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**CROSS-LINGUISTIC SEMANTIC PRIMING OF TRANSLATION
EQUIVALENTS IN SEMANTIC DECISION OF THAI-LAO-ENGLISH
OBJECT AND IMAGINARY WORDS**

Abstract:

Eight semantic priming of translation equivalents in semantic decision of physical and imaginary words examined the influences of semantic priming effect obtained from translation equivalents towards the lexical access of object and imaginary words. Also, the degrees of translation equivalent differences were also represented by using primes and targets, which are from the same or different language families as Thai and English (Experiment 1 -4) or Thai and Lao (Experiment 5-8). With this aim, lexical decision experiments using semantic related in the experimental condition or unrelated in the control condition between primes and targets were conducted in both Thai-English and Thai-Lao prime-target languages. In each experiment, the words meaning object and imaginary were tested. The results revealed the effect of semantic priming effect obtained from translation equivalents, the effect of object and imaginary, and the effect of language of prime and target. The results were implied to the issues of second language acquisition, second language development, and second language lexicon.

Keywords:

semantic priming, translation equivalents, semantic decision

JEL Classification: C99

Introduction

Presently, it is realized that the present world is multilingual and is becoming globalized. Language becomes an important communicative tool in human activities such as giving information, learning and teaching knowledge, or constructing social communication. In addition, most of people currently learn second or foreign language because knowing more than one language is useful for career path and progress, gaining awareness of other cultures and increasing understanding and knowledge towards language. Thus, it is common situation to learn at least 2 languages.

This research is interested to investigate the semantic effect obtained from translation equivalents in lexical access comparing between the effects obtained from translation equivalents found in two languages from the same language family and the effects obtained from translation equivalents found in two languages from the different language families.

According to the increase of studying translation equivalence (Kenny, 1998), American linguist Roman Jakobson (1959-2000: 114), who is one of the pioneers who proposed the concept of translation equivalence in meaning. Jakobson (1959) proposed that there is no exact translation equivalence between words of two languages. Jakobson proposed the example of the English word “cheese”, which does not exactly have the translation equivalent of the Russian term. This is because Russian language does not have the word meaning “cottage cheese”.

The translation equivalence continues to be an important point of study and discussion. Many theorists attempt to define, to characterize, and to explain the concept of translation equivalence between languages and getting translation equivalent words between languages (Fawcett, 1997) such as Catford (1965), Nida and Taber (1969), Newmark (1988), Vinay and Darbelnet (1958/1989), Baker (1992), and House (2002), the translation equivalence notion is defined, and explained depending on different views of each translation scholars. For the present study, the concept of interlingual (between two languages) translation equivalent by Jakobson (1959:232) was applied in this research.

Jakobson (1959:232) categorized three kinds of translation as intralingual (within one language), interlingual (between two languages), and intersemiotic (between sign systems). Regarding to the notion of interlingual translation, Jakobson claimed that the synonyms in the other language was used in order to get the ST message across. According to his explanation, 'translation involves two equivalent messages in two different codes' (ibid.233). Jakobson proposed that each languages differs from one another in different degrees, this may cause the problem of finding a translation equivalents between two languages. A number of examples revealed that when there is no a literal equivalent for a particular source language and the translator must select the most appropriated word to transmit the meaning in the target language.

According to Jakobson (1959), in the present investigation, it is hypothesized that those different degrees of translation equivalents among languages will influence the priming effect towards lexical access. Thus, this hypothesis was examined by comparing lexical access between two source and target language pairs. The first source and target language pair were Thai and English, which are from different language families. The second source and target language pair were Thai and Lao, which are from the same language family. The translation equivalents were investigated and prepared from the study of Thai-ASEAN Neighboring Language – English Common Base Concepts WordNet of 1st Order Entity by (Sudasna Na Ayudhya, 2015). The effect was investigated by using semantic priming tasks and lexical decision responses.

According to Horner and Henson (2008), a priming task consists of a previously presented stimulus or the “prime”, which facilitates or inhibits a response towards the next presented stimulus or the “target”. Priming tasks are used to examine linguistic performance which can be predicated according to a particular type of relation between a prime and a target such as orthographic, phonetic, or semantic relations (Cattell 1888/1947; Harley, 2005). A priming effect occurs from facilitation of word recognition or lexical access by prior exposure to a prime, which is related or unrelated in linguistic characteristics such as orthographic, phonetic, or meaning (Stremme and Johansson, 2015). A priming effect can influence the retrieval of words in two different ways. If a prime makes target recognition faster, it is called *facilitation*. Whereas, if a prime makes a target recognition slower, it is called *inhibition*. Whether the priming effect will be facilitation or inhibition, it depends on the relation between primes and targets. (Keatley, Spinks, and De Gelder (1994).

One of the most common types of priming is *semantic priming* (Chen and Ng, 1989). Semantic priming is produced by the relation of meaning between prime and target. This kind of priming was begun by Meyer and Schvaneveldt (1971)'s research. According to Meyer and Schvaneveldt (1971)'s research, subjects were asked to make a decision whether two simultaneously presented letter strings were words or not words such as a word pair of “table-grass” is a word or not a word. In this experiment, half of the word pairs have a semantic relation such as a word pair of “table-chair” and another half was not such as a word pair of “bread-grass”. The results revealed that participants provided faster responses when word pairs were semantically related compared to when word pairs were not related. This effect is called “semantic priming” (McNamara, 2005).

Priming effects including semantic priming effects can be measured by different methods. Using a semantic decision task is one of the important and usual methods to measure priming effects. In a semantic decision task, a subject is asked to make a semantic judgment of a target word. In a semantic decision task, subjects are asked to indicate the semantic category of the target (Bueno, & French-Mestre, 2008). It is hypothesized that subjects will respond to the tasks faster if the target is preceded by another prime related in meaning.

The aim of the present work was to investigate the influences of semantic priming effect obtained from translation equivalents towards the lexical access of object and imaginary words. Also, the degrees of translation equivalent differences were also represented by using primes and targets, which are from the same or different language families as Thai and English (Experiment 1 -4) or Thai and Lao (Experiment 5-8). The experimental words were selected from the study of Thai-ASEAN Neighboring Language – English Common Base Concepts WordNet of 1st Order Entity by Sudasna Na Ayudhya (2015) and the control procedures which are usual in semantic priming experiments was adopted.

Experiment 1 and 4

Method

Subjects. Fifty 1st year Thai undergraduate students, who studied English as foreign language (42 women, 8 men) from Bansomdejchaopraya Rajabhat University (Bangkok, Thailand), with ages ranging from 18 to 20 were selected as the subjects. They received a course credit for their participation.

Materials and design

The experimental condition consisted of two experiments: Experiment 1 and 2. In Experiment 1, 80 Thai and English translation equivalent pairs referring to objects were selected from the study of Thai-ASEAN Neighboring Language – English Common Base Concepts WordNet of 1st Order Entity by Sudasna Na Ayudhya (2015). These 80 Thai and English translation equivalent pairs were divided as two sets. The first set was composed by 40 Thai words used as targets and English translation equivalence used as primes. The second set was composed by 40 English words used as targets and Thai translation equivalence used as primes.

In Experiment 2, 80 Thai and English translation equivalent pairs referring to imaginary were selected from the study of Sudasna Na Ayudhya (2015). These 80 Thai and English translation equivalent pairs were divided as two sets. The first set was composed by 40 Thai words used as targets and English translation equivalence used as primes. The second set was composed by 40 English words used as targets and Thai translation equivalence used as primes.

The control condition consisted of two experiments: Experiment 3 and 4. In Experiment 3, 40 Thai words used as targets in Experiment 1 and 40 Thai words used as targets in Experiment 2 were used as targets and English unrelated words used as primes. In Experiment 4, 40 English words used as targets in Experiment 1 and 40 Thai words used as targets in Experiment 2 were used as targets and Thai unrelated words used as primes.

The research design of Experiments 1-4 was presented in Table 1 and the examples of experimental pairs were presented in Table 2

Table 1: Research design of Experiments 1-4

	Prime: English (L2)¹ Target: Thai (L1)²		Prime: Thai (L1) Target: English (L2)	
	Control (Unrelated)	Experimental (Translation Equivalence)	Control (Unrelated)	Experimental (Translation Equivalence)
Objects	Experiment 3	Experiment 1/Set 1	Experiment 4	Experiment 1/Set 2
Imaginary	Experiment 3	Experiment 2/Set 1	Experiment 4	Experiment 2/Set 1

Table 2: Examples of experimental pairs

	Prime: English (L2) Target: Thai (L1)		Prime: Thai (L1) Target: English (L2)	
	Control (Unrelated)	Experimental (Translation Equivalence)	Control (Unrelated)	Experimental (Translation Equivalence)
Objects	Shoe-รถ	Car-รถ	ดิน-house	บ้าน-house
Imaginary	Hell-ฝัน	Dream-ฝัน	ความคิด-Truth	ความจริง-Truth

Words used as primes and targets in both control and experimental condition were matched for word frequency and length.

By crossing the two variables above described, forty groups of four experimental pairs were obtained as presented in Table 2 for examples. Four different versions of experiments were constructed. So that there were 160 primes- target pairs appeared under the four priming conditions across participants, but any participant did not see any prime or target more than once.

A practice block of eight pairs was constructed. This block included examples of each type of prime-target pair in the same proportion as the experimental set.

¹ L2 is the abbreviation of second language.

² L1 is the abbreviation of first language.

Procedure and apparatus.

The subjects were tested by the experiments individually in separate computer desktop. The four experimental lists were assigned to individual subjects randomly. The subjects were given written instructions about the task before they performed the task. Each experimental trial consisted of a black dot fixation point appeared in the center of the computer screen for 500 ms. Then it was replaced by the prime presented for 150 ms. and the prime was immediately substituted by the target displayed for 1000 ms.

The subjects were asked to indicate whether the target meaning was object or imaginary, by pressing right or left shift buttons. Half of the subjects were asked to press right shift button for the “objects” and left shift button for the “imaginary”. The other half of the subjects were asked to press right shift button for the “imaginary” and left shift button for the “object” The order of prime-target pair presentation was randomized for each individual.

The stimulus items were displayed and the reaction times and error percentages were recorded by the DMDX package developed by Forster and Forster (2003).

Results

Incorrect responses were excluded from the analyses. Reaction times (RTs, in milliseconds) were more than two standard deviations above and below the individual subject’s mean in all conditions were set up as the appropriate cutoff values to moderate the influence of outliers. As a result, 2.7% of the data were excluded.

Two way ANOVAS were carried out to analyze RTs and error data both by subjects and by items. The analysis of subjects’ means of reaction times (RT) and the percentage of errors are presented in Table 3.

Table 3: Results (mean and standard error of the mean in parentheses)

	Prime: English (L2) Target: Thai (L1)				Prime: Thai (L1) Target: English (L2)			
	Control (Unrelated)		Experimental (Translation Equivalence)		Control (Unrelated)		Experimental (Translation Equivalence)	
	RT	error	RT	error	RT	error	RT	error
Objects	598 (11.2)	12.1 (0.9)	571 (10.1)	8.4 (0.7)	581 (10.4)	10.6 (0.9)	569 (10.0)	7.9 (0.7)
Imaginary	604 (12.4)	14.2 (0.9)	584 (11.3)	12.6 (0.8)	592 (11.1)	11.3 (0.9)	573 (10.2)	8.7 (0.8)

A main effect of translation equivalent was revealed by the analysis of RTs that was significant both by participants, $F(1,50)=6.71$, $p<.05$, $\eta^2p =0.261$, and by items, $F(1,79)=7.46$, $p<.05$, $\eta^2p =0.285$.

The effect of object and imaginary words was revealed by the analysis of RTs that was significant both by participants, $F(1,50)=9.11$, $p<.05$, $\eta^2p =0.355$, and by items, $F(1,79)=10.28$, $p<.05$, $\eta^2p =0.371$.

The effect of language of prime and target (L2 as Prime-L1 as Target; L1 as Prime-L2 as Target) was revealed by the analysis of RTs that was significant both by

participants, $F(1,50)=11.08$, $p<.05$, $\eta^2p =0.736$, and by items, $F(1,79)=14.51$, $p<.05$, $\eta^2p =0.844$.

The results of the present experiment illustrated that there was a semantic priming effect caused from translation equivalent prime. That is subjects responded faster to primes and targets, which were translation equivalent related than to primes and targets, which were unrelated. In addition, there is the significant effect caused from whether L1 or L2 is used as prime or target language.

Experiment 5 and 8

Methodology

Subjects. Fifty 1st year Thai undergraduate students, who studied Vietnamese as foreign language (37 women, 13 men) from Bansomdejchaopraya Rajabhat University (Bangkok, Thailand), with ages ranging from 18 to 20 were selected as the subjects. They received a course credit for their participation.

Materials and design.

The experimental condition consisted of two experiments: Experiment 5 and 6. The Experiment 5, 80 Thai and Lao translation equivalent pairs referring to objects were selected from the study of Sudasna Na Ayudhya (2015). The experimental conditions were the same as in Experiment 1.

The Experiment 6, 80 Thai and Lao translation equivalent pairs referring to imaginary were selected from the study of Sudasna Na Ayudhya (2015). The experimental conditions were the same as in Experiment 2.

The control condition consisted of two experiments: Experiment 7 and 8 conditions were the same as in Experiment 3 and 4.

The research design of Experiments 5-8 was presented in Table 4 and the examples of experimental pairs were presented in Table 5.

Table 4: Research design of Experiments 5-8

	Prime: Lao (L2) Target: Thai (L1)		Prime: Thai (L1) Target: Lao (L2)	
	Control (Unrelated)	Experimental (Translation Equivalence)	Control (Unrelated)	Experimental (Translation Equivalence)
Objects	Experiment 3	Experiment 1/Set 1	Experiment 4	Experiment 1/Set 2
Imaginary	Experiment 3	Experiment 2/Set 1	Experiment 4	Experiment 2/Set 1

Table 5: Examples of experimental pairs

	Prime: Lao (L2) Target: Thai (L1)		Prime: Thai (L1) Target: Lao (L2)	
	Control (Unrelated)	Experimental (Translation Equivalence)	Control (Unrelated)	Experimental (Translation Equivalence)
Objects	ບິດາ-ດິນ	ດິນ-ດິນ	ควาย-ຫມາ	ຫມາ-ຫມາ
Imaginary	ສະຫວັນ - ຄວາມຮັກ	ຮັກ -ຄວາມຮັກ	ນາກ-ຄວາມຮູ້	ຄວາມຮູ້-ຄວາມຮູ້

Procedure and apparatus

The procedure was exactly the same as in Experiment 1 - 4.

Results

Incorrect responses were excluded from the analyses. Reaction times (RTs) were more than two standard deviations above and below the individual subject's mean in all conditions were set up as the appropriate cutoff values to moderate the influence of outliers. As a result, 0.9% of the data were excluded.

One way ANOVAS were carried out to analyze RTs and error data both by subjects and by items. The analysis of subjects' means of reaction times and the percentage of errors are presented in Table 3.

Table 6: Results (mean and standard error of the mean in parentheses)

	Prime: Lao (L2) Target: Thai (L1)				Prime: Thai (L1) Target: Lao (L2)			
	Control (Unrelated)		Experimental (Translation Equivalence)		Control (Unrelated)		Experimental (Translation Equivalence)	
	RT	error	RT	error	RT	error	RT	error
Objects	581 (10.2)	6.4 (0.7)	538(6.2)	1.4 (0.4)	579 (10.1)	6.8 (0.7)	533 (6.0)	0.9 (0.3)
Imaginary	586 (11.3)	7.6 (0.8)	547 (7.6)	3.5 (0.5)	584 (10.8)	7.3 (0.7)	541 (7.2)	3.0 (0.5)

A main effect of translation equivalent was revealed by the analysis of RTs that was significant both by participants, $F(1,50)=12.03$, $p<.05$, $\eta^2p =0.537$, and by items, $F(1,79)=7.46$, $p<.05$, $\eta^2p =0.644$.

The effect of object and imaginary words was revealed by the analysis of RTs that was significant both by participants, $F(1,50)=9.11$, $p<.05$, $\eta^2p =0.271$, and by items, $F(1,79)=9.43$, $p<.05$, $\eta^2p =0.298$.

The effect of language of prime and target (L2 as Prime-L1 as Target; L1 as Prime-L2 as Target) was revealed by the analysis of RTs that was not significant both by participants, $F(1,50)=2.11$, $p=.34$ and by items, $F(1,79)=2.72$, $p=.44$.

The results of the present experiment illustrated that there was a semantic priming effect. That is subjects responded faster to primes and targets, which were translation equivalent related than to primes and targets, which were unrelated. Whereas, there is no significance caused from whether L1 or L2 is used as prime or target language. This implied that there is no significant difference between the conditions whether Thai or Lao is used as prime or target language.

Conclusion

In the present study, the influence of translation equivalents on semantic priming effect was test in the lexical decision of object and imaginary words. In addition, this influence was investigated in order to consider whether the degrees of differences between the language used as prime and target would obtain the different degree of semantic priming effect. In this study, the degrees of differences between the language used as prime and target were represented by selecting language used as prime and target from the same or different language families. That is, Thai and English are from different language families and are used as primes and targets in Experiment 1 -4 and Thai and Lao are from same language family and are used as

primes and targets in (Experiment 5-8). The present study, the recognition was divided between object and imaginary word recognition.

The results of the study revealed that there is the semantic priming effect obtained from translation equivalents in both object and imaginary word retrieval. However, the obtained semantic priming effect obtained from two types of prime and target language differences: prime and target languages are from the same language family and are from the different language families. The result presented in the condition of prime and target languages from the same language family, there is no significant difference whether prime and target languages were L1 or L2. Whereas, the condition of prime and target languages from the different language families showed significant difference when prime and target languages were L1 or L2. This can be implied that there is no significant difference when Thai and Lao were used as prime and target and vice versa. This can be explained by the relation between Thai and Lao languages, which belong to the Tai language family and are closely related. Especially, it was investigated from the previous linguistic studies (Diller, Edmondson, and Luo, 2004; Mollerup, 2001) that most of the words in Thai and Lao are similar in meaning; eventually some words have the same meaning but are used in different contexts in the two languages such as the word for "house" in Lao also meaning "house" in Thai but these two words are used differently in formality level between two languages. The results of the present study can be further implied to the issues of second language acquisition, second language development, and second language lexicon.

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