 2008; Lalor & Kirsner, 2000, 2001; Marecka et al., 2021; Mitchell, Tsui, & Byers-Heinlein, 2024; Nakayama et al., 2013; Sanchez-Casas & Garcia-Albea, 2005; Siyambalapitiya et al., 2009). Some of these studies in different script languages also focused on the direction of priming effect, whether it is L1-L2 or L2-L1 (Fotovatnia & Taleb, 2012a, 2012b; Gollan, et al., 1997). However, the results concerning the direction of translation has been somewhat mixed, whether it has been L1-L2 facilitation effect for both cognates and noncognates or no facilitation effects for noncognates. The effect of context

on cognate-noncognate recognition has also provided different results in favor of context-related materials. The lexical and conceptual overlap in cognates has promoted the facilitation effects even in decontextualized materials, whereas noncognates represented facilitatory effect problems even in contextualized situations due to only conceptual not lexical access (Lalore & Kirsner, 2001).

Findings of cognate recognition studies have been under the influence of different linguistic factors such as language proficiency of EFL learners or level of bilingualism and script differences between two languages, whether it is the same or different. While in all of the studies regarding these two factors cognate priming effect has been obtained, the directionality of this recognition has demonstrated contradictory results, mostly from L1 to L2 in different-script languages. Gollan et al. (1997) posited that this asymmetric priming effect for both cognates and noncognates is related to more reliance on phonology and absent orthographic similarity between two languages in unbalanced EFL Learners (learners with more proficiency in one of the languages). Fotovatnia and Taleb (2012a, 2012b) also obtained this result with cognates and no facilitatory effects for noncognates.

As the results for noncognate recognition have been contradictory, further research is required to attain definitive results. Therefore, regarding Persian and English as different-script languages and hence absent orthographical similarities, the current study aimed at investigating the recognition of noncognate words in both directions of translation and in-context and off-context situations in unbalanced Persian speaking EFL learners, to identify which results will be obtained considering both directions and conditions of testing among unbalanced Persian speaking EFL learners.

2. *LITERATURE REVIEW*

Research studies in this area display how the L2 learner processes languages. Most of these studies are conducted in the masked priming paradigm such as lexical decision task, in which the second language learner is confronted a pair of related words (prime and target) separated by a forward mask on a computer screen, by which the prime cannot be identified and is required to make a decision whether the target is related to the prime or not. The mental representations of the words are investigated by measuring the L2 learners' reaction times (RT) or response latencies. A number of empirical studies, adopting masked priming paradigm, have focused on the comparison between the recognition of cognates and noncognates and obtained cognate facilitation effects, but the results pertinent to cross language recognition (L1-L2 or L2-L1) are to some extent mixed.

In terms of studies with similar-script languages, in a study with Dutch-English bilinguals de Groot and Nas (1991) argued that separate but connected lexical representations occur for both cognates and noncognates, shared conceptual representations for cognates, and separate one for noncognates. Cognates share representations at the lexical and conceptual levels, whereas noncognates share these connections just in the lexical level. However, de Groot (1992) changed her position and proposed distributed memory representation model, according to which cognates share features at the lexical and conceptual levels, while noncognates share features merely at the conceptual level.

In another study which focused on cognates and their relationship with morphology, Lalor and Kirsner (2000) introduced frequency of words and morphological representations as the reason of cognate priming advantage over noncognates in Italian-English bilinguals, and cognate facilitation effect was for the second language, while there was no facilitation effect for noncognates in both languages. They proposed that cognates belong to a morphologically related set based on the abstract representations of their stems or roots, and they are not lexical, derivational, inflectional, or syntactic forms of their counterparts. They hold the same semantic features and do not act for grammatical purposes. Some other studies also announced considerable cognate priming advantage and no priming effects for noncognates and false friends. These studies held the view that morphological representations are the main cause of cognate priming advantage (Lalor & Kirsner, 2001; Sanchez-Casas & Garcia-Albea, 2005). Lalor and Kirsner (2001) gained significant priming effect for cognates, and it was less for between-language than within-language conditions in Italian-English bilinguals. Between-language priming effects were eliminated for false friends and noncognates. Sanchez-Casas and Garcia-Albea (2005) also obtained no priming effects for false friends and noncognates compared to cognates in Spanish-English and Catalan-English bilinguals.

There have also been studies considering age and degree of similarity between languages as important factors in obtaining different results for cognate and noncognate facilitation effects. Siyambalapitiya et al. (2009) examined cognate and noncognate transfer effects in young and old Italian-English bilinguals. For younger adults, symmetric cognate facilitation was observed, whereas noncognate effect was in L2-L1 direction. For older ones cognate

advantage was obtained in the intra-language condition, while noncognates displayed inter-language effects. The scholars maintained that similarity between the two languages is the cause of obtaining bidirectional cognate effect relative to noncognates. Mitchell et al. (2024) investigated French-English infant bilinguals on cognate-noncognate development and production in both languages and obtained cognate facilitation effect. Their findings suggested that phonological overlaps in cognates facilitate cognate learning in early ages, and the degree of similarity between languages leads to more facilitation effect, especially identical cognates are learned faster compared to similar cognates and noncognates.

Learning of cognates has shown an advantage over noncognates and false friends. In a learning task Marecka et al. (2021) studied the acquisition of cognates, false friends, and noncognates in Polish-English bilinguals. Cognates were learned faster than noncognates and false friends in both form production and meaning recognition blocks. They stated that learning of cognates is under the influence of both form and meaning overlaps.

Considering studies with different-script languages, Gollan et al. (1997) examined unbalanced Hebrew-English bilinguals and obtained L1 priming effect for cognates. The scholars suggested dual-lexicon model, based on which orthographical and phonological overlaps are needed to share lexical representations in both languages and represent bidirectional cognate priming advantage. They attributed the asymmetry of cognate effect in different-script languages to overreliance on phonology rather than absent similar orthography. Priming was also obtained for noncognates and with the L1-to-L2 direction. They vindicated this result by means of orthographic cue hypothesis (OCH), according to which script differences facilitate rapid access to produce noncognate priming effect, providing a cue to the lexical processor and getting access to the proper lexicon.

However, some scholars demonstrated that there is no cognate advantage by reason of nonorthographic representation for different-script languages. In this regard, Bowers, Mimouni, and Arguin (2000) obtained priming effects for French-English cognates and no priming effect for Arabic-French and French-Arabic cognates. On the other hand, Hoshino and Kroll (2008) claimed that in different-script languages in the absence of the written form there is cross-language activation of phonology in speech production, and script differences do not act as an abstract criterion. In other words, script visibility moderates speech production. These researchers examined Spanish-English and Japanese-English bilinguals, and cognate facilitation effect over noncognates was obtained for both groups.

Fotovatnia and Taleb (2012a) examined noncognates in Persian-English bilinguals, and obtained no priming effect. The results were consistent with distributed memory representation model proposed by de Groot (1992), according to which cognates share features at the lexical and conceptual levels, whereas noncognates share features only at the conceptual level. Fotovatnia and Taleb (2012b) also obtained L1 priming effect for cognates, which supported dual lexicon model suggested by Gollan et al. (1997) and no priming effect for noncognates. The scholars asserted that the phonological property of cognates was the cause of asymmetrical priming effect in participants with low level of language proficiency. Low L2 proficiency and excessive reliance on phonology was maintained as the reason of L1 priming advantage for cognates and no priming advantage for noncognates.

Word frequency and concreteness are lexico-semantic features affecting word processing in both L1 and L2. Word frequency is referred to the number of times a word appears in a corpus. High frequency words are processed faster than low frequency words in both L1 and L2. Concreteness is the degree to which a word is perceptible by the senses (Fotovatnia, Jones, & Scheerer, 2019). Fotovatnia et al. (2019) investigated the relationship between these features and reaction times of Persian-English speakers in a masked priming lexical decision task by means of a dataset containing cognates and noncognates. Participants' RTs were best predicted by English frequency and familiarity with English words. Pronunciation similarity and the number of phonemes predicted RT for cognates, whereas English frequency predicted RT for noncognates.

Nakayama et al. (2013) introduced another account for cognate advantage in languages with different scripts known as phonological account of the cognate priming advantage (Voga & Grainger, 2007), which argues that in languages with different scripts cognate priming effects are owing to both phonological and semantic factors compared to noncognates with only semantic factors in the recognition process. These researchers examined Japanese-English bilinguals with regard to word frequency and language proficiency and obtained cognate facilitation effects relative to noncognates in both directions. The priming effects for cognates were larger for low-frequency targets and for less-proficient bilinguals in L1-L2 direction, while in L2-L1 direction remarkable cognate priming effects were obtained regardless of L2 proficiency.

Given the large volume of studies in this area, the current study was carried out among unbalanced Persian-speaking EFL learners, and noncognates were examined in both L1-L2 and L2-L1 directions and contextualized and

decontextualized conditions. In view of all that has been discussed so far, this study sought to determine which pattern of results will be obtained with regard to Fotovatnia and Taleb's (2012a, 2012b) studies. Therefore, the main question of the present study is:

Is there any significant difference between the recognition of the noncognates in L1-L2 and L2-L1 directions in both contextualized and decontextualized conditions of testing among Iranian high school EFL learners?

3. *METHOD*

The present study aimed at conducting a recognition study on noncognate words. Thus, a bilingual paper test containing noncognate words was designed and administered to three levels of students in a high school. The test was carried out in both contextualized and decontextualized forms of testing and in both Persian-English and English-Persian directions of translation.

3.1 Participants

The study was conducted in a secondary school in Isfahan, Iran during two months. Sixty female pre-intermediate Persian-speaking high school EFL learners, falling between the age range of 16 to 18, were chosen as the subjects of the study from three grades of high school (the 10th, 11th, and 12th). The participants were recruited from a group of 158 students, and they were selected from six classrooms with two classes in each grade. A Solutions Placement Test (SPT) and a language background questionnaire were run, and based upon the non-random sampling 60 participants were selected and grouped into two cohorts equally. Ten participants in each grade were examined either L1-L2 or L2-L1 direction of noncognate words translation.

3.2 Instruments

The instruments of the study were: (a) Solutions Placement Test (SPT), (b) language background questionnaire, and (c) noncognate recognition test.

The grammar part of the Solutions Placement Test (SPT, 2013), which contained 50 multiple-choice items of grammar and vocabulary, was a tool for identifying elementary to intermediate level of English proficiency. To ensure the participants' general knowledge of English words had less effect on the recognition of the noncognate words, participants with low level of English proficiency were selected. Thus, this placement test was a suitable instrument to collect students with the pre-intermediate level of language proficiency.

The language background questionnaire was a researcher-made questionnaire. It included questions such as age, city of birth, citie(s) living before, the participants' mother tongue , the language spoken at home, whether the participants have been abroad more than three months, the period of learning English, the probability of learning English in institutes, and their previous year final English score (Brenders et al., 2011). This instrument was used after the placement test to identify and screen out those students who did not meet all the criteria in the questionnaire.

The noncognate recognition test was a researcher-made multiple-choice test and was designed in L1-L2 and L2-L1 directions and contextualized and decontextualized stages. The test entailed 20 items in each direction; L1 to L2 or L2 to L1. The first and second stages were the decontextualized and contextualized forms of the same vocabulary items respectively. In the contextualized form, all the English items and English distracters were used in sentences.

In order to collect the noncognate items of the test, the high school English books, Vision 1, Vision 2, and Vision 3 English for Schools, related to the 10th, 11th, and 12th grades were used and all the words were checked in monolingual Merriam Webster Dictionary and bilingual Tahlilgaran Dictionary. Frequency and degree of concreteness of the words were used as factors to homogenize each item and its distractors. Therefore, Leipzig Corpora Collection (LCC), a monolingual corpus with 431 corpus-based dictionaries for 252 languages, was used to check the frequency of Persian and English words. The mean frequency of Persian and English noncognate words were 12.85 and 12.90 respectively. A dataset called Concreteness Ratings for 40 Thousand English Lemmas was also used to check the degree of concreteness of the words. To collect the English distractors of the test items the Oxford Advanced Learner's Dictionary was used.

3.3 Data Collection Procedure

The data collection procedure included collecting data for the three instruments of the study. Twenty words were chosen from the high school books to encompass the noncognates words of the study. These words all were checked

in two monolingual and bilingual dictionaries. The noncognate items' distractors were all from the same semantic category of words, and the Persian distractors were all the translation of the English distractors:

Example: *L1-L2 noncognate*

سفالگری : a. carpentry b. painting c. calligraphy d. pottery

Example: *L2-L1 noncognate*

pottery : a. نجاری b. نقاشی c. خطاطی d. سفالگری

The frequency and degree of concreteness factors were considered within all the items and distractors to maintain the homogeneity of the words. To design the contextualized tests, all the English items and distractors were used in sentences:

Example: *. سفالگری : a. Cabinets are built in **carpentry**.*

*b. **Painting** is an art full of creativity.*

*c. **Calligraphy** is my favorite art.*

*d. Different dishes and jars are made by the art of **pottery**.*

Example: *pottery : Different dishes and jars are made by the art of **pottery**.*

a. نجاری b. نقاشی c. خطاطی d. سفالگری

To assure the stimulus lists are reliable and valid, the recognition test was checked by an experienced English teacher, and a sample of 20 students were used to pilot test all the instruments before conducting the study, to make sure the test items are not ambiguous, and adequate time will be allotted for each section of the study. The reliability indexes of the SPT and the noncognate recognition test were estimated through KR-21 formula and Chronbach alpha formula respectively, and were .76 for the SPT and .85 for the recognition test.

In order to administer the tests, six classes in a high school were used to select the participants of the study. The Solutions Placement Test was run, and 60 students were chosen whose score range for the low-intermediate level was 21-30 according to the test manual. The language background questionnaire was also used to separate the ineligible participants. Finally, the recognition test was conducted. Because the test was arranged in two directions, 30 participants took part in each direction of the test, and each grade was examined separately due to time restriction at the school. Whether L1-L2 or L2-L1, each 10 participants took the decontextualized test before the contextualized one in one session. In the contextualized stage the participants become certain about their choices in the decontextualized condition based on the contextual-based meaning of the test items.

3.4 Data Analysis Procedure

In this stage, the data for the SPT and the noncognate recognition test were analyzed by means of the Kolmogorov-Smirnov Test to check the scores' normality of the distributions. The p values obtained in this test revealed that for making comparisons between the SPT scores of the two groups of participants, independent-samples t test had to be employed, and the scores for the noncognate test in both directions were compared via Mann Whitney U Test.

4. *RESULTS*

The findings of the study and the details of the data analysis were discussed in this section. As a result, an account of the statistical facts of the study for different instruments such as the SPT and the noncognate recognition test were provided and elucidated in this part of the research.

4.1 Introductory Analyses for the SPT and the Noncognate Recognition Test

In order to test the assumption of normality in this study, the Kolmogorov-Smirnov Test was put to use on the SPT along with the contextualized and decontextualized tests of noncognate words for both groups of the participants. The results of the test are displayed in Table 1.

Table 1. *Kolmogorov-Smirnov test results for the SPT and noncognate recognition test*

Groups	Tests	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	*df*	*Sig.*	Statistic	*df*	*Sig.*
L1-L2	SPT	.12	30	**.20**	.94	30	.10
	CN	.18	30	**.00**	.92	30	.02
	DN	.15	30	**.05**	.96	30	.31
L2-L1	SPT	.11	30	**.20**	.94	30	.14
	CN	.21	30	**.00**	.85	30	.00
	DN	.17	30	**.01**	.94	30	.12

As it is conspicuous in Table 1, the p values for the SPT are greater than the significance level of .05 (p=.20). Thus, the distribution of the scores were normal and the SPT scores of the two groups could be compared by means of independent-samples t test. On the other hand, the p values for the noncognate words are smaller than the significance level, meaning that their scores were not normally distributed. Therefore, to compare the noncognate words' scores Mann Whitney U Test had to be used for between-group comparisons.

4.2 Results of the Solutions Placement Test

As it was mentioned before, 60 high school EFL learners were assigned to the two groups of L1-L2 and L2-L1. To ensure the two groups were homogeneous in terms of their level of proficiency, independent-samples t test was used to compare their SPT scores.

Table 2. *Descriptive statistics for the Solution Placement Test*

	Groups	*N*	Mean	*Std.* Deviation	*Std.* Error Mean
SPT	L1-L2	30	25.26	3.75	.68
	L2-L1	30	24.56	4.30	.78

Table 2 depicts that the L1-L2 and L2-L1 learners' mean scores on the SPT equaled 25.26 and 24.56 respectively.

Table 3. *Results of independent-samples t test comparing the students' SPT scores*

	Levene's Test for Equality of Variances		*t* test for Equality of Means			
	F	*Sig.*	*T*	*df*	*Sig.* (2-tailed)	Mean Difference
Equal variances assumed	.07	.78	.67	58	.505	.70
Equal variances not assumed			.67	56.93	.505	.70

As illustrated in Table 3, since the p value was greater than the significance level, there was not a statistically significant difference between the SPT scores of the L1-L2 group (M = 25.26, SD = 3.75) and the L2-L1 group (M = 24.56, SD = 4.30), t (58) = .67, p = .505 (two-tailed). Hence, it could be assumed that the two groups were homogeneous in terms of their level of language proficiency.

4.3 Results of the Noncognate Recognition Test

Results of the noncognate recognition test were delineated in noncognates' direction of translation in both conditions of testing. In comparing the recognition of the noncognate words across the two groups, Table 4 is quite revealing that the two groups had more similar means for noncognates in the contextualized condition compared to the decontextualized condition.

Table 4. *Results of descriptive statistics comparing the two groups' performances on tests of noncognate words*

Groups		Contextualized	Decontextualized
L1-L2	Median	17.50	16.00
	Mean	17.20	15.50
	Std. Deviation	1.64	2.19
	N	30	30
L2-L1	Median	18.00	14.00
	Mean	17.10	14.17
	Std. Deviation	2.39	3.00
	N	30	30

Table 5 demonstrates the results of Mann Whitney U Test comparing the two groups' means under the contextualized and decontextualized conditions.

Table 5. *Results of Mann Whitney U test comparing the two groups' performances on tests of noncognate words*

	Contextualized	Decontextualized
Mann-Whitney U	413.00	332.50
Wilcoxon W	878.00	797.50
Z	-.55	-1.75
Asymp. Sig. (2-tailed)	.57	.08

As it is apparent from the data in Table 5, there was not any statistically significant difference in the recognition of noncognate words between the two groups neither in the contextualized nor in the decontextualized condition.

5. *DISCUSSION AND CONCLUSION*

The main objective of this study was whether there is any significant difference between the recognition of the noncognates in L1-L2 and L2-L1 directions in both contextualized and decontextualized conditions of testing among Iranian high school EFL learners. Based on the statistical data analysis, there was not any statistically significant difference between the two groups in the recognition of noncognate words in both conditions of testing. There could be some plausible justifications for this finding.

As reported before, de Groot (1992) proposed distributed memory representation model, according to which cognates share features at the lexical and conceptual levels, while noncognates share features only at the conceptual level, which is the main cause of cognate priming advantage over noncognates in most studies with similar-script and different-script languages. In learning of cognates, false friends, and noncognates, Marecka et al. (2021) also confirmed the role of form and meaning overlap for cognates as the main cause of cognate priming advantage relative to other two groups of words in Polish-English bilinguals.

Some other scholars suggested morphological representations along with word frequency for cognate facilitation effect relative to noncognate words (Lalor & Kirsner, 2000). No priming effects for noncognate words has also been reported by these researchers affirming the role of morphological representations in cognate priming advantage compared to false friends and noncognates (Lalor & Kirsner, 2001; Sanchez-Casas & Garcia-Albea, 2005).

Degree of similarity between languages along with age has played a part in affecting the extent of cognate-noncognate recognition. Siyambalapitiya et al. (2009) announced significant cognate advantage over noncognates in young and old Italian-English bilinguals. However, noncognate effect for younger ones was from L2 to L1, whereas cognate priming effect was bidirectional. The scholars justified the symmetric cognate effect with the similarity of cross-language cognates between English and Italian. Mitchell et al. (2024) affirmed the role of cross-language similarity in learning identical cognates compared to similar cognates and noncognates in French-English infant bilinguals, and believed more similarity between languages results in faster cognate development in infant bilinguals.

Other researchers studying different-script languages announced different results for both cognate and noncognate recognition. Gollan et al. (1997) offered dual-lexicon model for L1 cognate priming effect in Hebrew-English

bilinguals, according to which overlap in orthography and phonology is needed to establish shared lexical representations to show symmetric cognate priming in both languages. They also gained L1 priming advantage for noncognate words. This result was ascribed to orthographic cue hypothesis (OCH), which posits that script differences facilitate rapid access to produce noncognate priming effect, providing a cue to the lexical processor and getting access to the proper lexicon. According to Gollan et al. (1997), the cause of L1 priming advantage in incompetent bilinguals might be the strong relationship between lexical and conceptual system in L1 compared to L2. While an L1 prime and L2 target activate all the semantic representations, an L2 prime and L1 target activate only some of the semantic representations.

However, some others such as Bowers et al. (2000) highlighted the importance of nonorthographic representations in languages with different scripts and believed that there is no cross-language activation for cognates in these languages (e.g. Arabic and English). On the other hand, Hoshino and Kroll (2008) contended that the same phonology in these languages can cause activation of cognate words even when the written lexical form is absent in speech production, and script differences do not serve as an abstract language cue. In both Spanish-English and Japanese-English bilinguals cognates gained priming advantage relative to noncognate words.

The results can also be credited to low level of English proficiency and more reliance on phonology in unbalanced bilinguals. Fotovatnia and Taleb (2012a) examined L1-L2 and L2-L1 noncognate words in Persian-English bilinguals, and no priming effect was obtained. In another study, Fotovatnia and Taleb (2012b) examined both cognates and noncognates in both directions. Cognates gained L1 priming effect, and there was no priming effect for noncognate words again. The scholars suggested distributed memory representation model by de Groot (1992) along with low English proficiency level and overreliance on phonology in different-script languages as the reason of L1 priming advanteage for cognates and no priming effect for noncognate words.

Other accounts have been proposed for cognate priming advantage. One such account is phonological account of the cognate priming advantage (Voga & Grainger, 2007), based on which in languages with different scripts cognate translation priming effects are by virtue of both phonological and conceptual factors compared to noncognates with only conceptual factors working in the recognition process. According to this account, Nakayama et al. (2013) obtained both L1-L2 and L2-L1 cognate effect over noncognates for less proficient Japanese-English bilinguals.

In the present study, more mean differences between two groups in the decontextualized condition compared to the contextualized one can be justified by the fact that in the absence of context in the decontextualized condition, due to form differences of noncognate words between two languages and low level of English proficiency in Persian-English bilinguals, facilitation effect is obviously less than the contextualized stage of testing, and this facilitation effect is more in L1-L2 direction. This result could be ascribed to orthographic cue hypothesis (OCH) Postulated by Gollan et al. (1997) and overreliance on phonology in unprofessional bilinguals. When context is present, bilinguals act more proficiently. Consequently, the difference of means between two groups are minimized to the extent that there is no facilitation effect between both L1-L2 and L2-L1 groups.

However, no facilitation effect found in this study in both conditions and directions proves that context has not played an important part in noncognate recognition owing to overall low language proficiency of Persian speaking bilinguals. Given the fact that the current study was a paper test of translating noncognate words, the results are also the same as what was obtained in Fotovatnia and Taleb's (2012a, 2012b) studies, which used computerized branch of testing or masked priming paradigm. Therefore, the task type has not made any difference in the results achieved.

In the current study, the following conclusions have been drawn from the discussion part. No facilitation effect for noncognate words can be attributed to distributed memory representation model, phonological account of the cognate priming advantage, morphological representations for only cognate words, low level of L2 proficiency, and more reliance on phonology instead of absent similar orthography in different script languages. The results corroborate what was found by Fotovatnia and Taleb (2012a, 2012b), Lalor and Kirsner (2000, 2001), and Sanchez-Casas and Garcia-Albea (2005), but they run counter to what was found by Gollan et al. (1997) with L1 priming effect and Siyambalapitiya et al. (2009) with L2 priming effect.

The present study holds important implications both in terms of theoretical implications with different models responsible for word storage in bilingual's mind and pedagogical implications with instructional materials such as contextual ones for better recognition of noncognate words. Conducting more studies using masked priming paradigm with monolingual stimuli in languages with different orthographies can attain more acceptable results.

REFERENCES

[1] *Bowers, J. S., Mimouni, Z., & Arguin, M. (2000). Orthography plays a critical role in cognate priming: Evidence from French/English and Arabic/French cognates. Memory & Cognition, 28(8), 1289-1296. doi:10.3758/BF03211829*

[2] *Brenders, P., Van Hell, J. G., & Dijkstra, T. (2011). Word recognition in child second language learners: Evidence from cognates and false friends. Journal of Experimental Child Psychology, 109(4), 383-396. doi:10.1016/j.jecp.2011.03.012*

[3] *Brysbaert, M., Warriner, A. B., & Kuperman, V. (2014). Concreteness ratings for 40 thousand generally known English words lemmas. Behavior Research Methods, 46(3), 904-911. doi:10.3758/s13428-013-0403-5*

[4] *de Groot, A. M. B. (1992). Determinants of word translation. Journal of Experimental Psychology: Learning, Memory, and Cognition, 18(5), 1001-1018. doi:10.1037/0278-7393.18.5.1001*

[5] *de Groot, A. M. B., & Nas, G. L. J. (1991). Lexical representation of cognates and noncognates in compound bilinguals. Journal of Memory and Language, 30(1), 90-123. doi:10.1016/0749-596X(91)90012-9*

[6] *Deuter, M., Bradbery, J., & Turnbull, J. (2014). Oxford advanced learner's dictionary (9th ed.). Oxford, UK: Oxford University Press.*

[7] *Edwards, L. (2013). Solutions placement test: Elementary to intermediate. Oxford, UK: Oxford University Press.*

[8] *Eighthbit. (2012). Merriam Webster dictionary (Version 1.3.2) [Mobile application]. Merriam-Webster.*

[9] *Fotovatnia, Z., Jones, J. A., & Scheerer, N. E. (2019). A Persian-English cross-linguistic dataset for research on the visual processing of cognates and noncognates. Iranian Journal of Applied Linguistics (IJAL), 22(2), 36-70.*

[10] *Fotovatnia, Z., & Taleb, F. (2012a). Masked noncognate priming across Farsi and English. Journal of Language Teaching and Research, 3(3), 536-542. doi:10.4304/jltr.3.3.536-542*

[11] *Fotovatnia, Z., & Taleb, F. (2012b). Mental representation of cognates/noncognates in Persian-speaking EFL learners. Journal of Teaching Language Skills (JTLS), 4(1), 25-48.*

[12] *Goldhahn, D., Eckart, T., & Quasthoff, U. (2012). Building large monolingual dictionaries at the Leipzig Corpora Collection: From 100 to 200 languages. LREC, 29, 759-765.*

[13] *Gollan, T. H., Forster, K. I., & Frost, R. (1997). Translation priming with different scripts: Masked priming with cognates and noncognates in Hebrew-English bilinguals. Journal of Experimental Psychology: Learning, Memory, and Cognition, 23(5), 1122-1139. doi:10.1037/0278-7393.23.5.1122*

[14] *Hoshino, N., & Kroll, J. F. (2008). Cognate effects in picture naming: Does cross-language activation survive a change of script? Cognition, 106(1), 501-511. doi:10.1016/j.cognition.2007.02.001*

[15] *Lalor, E., & Kirsner, K. (2000). Cross-lingual transfer effects between English and Italian cognates and noncognates. International Journal of Bilingualism, 4(3), 385-398. doi:10.1177/13670069000040030501*

[16] *Lalor, E., & Kirsner, K. (2001). The representation of "false cognates" in the bilingual lexicon. Psychonomic Bulletin & Review, 8(3), 552-559. doi:10.3758/BF03196191*

[17] *Marecka, M., Szewczyk, J., Otwinowska, A., Durlik, J., Forys-Nogala, M., Kutylowska, K., & Wodniecka, Z. (2021). False friends or real friends? False cognates show advantage in word form learning. Cognition 206. doi:10.1016/j.cognition.2020.104477*

[18] *Mitchell, L., Tsui, R. K. Y., & Byers-Heinlein, K. (2024). Cognates are advantaged over non-cognates in early bilingual expressive vocabulary development. Journal of Child Language, 51(3), 596-615. doi:10.1017/S0305000923000648*

[19] *Motamed, A. R. (2017). Tahlilgaran dictionary (Version 14.0) [Mobile application]. Tehran, Iran: Tahlilgaran Online English Institute.*

[20] *Nakayama, M., Sears, C. R., Hino, Y., & Lupker, S. J. (2013). Masked translation priming with Japanese-English bilinguals: Interactions between cognate status, target frequency and L2 proficiency. Journal of Cognitive Psychology, 25(8), 949-981. doi:10.1080/20445911.2013.839560*

[21] *Perez, A. M., Pena, E. D., & Bedore, L. M. (2010). Cognates facilitate word recognition in young Spanish-English bilinguals' test performance. Early Childhood Services (San Diego, Calif.), 4(1), 55-67.*

[22] *Petrescu, M. C., Helms-Park, R., & Dronjic, V. (2017). The impact of frequency and register on cognate facilitation: Comparing Romanian and Vietnamese speakers on the Vocabulary Levels Test. English for Specific Purposes, 47, 15-25. doi:10.1016/j.esp.2017.03.001*

[23] *Research and Educational Programming Organization. (2016). Vision 1 English for schools (1st ed.). Tehran, Iran: Publication Corporation of Educational Books.*
[24] *Research and Educational Programming Organization. (2019). Vision 2 English for schools (3rd ed.). Tehran, Iran: Publication Corporation of Educational Books.*
[25] *Research and Educational Programming Organization. (2019). Vision 3 English for schools (2nd ed.). Tehran, Iran: Publication Corporation of Educational Books.*
[26] *Sanchez-Casas, R. M., & Garcia-Albea, J. E. (2005). The representation of cognate and noncognate words in bilingual memory: Can cognate status be characterized as a special kind of morphological relation? In J. F. Kroll & A. M. B. de Groot (Eds.), Handbook of bilingualism: Psycholinguistic approaches (pp. 226-250). New York, NY: Oxford University Press.*
[27] *Siyambalapitiya, S., Chenery, H. J., & Copland, D. A. (2009). Bilingualism and aging: Reversal of the cognate advantage in older bilingual adults. Applied Psycholinguistics, 30(3), 531-554. doi:10.1017/S0142716409090262*
[28] *Voga, M., & Grainger, J. (2007). Cognate status and cross-script translation priming. Memory & Cognition, 35(5), 938-952. doi:10.3758/BF03193467*

APPENDIX
TEST ITEMS

English noncognates	*Persian noncognates*
Leopard	پلنگ
Mango	انبه
Carpet	فرش
Sofa	کاناپه
Observatory	رصدخانه
Pilgrim	زائر
Continent	قاره
Fuel	سوخت
Poem	شعر
Inventor	مخترع
Carrot	هویج
Zebra	گورخر
Desert	بیابان
Pottery	سفالگری
Pigeon	کبوتر
Mars	مریخ
Researcher	محقق
Resources	ذخائر
Entry	لغت
Century	قرن