

The Effect of Persian Polysemy on the Interpretation of English Sentences

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Abstract—The present study was an attempt to discover the effect of the activation of multiple Persian polysemous senses (L1) on the interpretation of English sentences (L2) through reading. To do so, an OPT test was given to 82 Persian learners of English to divide them into 2 groups of highly proficient and low proficient L2 learners. They were presented with 80 English sentences, each of which included an exchanged Persian polysemous noun or verb (e.g., *He found it hard to get his “language” round these Polish names, and He could speak several “tongues.”* The Persian polysemous word in these two sentences was *زبان*/zæbɑ:n/.) They were asked to determine whether the L2 word, considered as an L1 polysemous word, was an acceptable completion to a sentence. Results showed that the low proficient Persian learners outperformed the high proficient ones in interpreting the L1 polysemous words, and the highly related L1 polysemous words made more interference in interpreting the L2 words. Results would shed light on the effect of L2 words which are considered as L1 polysemous words on the students’ abilities of translation and interpretation of such words in L2 sentences.

Index Terms—ambiguity, lexicalization, polysemy, reading comprehension

I. INTRODUCTION

Ambiguity is a challenging and thought-provoking phenomenon which has a very vital role in the interpretation of a language (Langaker, 1991). Every day, human beings think and use their mental lexicon to process different senses of ambiguous words (Guttler & William, 2008). Although the two fundamental features of ambiguous words are homonymy and polysemy, Hanks (2006) has found that ambiguity is mostly related to polysemy rather than homonymy due to the fact that senses of polysemy are semantically very close to one another. Kaufman (2002) goes beyond this idea and contends that knowing a language is mostly related to knowing the applications of different senses of polysemous words, rather than having the vocabulary knowledge itself.

In recent years, most studies on polysemy (e.g., Bierwische & Schreuder, 1992; Brown, 2006; Parent, 2009) have been done on L2 polysemous words, mostly on the coactivation effect of multiple senses of such words, and on the interfering role they have in L2 processing. Nevertheless, the importance of polysemous interfering role becomes more apparent when two languages are involved, in a way that one word in an L2 is monosemous, whereas it has two or more equivalences in an L1 (Williams, 2007).

The present study set out to investigate the influence that multiple senses of Persian polysemous words (here, L1) have in L2 learners’ minds when reading English texts (here, L2). The main focus was on cases where a Persian polysemous word was realized by two or more independent words in English. It also focused on the role of lexical-level translation connection and the coactivation of multiple senses of Persian polysemous senses in reading English texts. The Persian word *زبان*/zæbɑ:n/, for example, has two equivalences of *tongue* and *language* in English. Reading the word *tongue*, a Persian learner of English activates the Persian translation equivalence *زبان* (tongue). The word *زبان* in turn, activates its L1 meaning *language*. Therefore, this inappropriate conceptual feature provides the learner with interference in L2 semantic processing task. The results of this study may hopefully shed some light on the effect of L1 polysemous words in the interpretation of L2 sentences and might be of great importance to L2 pedagogy.

II. BACKGROUND TO THE STUDY

A number of studies (e.g., Kroll & Stewart, 1994; Rodd, Gaskell, & Wilson, 2002) have been done on the possible effects of L1 polysemous words on the interpretation of L2 sentences. The findings are not clear-cut in the sense that there are conflicting views regarding the possible influence of L1 polysemy in L2.

Given the lexicalization patterns of polysemy, two different views have been arisen. The first view by Kroll and Stewart (1994) states that different lexical patterns in languages interfere with each other in processing. According to this view, L2 words are produced and understood directly via lexical level translation connection to L1 words. In support of this view, Guttler and William (2008) investigated the effect of German polysemous words on English

processing. Their result showed that when a German learner of English read the word *bag* whose translation in German was the polysemous word *tasche* with two different lexical forms of *bag* and *pocket* in English, a lexical level-link activated the German translational equivalence *tasche*. The word *tasche*, in turn, activated its L1 meaning. Then, inappropriate conceptual features associated with the concept of *bag* became activated. This made it hard for the German participants to distinguish between L1 and L2 lexicalization patterns leading to interference in L2 semantic processing task. Moreover, being in agreement with the theory of interference, Kang (2005) declared a directly interrelated link between the interfering effect of L1 polysemous words and L2 learners' level of proficiency. The performance of the Japanese participants in his research showed that the more proficient an L2 learner was, the better polysemy interpreter he or she would be. Finally, in favor of the interference theory, Klepousniotou, Titone, and Romero (2008) added the overlapping senses theory in which the Italian polysemous words (in this case, L1) which included highly related senses were much more interfering in English (in this case, L2) processing than those of moderately related senses.

The second view holds that different patterns in languages are kept distinct and make no interference in processing (Rodd, Gaskell, & Wilson, 2002). Based on this view, L2 words are comprehended via concepts and L2 learners have to develop conceptual mappings from L2 words. Verifying this view, Jiang (2002) affirmed that to comprehend English words including L1 polysemous equivalences such as the Chinese word *wenti* with two English equivalences of *problem* and *question*, Chinese learners of English have to develop direct conceptual mappings from these forms to the conceptual level and to suppress relying on L1 translation equivalence. In addition, Tylor and Evans (2003) presented separate meaning theory of polysemy senses based on which polysemous senses are interpreted separately. According to this theory, polysemous senses are unpredictable, and they must be explicitly shown in the lexicon because they cannot be explained by a linguistic rule. Moreover, different senses have their own lexical entries and cannot predict the meaning of each other. Semantic relatedness is known to be facilitator in meaning processing. Thus, under this theory, different senses of a polysemous word do not interfere in each other's activation.

Given the above conflicting views regarding the effect of multiple senses of L1 polysemous senses in L2 processing, it makes good sense to investigate the existence of such semantic phenomenon in the Persian language and see how consistent the results are with the previous ones. It is hoped that conducting this research and its following results will pave the way for the related lines of inquiry in future. At the same time, the researchers hope that the findings will increase our understanding and awareness, as English teachers, of the nature of human language in general in order to help L2 learners of English to experience a much easier and smoother learning task. The study, therefore, sought answers to the following questions:

1. How does L2 proficiency relate to meaning interpretation of polysemous L1 words?
2. How does the type of polysemous L1 words (i.e., nouns vs. verbs) influence the meaning interpretation of L2 words?
3. How does the degree of relatedness of L1 polysemous nouns (i.e., high vs. moderate) influence the meaning interpretation of L2 words?
4. How does the degree of relatedness of L1 polysemous verbs (i.e., high vs. moderate) influence the meaning interpretation of L2 words?

III. METHODOLOGY

A. Participants

The main participants were L2 students who had been learning English for more than 6 years in English institutes. A total number of 82 advanced learners of English including 41 females (mean age 28) and 41 males (mean age 30) were randomly selected from four language institutes, the reason of which was to have a sample which was representative of population. Moreover, 72 Persian native speakers from Persian literature faculties were randomly selected. They were 36 females and 36 males (both above 25). In addition, a group of 23 native speakers of English (11 male and 12 female) were asked to answer the same questionnaire given to the main participants. Their answers were, then, examined in order to be compared and contrasted with those of the main Persian participants.

B. Materials

Two questionnaires and a test were used in this study. The first questionnaire was a Persian one and was designed for the Persian participants majoring in Persian Literature to determine the relatedness of the senses of the Persian polysemous words underlined in each statement of the questionnaire. The participants answered the questionnaire according to the scale of 0 to 4: 0 (*the same meaning*), 1 (*very similar*), 3 (*fairly similar*), and 4 (*very different*). The second questionnaire was an English one, including forms A and B with 80 English statements. In form A, consisting of the first 40 statements, each statement included a verb considered as a polysemous one in Persian. And, each statement of form B, the second 40 statements, included a noun which was a polysemous one in Persian. In each form, half of the polysemous words' senses (i.e., nouns and verbs) were highly related to each other, and half of them were moderately related to one another (see sample items in the Appendix). And, the test used in this study was the Oxford Placement Test (OPT) to determine the homogeneity of the main participants.

C. Procedure

At the first stage of the experiment, a questionnaire including Persian statements, each of which consisting of a pair of Persian polysemous nouns and a pair of Persian polysemous verbs, was given to the group of participants majoring in Persian Literature. They were asked to choose how related the senses of each pair of the Persian polysemous words were. Based on the result of this questionnaire, the English questionnaire which was the translation of each of the Persian statement to English was administered to the main participants.

At the second stage of the experiment, first, the main participants were tested for their homogeneity. The results showed the more or less homogeneity of the participants. What was focused was their proficiency and they were categorized into two groups of highly proficient and low proficient English learners. Also, they were given the English questionnaire. What they were asked to do was to read the statements and choose whether or not they made sense to them. All the statements included the sense of polysemous word which did not fit in the texts. And, the participants were supposed to decide whether the statements were semantically *acceptable* or *unacceptable*. Moreover, to make sure that the multiple senses of the polysemous words made interference and it was a normal and general phenomenon, the group of native speakers of English was asked to answer the same English questionnaire. The results were compared with those of the main participants.

IV. DATA ANALYSIS

In order to test the relationship between the participants' proficiency level and their interpretation of the polysemous words, a *t* test was calculated for each group of the highly proficient and the low proficient participants. The scores obtained from the two groups were compared and subjected to statistical operations. Table 1 indicates that there was a difference between the means of the two groups ($t = 8.82$, $df = 42.36$, $\alpha = 0.05$, $p = 0.00$). The result of the *t* test shows that the *p* value is less than α ; therefore, there was a difference between the means of the two groups and the first null hypothesis is rejected:

- Highly proficient L2 learners are not different from low-proficient L2 learners in terms of interpreting polysemous words.

TABLE 1.
T TEST ON THE MEAN SCORES OF POLYSEMY INTERPRETATION AND PROFICIENCY LEVEL

Variable	N	Mean	Std.	t	sig.
Polysemy Interpretation (low group)	33	20.84	8.42	8.82	0.00
Polysemy Interpretation (high group)	29	49.00	15.25		

* $p < .05$

In order to test the relationship between the word-type (i.e., noun vs. verb) and the polysemy interpretation, a *t* test was calculated; the scores obtained from form A (polysemous nouns) of the English questionnaire were compared with the scores of form B (polysemous verbs). The results from form A and form B of the questionnaire show that there was a significant difference between the interpretation of the polysemous verbs and the polysemous nouns by the nonnative participants ($t = -2.42$, $df = 67$, $\alpha = 0.05$, $p = 0.01$). Because *p* value is less than α , there was a significant difference between the means of form A and form B (see Table 2); therefore, the second null hypothesis is also rejected:

- There is no difference between the effect of L1 polysemous nouns and L1 polysemous verbs on the meaning interpretation of L2 words

TABLE 2.
T TEST ON THE MEAN SCORES OF POLYSEMY INTERPRETATION AND PROFICIENCY WORD-TYPE

Variable	N	Mean	Std.	t	sig.
Polysemy Interpretation of Verbs(form A)	62	7.70	4.25	-2.42	.001
Polysemy Interpretation of Nouns (form B)	62	8.60	5.03		

* $p < .05$

To explore the differences between the degree of relatedness of the polysemous words and the interpretation of polysemy, two *t* tests were calculated in order to see if there were any. The scores obtained from the four groups of the polysemous words including highly related polysemous verbs, moderately related polysemous verbs, highly-related polysemous nouns, and moderately related polysemous nouns were statistically analyzed and compared with one another. As shown in Table 3, there was no difference between the interpretation of the two groups of the highly related polysemous nouns and the moderately related polysemous nouns by the nonnative speakers ($t = -0.84$, $df = 68$, $\alpha = 0.05$, $p = 0.401$). Because *p* value is more than α , there was not any significant difference between the two groups; therefore, the third null hypothesis is not rejected:

- The degree of the relatedness of L1 polysemous nouns does not have any effect on the meaning interpretation of L2 words.

TABLE 3.

T TEST ON THE MEAN SCORES OF POLYSEMY INTERPRETATION AND THE DEGREE OF RELATEDNESS OF THE NOUNS

Variable	N	Mean	Std.	t	sig.
Polysemy Interpretation (highly related nouns)	69	8.49	5.09	-0.84	0.40
Polysemy Interpretation (moderately related nouns)	69	8.49	6.50		

* $p < .05$

In contrast, as Table 4 indicates, the mean scores of the two groups of the highly related and the moderately related polysemous verbs were of significant difference ($t = -3.87$, $df = 68$, $\alpha = 0.05$, $p = 0.00$). Because p value is less than 0.05, there was a significant difference between the two groups of the highly and the moderately related polysemous verbs. Hence, the forth null hypothesis below is rejected:

- The degree of relatedness of L1 polysemous verbs does not have any effect on the meaning interpretation of L2 words.

TABLE 4.

T TEST ON THE MEAN SCORES OF POLYSEMY INTERPRETATION AND THE DEGREE OF RELATEDNESS OF THE VERBS

Variable	N	Mean	Std.	t	sig.
Polysemy Interpretation (highly related verbs)	69	7.88	4.58	-3.87	0.00
Polysemy Interpretation (moderately related verbs)	69	9.04	4.73		

* $p < .05$

V. DISCUSSION AND CONCLUSION

This research program investigated the effect the multiple senses of Persian polysemous words have on English interpretation using Persian speakers learning English in Iran. Two types of Persian polysemous words—nouns and verbs— along with two types of degree of relatedness—highly related and moderately related—were explored by two experimental groups of highly proficient and low proficient. The first null hypothesis was that the highly proficient L2 learners were not different from the low proficient L2 learners in terms of interpreting L1 polysemous words. The performance of the high and the low groups was statistically different, hence rejecting the first null hypothesis. Furthermore, the effect of word-type (i.e., noun vs. verb) turned out to be achieved on the L1 polysemy interpretation. Therefore, the second hypothesis of no difference was rejected. Finally, regarding the last two questions of the study, the degree of relatedness had no effect on interpreting the Persian polysemous nouns, hence failing to reject the third null hypothesis. However, it had a significant effect on interpreting the Persian polysemous verbs, so rejecting the fourth null hypothesis.

As mentioned before, reading interpretation and language proficiency are interrelated (Kang, 2005). The more proficient a reader is, the better interpreter he or she will be. This idea was rejected by the present study in which the low proficient learners outdid the highly proficient ones. The reason for such a contradiction is that the multiple senses knowledge of polysemous words appeared to be an interfering feature for reading the English sentences consisting the Persian polysemous words because the coactivation of Persian concepts and the effective role of lexical-level translation connection in activating Persian concepts from English words made the interfering feature double.

Moreover, the findings of the present study showed that the interpretation of the Persian polysemous verbs was more interfering for the participants than the Persian polysemous nouns. This finding is obviously in agreement with the one by Kaufman (2002) who found that verbs are generally more polysemous than nouns.

In addition, Guttler and William (2008) explained that because highly related senses of a polysemous verb associate with almost the same action in an L2 learner's mind, the two close actions bump into the L2 learner's mind simultaneously and make interference in interpreting the accurate sense. But it is not true of the interpretation of the moderately related senses of a polysemous verb whose actions are almost different from one another. The present study confirmed these findings. When a Persian learner of English read *He picked some flowers from the garden*, he or she translated it to *او چند شاخه گل از باغ چید* /u: tʃændʒɑ:kħæ æz bɑ:q tʃi:d/. The Persian polysemous verb *چیدن* /tʃi:dæn/ associated with the other sense which was *cut*. The coactivation of the highly related senses of *pick* and *cut* made semantic interference.

As the final note, the present researchers, considering the findings of the study, should remind L2 teachers, particularly those teaching English, to be aware of the value of correct interpretation of ambiguous polysemous words, especially L1 polysemous ones. They might use authentic written materials including L2 words whose translation into L1 has got two senses and might draw up a list of misinterpretation of L2 words considered as L1 polysemous ones and improve L2 learners' areas of weaknesses.

APPENDIX SAMPLE ITEMS

Instruction: Please read the statements carefully to see which one makes sense meaning fully and which one does not.

Please tick (✓) your answer.

- He found it hard to get his language round these polish names.

- | | |
|--|---------------------------------------|
| Acceptable <input type="checkbox"/> | Unacceptable <input type="checkbox"/> |
| • Barriers can be formed by human agency, or by the intervention of wild-life such as beavers. | |
| Acceptable <input type="checkbox"/> | Unacceptable <input type="checkbox"/> |
| • I called the doorbell, but no one answered. | |
| Acceptable <input type="checkbox"/> | Unacceptable <input type="checkbox"/> |
| • The little boy got on the old horse. | |
| Acceptable <input type="checkbox"/> | Unacceptable <input type="checkbox"/> |

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