

## LEXICAL LEARNING OF NOVEL WORDS IN BI/MULTILINGUAL CHILDREN

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### Abstract

*Learning new linguistic forms in a bi/multilingual environment is an interesting phenomenon. Studies have reported that new vocabulary learning is more lexically mediated during the earlier stages of learning than in later stages (Kroll & Curley, 1988). While the literature provides some findings that pertain to lexical learning in monolinguals, comparable lexical learning studies involving bilinguals and trilinguals/multilinguals are unavailable. Indian context presents a unique scenario as individuals are routinely exposed to new words in a hitherto unknown language. It is thus imperative to attain some understanding of the strategies that come into play when they encounter these new words. Present study aimed to investigate novel word learning in Malayalam-English bilinguals (Group A) and Tulu-Kannada-English multilinguals (Group B). Forty (40) bilingual/multilinguals in the age group of 15-16 years were selected as participants. Stimuli consisted of 32 novel words, 8 words in each language. Each participant was assessed for acquisition of novel words using two tasks namely referent identification task and picture naming task. Mean reaction time and error analysis was carried out for both groups. Bilingual children learned novel words faster in L1 (Malayalam) when compared to L2 (English) whereas multilingual children learned words faster in L3 (English) followed by L1 (Tulu) and L2 (Kannada). The results obtained in the present study are consistent with the view that novel word learning is not an idiosyncratic reflection of a subject's personal linguistic history, but that generalizations are possible involving such factors as language proficiency, degree of exposure and opportunities for frequent conversational use.*

**Keywords:** *Novel word learning, bi/multilingualism, second language learning*

A multilingual person, in the broadest sense, is a person able to communicate in more than one language, actively (at the level of speaking and writing) or passively (at the level of listening and reading). In this study, we take bilinguals and multilinguals to be adolescents who learn a majority language from birth (L1) and use it as a mother tongue for primary functions in their society and who begin to learn a second language (L2) - and in multilingual case, a third language (L3) - from early childhood and use L2 (and, where applicable, L3) for formal functional language in their society. This definition is closely related to criteria used by Jia & Kohnert, 2006 to define multilinguals in their study on Spanish-English-Dutch trilinguals.

It is estimated that by the time a child graduates from high school he/she will have acquired an understanding of more than 60,000 words. To achieve the vocabulary of this size, the child must learn multiple words per day through out childhood (Bloom, 2000). Learning new linguistic forms in a multilingual environment is an even more challenging task, and its analysis can in principle improve our understanding of how lexical representations are created and stored. Vocabulary is a cross-linguistically variable domain and the availability of vocabulary in the case of an individual speaker depends in ways that are amenable to investigation upon his/her experience and the

exposure to the language/s, his/her education, socio-economic status, native language/ dialect, IQ and sex (Mallikarjun, 2002).

The list of factors provided by Mallikarjun does not include age as a crucial variable. However, there is some evidence that children approach to L2 vocabulary learning differently than adults. Approach to learning novel words seems to change as children age. Younger children learn new information by dedicating most of their focus to the stimulus being observed. As they mature, they begin to integrate previous knowledge to better interpret and commit new information to memory (Paris & Lindauer, 1982). Appel and colleagues (1972) found that older children may be using more conscious learning strategies when they are told to memorize lists of items. Learning L2 in early childhood and learning L2 later in life may utilize different learning strategies. When learning a new L2 word, children may simply associate the new word to a perceptual representation of whatever is being referred to. Potter et al, (1984) present data suggesting that conceptual representations mediate L2 vocabulary learning at both early and late stages of language learning.

Other studies have also supported the idea that new vocabulary learning is more lexically mediated during the earlier stages of learning than in later stages. Kroll and Curley (1988) found written translations to be faster than L2

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picture-naming in early L2 learners, but the naming and translation speeds did not differ for more proficient learners. Kroll & Dufour (1999) also found that less proficient Spanish speakers spent more time in making judgments when words were lexically similar, while the more proficient speakers met more interference judging the semantically similar words. This provides further evidence of the use of lexical mediation in the earlier stages of language. Chen and Leung (1989) evaluated the role of L1 lexical mediation and concept mediation during new vocabulary learning. They found that children used more concept mediation than the more experienced L2 learners. While the claim that age influences learning strategies seems consistent with a wide range of studies, the details of this effect are far from clear. Bronson, (2000) reviews a body of literature showing that as the ability for strategy use develops, approach to L2 vocabulary learning may also evolve.

Learning to add a new language vocabulary to an already existing language at a younger age, when a direct-mapping approach is more probable, results in using less L1 translations. Whereas learning to add a new language at a later age when lexical-mediation is more prevalent, results in the use of more L1 translations (Dijkstra et al., 2006). It was hypothesized that early L2 learners may learn a novel word faster and would also recall these words faster. This view stresses the possibility that learning an L2 in one's early childhood and learning it later in life may tend to be associated with different learning strategies. The suggestion is that young children, when learning a new L2 word, may simply connect the new word to a perceptual representation of the referent. This would indicate that the learning strategy that they are more prone to use, leads to more proficiency in vocabulary learning.

Although the studies cited above do not converge on an unambiguous account of the factors that determine the choice of strategy in novel word learning tasks, at least help identify directions for further inquiry in the case of monolinguals and bilinguals. It is not easy, however, to use these results to arrive at norms (for clinical or other use) applicable to Indian speech communities, where bi- or multilingualism is quite frequent. A literature search shows that nothing is known about the way age, language learning history and other factors interact in the responses of subjects from Indian speech communities to novel word learning. It is thus appropriate to perform at least preliminary analyses of novel word learning data from a speech community in which it is possible to compare bilingual with trilingual subjects; hence the present study.

In the Southern Karnataka region, where this study was conducted, the most widely used languages are Tulu, Kannada and English. Kannada, with a national total of 40 million speakers, is the dominant language of the state of Karnataka. Tulu, with 1.5 million speakers, though not a dominant language, is a robust feature of the linguistic landscape of Southern Karnataka. Its speakers use Tulu with relatives and friends, Kannada as a spoken language in institutional settings, and English to meet certain formal and educational needs. Also considering the linguistic scenario in Kerala, Malayalam is widely used as a spoken language and English is used for educational and formal functions. Thus, it is relatively easy to find Tulu-Kannada-English trilingual subjects and Malayalam-English bilingual subjects who differ only in their language learning histories and are otherwise comparable. The linguistic similarities between Tulu, Kannada and Malayalam are close whereas English is phonetically, syntactically and morphologically different from these languages. Hence Tulu-Kannada-English trilinguals and Malayalam-English bilinguals presented as ideal target populations for the present study.

#### **Need for the study**

While the literature provides some findings that pertain to lexical learning in the context of monolingual and bilingual subjects, comparable lexical learning studies involving bilinguals and trilinguals are unavailable. In the Indian context, for clinical, pedagogic and other purposes, it is necessary to establish norms covering trilinguals as well. The absence of empirical material comparing bi- and trilinguals becomes a major problem. India is a country where ordinary natives are exposed to novel words in languages in which relatively they have no proficiency. It is thus imperative to attain some understanding of the strategies that come into play when they encounter these new words. This study is a first step towards such an understanding.

#### **Aim**

Present study aimed to investigate novel word learning abilities in Malayalam-English bilinguals and Tulu-Kannada-English trilinguals using referent identification and naming task.

#### **Methodology**

The study was conducted on two different groups, Group A with Malayalam – English bilinguals and Group B with Tulu –Kannada-English multilinguals.

#### *Participants*

Forty bi/multilingual school going children whose age ranged from 15-16 years were

selected as participants. These children were recruited from schools and their academic performance was above average as per the report obtained from class teacher. Group A consisted of 20 children whose mother tongue was Malayalam and second language was English. Similarly Group B consisted of 20 children whose mother tongue was Tulu, second language as Kannada and third language as English. The subjects were quantitatively assessed for their proficiency for all the languages using the International second language proficiency rating scale (ISLPR, Wylie & Ingram, 2006). The overall proficiency across languages in these participants varied from S: 3 – S: 4 level on ISLPR. None of the subjects presented with any history of auditory disorders, hearing loss, speech and language problem, neurological deficits or any other sensory, motor or cognitive problems.

#### *Stimuli*

The stimuli consisted of 32 novel words, 8 novel words in each language. These novel words were non words created with in Malayalam, Kannada, Tulu and English to obey the phonological composition of these languages and also to maintain naturalness of pronunciation. The novel words which were used in the current study were selected from this stimulus pool after being validated with the help of two linguists. Eight novel words in each language were made into 4 pairs and 32 pictures which are less familiar to these participants were selected. Each of these pictures was connected to one novel word. A total of 16 short stories were made, 4 stories in each language. Each pair of word was embedded in the story such that no two novel words occur within a single sentence.

To take a few examples, the English novel word *Penears* was associated with a picture of a synagogue –an image that the participants were unlikely to be familiar with. The novel words *Hugura* (Kannada) and *Jeppula* (Tulu) were associated with pictures of an avalanche and a submarine respectively.

#### **Procedure**

The participants were taken to a room which was devoid of distraction and a word learning task was carried out. The word learning task consisted of 5 sessions. In the initial phase these novel words were introduced by a live story narration along with a picture presentation. Each story episodes incorporated these novel words, provided maximum exposure to participants. The stories were repeatedly presented in each language for the next four sessions. Each participant was assessed for the acquisition of these novel words following the five phases of

story narration and this was tested in two different tasks.

A) Referent identification task

B) Picture naming task

In the referent identification task, a set of 3 picture choices were provided. The picture choices included the target referent and 2 distractors; a semantically related referent, and an unrelated referent. The target referent was then presented auditorily via a loudspeaker and the participant was instructed to point to the picture that corresponded to the auditory stimulus.

In the picture-naming task, the target referent was presented via a laptop computer and the participant was asked to name it. Responses were video recorded and phonetically transcribed for later analysis.

#### Analysis

The participant's responses were video recorded and phonetically transcribed for later analysis. Responses were evaluated for two different tasks.

1. Referent identification task
2. Picture naming task.

Reaction or latency time measurements were used to calculate the responses for both the tasks. Scoring for both the tasks was carried out based on the percentage of words correctly identified, correctly named and the percentage of repeated errors for the participants in both the groups was calculated using the following formula:

$$\frac{\text{Number of correctly repeated/identified words}}{\text{Total number of words}}$$

Total number of words

Word error analysis was done using Li and Williams (1990) checklist, extended version of error categorisation system by Kohn and Goodglass (1985). Reaction times taken for naming and referent identification was calculated separately and mean reaction time of each individual in all languages was found. In Group A the Reaction time between both languages was analysed using Paired T- test and in Group B one way ANOVA was used to calculate the reaction time of both the tasks.

#### **Results**

##### **Group A (Malayalam- English bilinguals)**

Reaction time: The results obtained in reaction time for Malayalam and English bilinguals were examined in following 2 conditions

- A) Comparison of reaction time between L1 and L2
- B) Comparison of reaction time within L1 and L2

Table 1: Comparison of reaction time between Malayalam and English (Mean, standard deviation & t' value).

Task	Language	Mean	SD	t' value
Referent Identification	L1	2.2024		
	L2	2.2024	0	0 NS
Naming	L1	2.9118		
	L2	4.249	1.4140	4.2584**

(p<.05=\* significant, P<.01=\*\* highly significant, NS=Not significant)

Referent identification and naming tasks were evaluated in detail with respect to reaction time responses in all the languages. Highly significant differences were observed for naming task in L1 and L2. The time taken to name the novel words in L2 (English) was more when compared with L1 (Malayalam). This shows that lexical retrieval was faster in L1 (Malayalam) than L2 (English). However no significant difference was obtained for referential identification task in neither of the languages.

Table 2: Comparison of reaction time within Malayalam and English

Language	Task	Mean	SD	T value
L1	Referent Identification	2.2024		
	Naming	2.9118	1.3766	5.78**
L2	Referent identification	2.2024		
	Naming	4.249	1.7715	7.93**

(p<.05=\* significant, P<.01=\*\* highly significant, NS=Not significant)

Comparison of reaction time with in L1 and L2 for referent identification and

naming revealed a highly significant difference. Referent identification scores were observed to be better for all the participants when compared with naming task.

Table 3: Percentage of correctly repeated and identified for L1 and L2.

Tasks	L1	L2
Referent Identification	100%	100%
Naming	82.5%	78.75%

The percentage of correctly identified words (100%) were similar in both the languages .The percentage of correctly repeated words were maximum in L1 (82.5%) followed by L2 (78.75%).

Table 4: Analysis of word errors in L1 and L2

Word Errors	L1(%)	L2(%)
Syllabic repetition	3.75	1.25
Syllabic substitution	3.75	1.25
Addition	1.87	0.62
Related word repetition	-	2.5
Part word repetition	0.62	1.87
Rejection error	0.62	0.62
Reduplication	1.25	
Final consonant deletion	-	3.12
Phonemic omission	-	6.25

A detailed analysis of word errors were carried out and percentage of each word error in both the languages were found out. The types of errors seen in L1 are syllabic repetition (3.75%), syllabic substitution (3.75%), addition (1.87%), part word repetition (.62%), rejection error (.62%) and reduplication (1.25%). Percentage of syllabic repetition and substitution were more in L1 with no final consonant deletion and omission errors.

Errors in L2 include syllabic repetition (1.25%), syllabic substitution (1.25%), addition (.62%), part word repetition (1.87%), rejection (.62%), final consonant deletion (3.12) and phonemic omission (6.25%). Final consonant deletion and omission error were more in L2 with no reduplication.

### Results of Group B (Tulu, Kannada & English multilinguals)

To find out the significant difference in naming and referent identification for L1 (Tulu), L2 (Kannada) & L3 (English) one way ANOVA was carried out.

Table 5: Mean and standard deviation of the reaction time for naming task in L1, L2 and L3.

Languages	N	Mean	SD
L1	120	6.28	2.19
L2	120	6.82	1.88
L3	120	2.32	0.47

Mean reaction time for naming task was almost similar in L1(Tulu) and L2(Kannada) with a minimal difference in standard deviation. L3(English) exhibited better naming scores i.e, less reaction time when compared with L1 and L2. Overall multilinguals named novel words faster in L3 compared to L1 and L2.

Table 6: Comparison of reaction time for Naming task in L1,L2 & L3 using ANOVA.

Sources of variation	F <sub>cal</sub>	Significant difference
Between group		
Within group		
Total	252.035	.000*

Less reaction time were obtained for L3 followed by L1 and L2. L3(English) showed a high significant difference with L1(Tulu) and L2(Kannada) in both the conditions(i.e,within and between group ). This shows lexical retrieval of novel words were faster in L3 (English) when compared to L1 and L2.

Table 7: Mean and standard deviation of reaction time for referent identification in L1,L2 and L3.

Languages	N	Mean	SD
L1	120	1.0417	0.2007
L2	120	1.0672	0.2515
L3	120	1.0000	0.000

From Table 7 it is clear that there was no markable difference in mean reaction time for referent identification task in L1,L2 and L3.However, there was a minimal difference in the mean and standard deviation scores for L3 (English) when compared with L1 and L2.This indicates L3 was slightly better followed by L1 and L2.

Table 8: Between and within comparison of reaction time for referent identification in L1,L2and L3.

Sources of variation	Degree of freedom	Mean square	Significant difference
Between group	2	.138	
Within group	356	3.442E-02	.019 NS

(NS=Not significant)

Comparison of reaction time between and within languages for referent identification revealed no significant difference in L1,L2 and L3 as shown in Table 8.

Table 9 : Percentage scores of naming and referent identification

Tasks	Tulu	Kannada	English
Referent identification	100%	100%	100%
Naming	77%	73%	88%

All the target referents were correctly identified by subjects in L1,L2 and L3.Maximum number of naming scores were obtained in L3 (88%) followed by L1(77%) and L2(73%).

Table 10 : Analysis of word errors in L1, L2 and L3

Word errors	L1 (%)	L2 (%)	L3 (%)
Syllabic repetition	4.75	3.75	1.55
Syllabic substitution	3.25	3.5	.82
Addition	1.55	1.85	.25
Related word error	—	—	2.5
Part word repetition	0.42	.25	1.87
Rejection error	1.25	2.25	0.62
Reduplication	.62	.425	—
Final consonant deletion	—	—	4.25
Phonemic omission	—	—	5.85

Word error analysis in each language showed maximum percentage of syllabic repetition (4.75% & 3.75%), syllabic substitution (3.25% & 3.5%) and addition errors (1.55% & 1.85%) in Tulu and Kannada.Part word repetition(.42% & .25%) and rejection errors(1.25% & 2.25%) were also seen in L1 and L2.

However, errors like final consonant deletion and phonemic omission were not seen in either Kannada or Tulu. Maximum percentage of omission (5.85%) and final consonant deletion (4.25%) errors were seen in English followed by part word repetition (1.87%).

### Discussion

The present study attempted an in depth comparison of lexical learning skills in Malayalam-English bilinguals and Tulu-Kannada-English multilinguals. Naming and referent identification were used to study the lexical skills in these populations. The first finding we present is that bilingual children showed a very significant difference in word learning between L1 and L2. Naming scores for L1 were better when compared with L2.This shows that the lexical processing and the ability to learn a novel word was faster in L1 than L2. Paradis (1997) ventured that L1 may depend more on implicit, procedural memory because it has been acquired spontaneously, whereas L2 depends more on explicit, declarative memory if it has been acquired largely through school instruction. The reason for lower L2 scores could be attributed to the limited exposure of L2 which is only used for the academic purposes.

The Tulu-Kannada-English trilinguals showed a different pattern of results. Reaction time taken for naming in English was better followed by Tulu and Kannada. This shows that the lexical processing and the ability to learn a novel word were faster in L3 followed by L1 and L2. Unlike the subjects in Group A those in Group B were more frequently exposed to English and used

English more often for communication as reflected by their responses on ISLPR (S:4 level of proficiency). The higher scores obtained in L3 supports the view that as language proficiency increases, there may be a larger association between the lexical forms and semantics and eventually it becomes easier to retrieve the words faster (Kroll & Stewart 1994; Kroll & de Groot 1997). Interestingly, the referent identification scores across languages did not vary significantly across bilinguals and multilinguals. The children in both the groups received equal and repeated auditory presentation for all the novel words. Studies have suggested that repeated language comprehension training task would provide a faster lexical access (Fukink et al, 2005). This may be the reason for similar identification scores across languages.

Additionally we also probed the error patterns for naming task in all the languages in these children. A detailed error analysis in all the languages revealed a similar pattern of errors in Malayalam, Kannada and Tulu. Maximum numbers of syllabic repetition, substitution and addition errors were found in these languages. English exhibited more of omission and final consonant deletion errors. This finding could be interpreted as a reflection of the structural differences between English and other languages. A similar error types in Malayalam, Kannada and Tulu may due to the close linguistic similarity between these languages. Phonemic deviation showed the highest score; such deviations occur more often in a second language. It is possible to suggest a weaker phonological mechanism in the subjects' knowledge of the second language. However, little is understood about error patterns during the learning of novel words in the case of Indian languages – or for any trilingual subjects – and it would be premature to do more than suggest the possibility that L2 phonological systems may in general be weaker than L1 systems. This study has major implications for almost all language impaired populations like those with hearing impairment, specific language impairment, and others, where learning a new word can be difficult.

### Conclusions

The purpose of the current study was to compare the lexical learning skills in bilingual and multilinguals in two different language contexts. The results obtained in the present study are consistent with the view that novel word learning is not just an idiosyncratic reflection of a subject's personal linguistic history, but that generalizations are possible which may involve such factors as language proficiency, degree of exposure and opportunities for frequent conversational use.

The results also show that language dominance is a distinct factor; even if the two group of populations have English commonly in their repertory, it may be dominant in one population but not in the other, with sharply distinct consequences. As we work towards clinically useful norms in the multilingual societies of India, it becomes necessary to improve our understanding of different linguistic repertoires and the consequences they have on a subject's word perception ability for each language in his or her repertory. The present study has major implications for language impaired populations affected by hearing impairment, specific language impairment, and other difficulties that affect the learning of new words. Studies that seek to replicate these results for other multilingual groups in India would be interesting. The results of such studies will be of great use in the context of setting specific treatment goals for language disabled individuals.

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