

Retrieval of Inter-Lingual Homophones among Tamil Native Bilinguals

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Abstract

Need and Aim of the Study

Inter-lingual homophones are words that have similar pronunciation but different meanings across languages. The processing of this may vary with languages. Hence, there was a need to study the retrieval of semantics of the perceived inter-lingual homophones. The present study aims at investigating the inter-lingual homophone retrieval abilities in normal bilinguals.

Methods and Material

Data were collected from a total of 60 participants (9-45 yrs) who are bilinguals (native speakers of Tamil and have acquired English as their second language). The participants were sub grouped into: Group I= 9-18 yrs; II= 19-28 yrs; and III= 29-45 yrs. Twenty paired words which consisted of inter-lingual homophones were presented. The participants were asked to listen carefully to the pairs of words which were in two different languages that they knew and were asked to write the meaning of each word.

Statistical Analysis Used

Repeated measures ANOVA, Bonferroni pairwise comparison and Paired t-tests were carried out using SPSS software, version 17.0.

Results

Irrespective of the medium of instruction taken in school, native language (L1) was more dominant for retrieval of the meanings of the words for group II and III. Hence results reveal that younger subjects of group I exhibit a shared lexicon and Subjects of group II and group III show a selective lexical-access.

Conclusions

The study has its implications for the assessment, diagnosis and planning of intervention programs. For subjects belonging to group I, either L1 or L2 can be considered as a medium of instruction during remediation, but care should be taken about the choice of language used while planning out intervention for subjects of the other two groups.

Introduction

Inter-lingual homophones refer to words that sound the same or very similar but do not have the same meaning in both the languages. The retrieval has been debated through different models by various authors, but still remains to be controversial. Content plays a role in accessing words in one language or another, and bilinguals have more difficulty in processing mixed sequences of words than sentences presented only in a single language. This finding reflects that the opening word of the sentence 'switches on' the lexicon in either of the bilingual's languages, and that all lexical searching takes place initially in that particular lexicon (Grainger, 1994). The less proficient learners exhibit bilingualism of the sub-ordinative type, whereas the highly proficient and near-native learners exhibit bilingualism of the compound type, concluding that an individual lexical organization moves from the former category to the latter as proficiency increases (Woutersen, 1996 & Woutersen, 1997).

It has been suggested that bilingual's storage is shared, but organized and retrieved primarily through his first language (L1) (Curtis, 1978). A lexicon-specific access has been reported to exist (i.e., Access to one language at a time) in a bilingual's mental lexicon, in contrast to some authors who have suggested a non-selective access (i.e., access to both the languages simultaneously) (Gerard & Scarborough, 1989). Lexical access can be language

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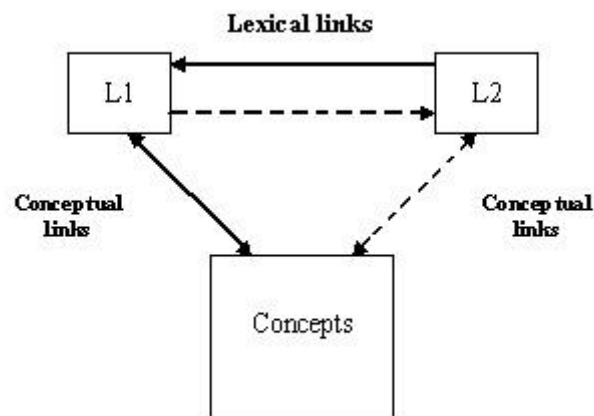
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specific and is achieved by considering only the activation level of the lexical modes (Costa & Carmazza, 1999). Bilinguals have also been reported to perform superior on cognitive tasks than when compared to monolinguals (Groot, 1992).

The revised hierarchical model (RHM) as shown in Figure 1 was proposed to capture the implications of early reliance on L1 for the form of word-to-concept connections (Kroll & Stewart, 1994). The model merges the word association and concept mediation alternatives into a single model in which the strength of the connections between words in L1 and L2 and concepts is proposed to take on different values.

Figure: 1 The revised hierarchical model (RHM). (Kroll & Stewart, 1994).



The model assumes that connections between words and concepts are stronger for L1 than for L2. More critically, only translation from L1 to L2 was influenced by the presence of semantic information. The absence of semantic effects in the L2 to L1 direction of translation suggests that it was possible for bilinguals to translate directly at a lexical level. According to the model, the translation equivalents are connected both through concept-mediation and through direct associative links. However, the strengths of these links differ as a function of language.

Studies have reported that when a person has a reasonable command of two languages, lexical items are subconsciously activated in both the languages, those in the

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language not required being suppressed (Green, 2003). The usage of only a single language at a time by a bilingual indicates the separation of the respective lexicons. The studies of language loss due to brain damage in bilingual/multilingual also support the representation of different lexicons. In such instances of language loss, often all languages known to the individuals are effaced and are then recovered one by one (the L1 not necessarily appearing first). Semantic–lexical task would show gender differences with females performing better than males (Frost et al., 1999).

In monolinguals, phonology plays a considerable role in visual word recognition (Frost, 1998). The meaning of words is represented in terms of distributed semantic features. The cross-linguistic semantic similarity present in cognate items will then lead to facilitation relative to controls because both readings of a cognate to a large extent activate the same semantic features (Groot, 1992).

Need and Aim of the Study

Tamil is a Dravidian language spoken in the southern part of India, in the State of Tamil Nadu. English is an alphabetical language and is spoken and learnt as a second language by the Tamil natives. In Tamil Nadu, the medium of education could also be considered as a variation as this contributes majorly to the amount of exposure to the second language (L2). Individuals educated in Tamil medium schools learn their curriculum in Tamil and have English as one of the subjects, whereas individuals educated in English medium schools learn all their subjects in English except the Indian language subject. Hence, it is clear that individuals educated in English medium schools have greater exposure to English language than when compared the individuals educated in Tamil medium schools.

Hence, there is a need to understand whether bilinguals process language sequentially or simultaneously and to understand the language dominance and its pattern in bilinguals. Inter-lingual homophones are words having similar sounds common to both the languages. Hence, to fulfill the needs of the study, the task of semantic retrieval of inter-lingual homophones in both first (L1) and second (L2) language were used using the following methodology.

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Method

A total of 60 participants (30 males and 30 females) participated in the study. The education level of all the participants ranged from 5th grade to graduate level. The participants of the present study were native speakers of Tamil. 30 participants had Tamil as their medium of instruction. 30 participants had English as their medium of instruction. Tamil (30 participants) and English (30 participants). Participants were divided into three groups based on their age. They are:

Group I: Participants in the age range of 9 to 18 years.

Group II: Participants in the age range of 19 to 28 years.

Group III: Participants in the age range of 29 to 45 years.

All the Participants have undergone hearing screening and the participants who had their hearing sensitivity within normal limits were selected for the study. LEAP-Q was administered to all the participants. The participants who had a minimum of vocational level proficiency were selected for the study. The following were the selection criteria used to choose subjects:

Group I: The participants had their native language as Tamil and L2 as English with a minimum exposure for 4 years and a maximum of 13 years.

Group II: The participants had their native language as Tamil and L2 as English with a minimum exposure of 14 years and a maximum of 23 years.

Group III: The participants had their native language as Tamil and L2 as English with a minimum exposure of 25 years and a maximum of 40 years.

The participants were proficient and comfortable in using both the languages and those who used their native language (L1) for day-to-day communication and their second language (L2) for academic purposes were selected for the study.

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Test stimuli consisted of a total of 20 paired non-standardized words. Words belonging to both the languages (Tamil and English), having the same structure but different meanings (e.g.:/mai/ meant 'cosmetic used in the eye' in Tamil and 'mine' in English) were selected for the study. Commonly used words in Tamil and English which use homophones were chosen for the study. These words were judged to be familiar by three native speakers of Tamil. The pair of words was recorded by a native speaker of Tamil using a laptop. Recording was done as naturally as possible, with an interval of 1 sec. between the words of a pair and with an inter-stimulus interval of 1minute.

The final test material was presented to all the participants in an individual set-up in a quiet environment under headphones. Before the actual administration of the test, two words were presented as practice trial to all the participants. The participants were asked to listen carefully to the pairs of words which were in two different languages that they knew and were asked to write the meaning of each word in both the languages separately. The participants were scored with one mark for each correct response. So a total of 20 were given as a maximum score to all the participants in both L1 and L2.

Results

Statistical analysis was carried out using SPSS version 17.0. Mean and standard deviation of the results obtained are tabulated in Table 1 and Table 2. As shown in Table 1 and Table 2, descriptive statistics showed a gradual increase in the trend of scores obtained as age increased. The same trend was observed in Tamil and English words for subjects belonging to both Tamil and English medium. When compared to male subjects, female subjects exhibited an increase in scores for the task of semantic retrieval of inter-lingual homophones.

Table 1: The mean and SD of scores obtained for correct retrieval of meaning across age

Age in years	Medium	Tamil words		English words	
		Mean	SD	Mean	SD
9-18 yrs	Tamil	11.0	2.87	8.8	3.58
	English	14.4	3.92	12.2	3.79
19-28 yrs	Tamil	15.2	3.08	9.9	4.58
	English	16.2	2.82	13.0	3.09
29-40 yrs	Tamil	16.1	2.56	11.4	5.56
	English	17.6	1.43	14.2	2.04

Table 2: Mean and SD of scores obtained for correct retrieval of meaning across gender

Gender	Medium	Words	Mean	SD
Male	Tamil	Tamil	13.4	3.40
		English	9.4	4.91
	English	Tamil	15.6	4.17
		English	12.9	3.61
Female	Tamil	Tamil	14.1	4.63
		English	10.6	4.37
	English	Tamil	16.4	1.51
		English	14.0	2.80

Comparison of Age Group

Repeated measures ANOVA was carried out for the comparison of age groups separately for Tamil medium and English medium subjects. Results revealed that for Tamil medium subjects, a statistically significant difference was observed ($F= 16.044$, $df= 2$, $p<0.001$) among ages for Tamil words. As shown in Table 3, Bonferoni pairwise comparison revealed that groups I and II & group I and group III are significantly different from one another. Whereas group II and group III are not significantly different from one another. Hence the performance of group II

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and group III was better than group I in their L1 with not much of a difference between group II and III. However, no significant difference was observed across the three age groups for the retrieval of English words ($F= 1.489$, $df= 2$, $p>0.05$).

Table 3: Results of Bonferoni pairwise comparison of the three Groups

(I) Group	(J) Group	Mean Difference (I-J)
I	II	-4.200*
	III	-5.100*
II	I	4.200*
	III	-.900
III	I	5.100*
	II	.900

*Note: *p < 0.05*

Among English medium subjects, no significant difference was seen in Tamil words ($F= 3.161$, $df=2$, $p>0.05$) and English words ($F= 2.940$, $df=2$, $p>0.05$) across the three age groups. However, there is a difference in performance between all three groups. But the difference is not significant.

Comparison of L1 and L2

To study the significant difference between the two languages, paired t-test was carried out separately for all 3 age groups. It was observed that among the Tamil medium subjects, there is significant difference was observed for the retrieval between Tamil and English words by subjects belonging to group I, group II and group III. The performance was observed to be better in their native language (L1) as shown in Table 4.

Table 4: Results of paired t- test for the scores of 3 groups of Tamil medium subjects between Tamil and English words

Pairs	df	t
Tamil vs English word (Group I)	9	2.703*
Tamil vs English word (Group II)	9	4.077*
Tamil vs English word (Group III)	9	3.481*

Note: *p < 0.05

Among the English medium subjects, significant differences were observed for the retrieval between Tamil and English words by subjects belonging to group I, group II and group III. English medium subjects performed better in Tamil than in English. The performance was observed to be better in their native language (L1) as shown in Table 5.

Table 5: Results of paired t- test for the scores of 3 groups of English medium subjects between Tamil and English words

Pairs	df	t
Tamil vs English medium (Group I)	9	4.975*
Tamil vs English medium (Group II)	9	4.226*
Tamil vs English medium (Group III)	9	4.431*

Note: *p < 0.05

Comparison of Tamil and English Medium Subjects

To study the significant difference between Tamil and English medium subjects, independent t-test was carried out separately for all 3 age groups. As given in Table 6, it was observed that for L1 (Tamil), significant difference was observed between Tamil and English medium subjects of group I with no significant difference across the medium for group II and

group III. In group I the performance in L1 was better by English medium subjects when compared to Tamil medium subjects.

Table 6: Results of independent t- test for the scores of 3 groups for semantic retrieval of Tamil words between Tamil and English medium subjects

Pairs	df	t
Tamil vs English medium (Group I)	9	-2.245*
Tamil vs English medium (Group II)	9	-.667
Tamil vs English medium (Group III)	9	-1.354

*Note: *p < 0.05*

For L2 (English), no significant difference was observed in the retrieval between Tamil and English medium subjects belonging to group I, group II and group III. In group I the performance of English medium subjects in L2 was better when compared to Tamil medium subjects. Hence there was no influence of medium in the retrieval of English (L2) among the subjects of group II and group III.

Comparison of Gender

Figure 2: Scores for semantic retrieval in Tamil between male and female participants in Tamil and English medium

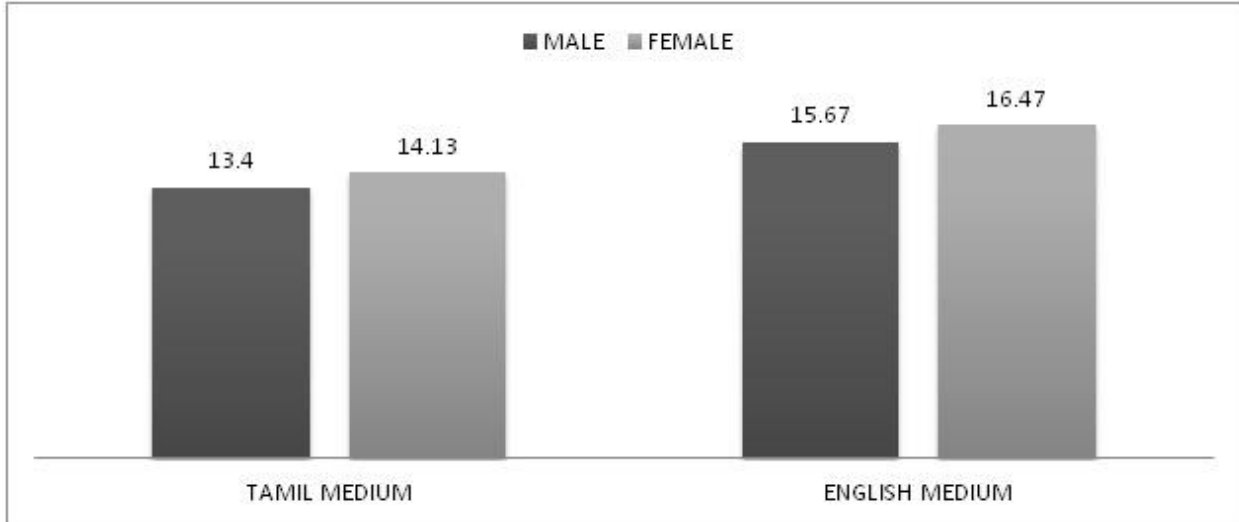
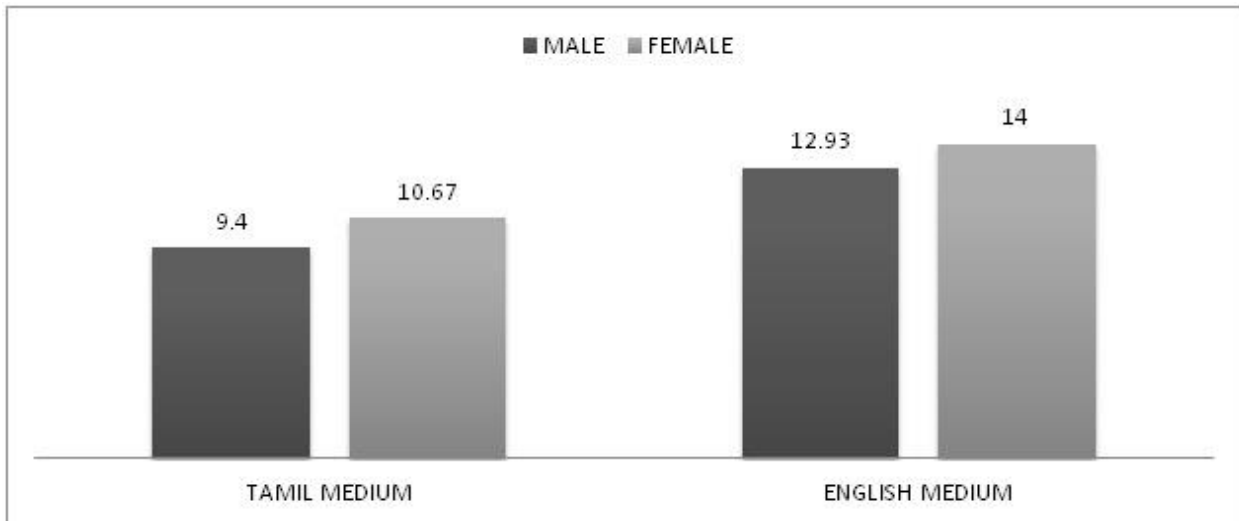


Figure 3: Scores for semantic retrieval in English between male and female participants in Tamil and English medium



To study the significant difference between subjects, paired t-test was carried out.

Males

To study the difference in performance across L1 and L2 within the same medium males, paired t-test was carried out. As shown in Table 7, male subjects belonging to Tamil medium and English medium had a significant difference in their performance between L1 and L2 (i.e., Tamil and English). Participants belonging to both the medium performed better in L1 than in L2.

Table 7: Results of paired t- test for the scores of males for semantic retrieval between Tamil and English words among Tamil and English medium subjects

Pair	df	t
Tamil – English word (Tamil medium)	14	3.416*
Tamil – English word (English medium)	14	5.160*

Note: *p < 0.05

To study the difference in performance across medium within the same language, independent t-test was carried out. No significant difference (p>0.05) was observed in the semantic retrieval between Tamil medium and English medium male subjects for L1 and L2.

Females

Among the female subjects belonging to Tamil medium, a significant difference was observed in the performance between L1 and L2 (i.e., Tamil and English). Among the female subjects of English medium, significant difference was observed between the performance in L1 and L2. For both Tamil and English medium subjects, performance was better in their L1 as given in Table 8.

Table 8: Results of paired t- test for the scores of females for semantic retrieval between Tamil and English words among Tamil and English medium subjects

Pair	df	t
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Tamil – English word (Tamil medium)	14	4.000**
Tamil – English word (English medium)	14	5.533**

*Note: *p < 0.01*

No significant difference ($p > 0.05$) was observed in the semantic retrieval between Tamil medium and English medium female subjects for L1. The significant difference [$t(14) = -2.615$, $p < 0.05$] was observed in the semantic retrieval between Tamil medium and English medium female subjects for L2. The performance was better in L2 by English medium female subjects.

Males and Females

Comparative results of male and female subjects revealed that in Tamil medium subjects the performance of males and females in Tamil ($p > 0.05$) and English ($p > 0.05$) had no significant difference. No significant difference was observed for Tamil ($p > 0.05$) and English ($p > 0.05$) between male and female subjects of English medium. Hence the gender difference was not observed for the semantic retrieval of inter lingual homophones.

Discussion

The above results show that the retrieval of the meanings of the inter-lingual homophones is better in the native language (L1) in all the 3 age groups. This was seen both for Tamil and English medium subjects. These results are in accordance with the studies done earlier stating that the bilinguals organize and retrieve words mainly in their dominant language (Curtis, 1978). This difference of better retrieval abilities in the native language, i.e., L1 can also be well explained with the help of the Revised Hierarchical Model (Kroll & Stewart, 1994). Based on this model it can be assumed that the word-concept association has stronger links when the word belongs to L1 than in L2. This is indicative of the fact that L1 has a stronger base compared to L2 while processing inter-lingual homophones. Hence, the same model can be employed to explain the processing of homophones when presented through the auditory modality.

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The use of L1 in all the age groups, more effectively is due to the greater exposure to the first language. L1 becomes stronger compared to L2 and in order to establish a connection between the word and meaning in L2, the bilingual needs to access the conceptual level through L1. The findings of the present study also suggest that one can perform better in first language (L1) without the interference of the other (L2) effectively, giving the picture of two separate lexicons for both the languages. They show a selective lexical-access (i.e., Only one language is stimulated at a time) and this is in accordance with the earlier findings (Gerard & Scarborough, 1989). This was against the study in which it was stated that when a person has a reasonable command of both the languages, lexical items are subconsciously activated in both the languages (Green, 1986). All groups exhibited a selective lexical access (i.e., Both the languages are non-simultaneously accessed) as suggested by earlier researchers. Both the Tamil medium and English medium were more dominant in retrieving meaning in their native language (L1). This can be attributed to the greater exposure to Tamil (social communication).

The phonological activation in bilinguals is also influenced by an individual's language proficiency (Haigh & Jared, 2007). The results of the present study suggest that even when exposure to L2 varied to a large extent, the performance was superior in L1 (Tamil). This was common to subjects belonging to both the medium. As exposure increases in L1, the lexical access is becoming strong across age, as the dominance of the native language increased. Hence, the processing of the dominant language would not have been interfered due to the other language. Irrespective of the proficiency and exposure to L2, performance was better seen in L1. This result contradicts the position suggested by Green's Convergence Hypothesis (Green, 2003) For the task of semantic retrieval of inter-lingual homophones, the gender difference was not observed between the males and the females of both Tamil medium and English medium. This is against the findings of a study which states that gender difference exists and females perform better for semantic- lexical tasks (Frost et al., 1999).

Summary and Conclusion

The results of the present study suggest that the retrieval is better for both Tamil and English medium subjects. Exposure to L2 did not influence the subject's performance in L1.

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Even though formal education is observed in all the three age groups in English (L2), semantic retrieval was good in Tamil (L1).

Thus, while assessing and managing language related disorders, the role of L1 and L2 becomes a variable especially at the semantic level.

Inter-lingual homophones are words that have similar pronunciation but different meaning across languages. Across the three different age groups, the performance of the semantic retrieval varied. Subjects exhibited a better performance in their native language, L1 (Tamil) irrespective of the medium learnt in school. Subjects in all the three age groups exhibited a non-selective lexical access. The task is complex involving auditory vigilance, attention, memory, thinking, ability to inhibit the other activated lexicon, dual inhibition and graphical abilities. The study has its implications for the assessment, diagnosis and planning of intervention programs. For subjects belonging to all the three age groups, L1 should be considered as a medium of instruction during remediation.

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