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Estimating the Lexical Breadth and Depth in Bilingual Indian Children Aged between 5 and 11 Years of Age

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Abstract

Objectives Lexical breadth of knowledge is the quantity of words that the individual knows with regard to vocabulary size of the learner; while lexical depth is the learner's knowledge and mastery level of various semantic relations of a given word. Both measures have been used in the assessment of speaking/writing skills of first (L1) and second (L2) language users. The current study aims to explore the lexical knowledge of typically developing school going bilingual Indian children.

Methods Seventy-two Konkani (L1) and English (L2) speaking children (between 5 and 11 years of age) were recruited in the study. The study was performed in three phases. Phase 1 comprised of developing the experimental tasks (lexical breadth and lexical depth); phase 2 included the data collection; and phase 3 focused on data and statistical analysis. Mean and standard deviation of the total number of words and total number of different words were analyzed. Two-way repeated measures analysis of variance test was done to assess the level of significance ($p < 0.05$) across the groups for both tasks. Paired *t*-test was done to assess the interaction effect between age and language.

Results The results indicated an overall increase in lexical breadth and depth across age for L1 and L2. The interaction between the two languages has been discussed in detail.

Conclusion The findings of this study may help pave way toward future explorations to address issues pertaining to the complex interaction of L1 and L2 languages in bilinguals.

Keywords
- bilinguals
- English
- Indian
- Konkani
- lexical depth
- lexical breadth

Introduction

Lexical knowledge is a complex aspect paramount to overall language proficiency playing a major role in reading and acquiring new information from text. Besides being involved in the ability to recognize lexical items, there does exist the application of this knowledge appropriately to a situation and context of use, encompassing all information that is known about words and the relationships among them.[1] Research suggests lexical knowledge to be the biggest part of learning a language, often viewed in terms of lexical depth and lexical breadth.[2] The quantity of words that the individual knows with regard to vocabulary size of the learner at a certain level[3] does indicate the lexical breadth of knowledge.

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The vocabulary size includes knowing the surface meanings, written and oral forms, and basic uses of the words. Alternatively, lexical depth is the learner's knowledge,[4] and mastery level of various semantic relations of a given word,[5] or in what way the learner recognizes this word,[6,7] including the knowledge of pronunciation, meaning, spelling,[8] the use of affixes,[9] the use of sound sequences,[10] semantic and syntactic relationships with other words such as antonym and synonym,[5] word fluency,[11] hyponym, and collocation.[6] Anderson and Freebody were the first to make a distinction between the vocabulary breadth and depth.[12] They claimed that lexical breadth referred to the total number of words the person knows with some significant aspects of their meaning; while the lexical depth is the quality of understanding. Lexical depth can be estimated by the different lexical and grammatical words (types) present in a discourse; while lexical breadth can be estimated by the total number of lexical and grammatical words (tokens)[13] present in a discourse.

Studies have examined the lexical breadth and lexical depth[11,14,15] in first (L1) and/or second language (L2) users, primarily focusing on school age bilingual children.[16] Mohamad Nor and Rashid consider L1 as a primary language, mother tongue, and native language which one may acquire early during childhood, generally before the age of 3.[17] The L1 acquisition mostly happens during the process upbringing with individuals who tend to use the similar language. Conversely, L2 is the language learnt by an individual, subsequent to their L1 which they already seem to have acquired. According to Wolter, the lexical structure of a child is strengthened by the refined understanding of experiential and conceptual knowledge, indicating the learner's links to concepts across the languages (L1 and L2) that are connected to each other.[18] This does direct the L1 to have a substantial effect on how the learner constructs lexical networks among words in his/her L2, sometimes proving to be an advantage, considering that they already are aware of the workings of the language system.[17] Therefore, the L1 lexical knowledge invariably allows the assimilation of novel L2 words precisely into the mental lexicon of L2, aiding in making sound judgments about the probable words combinations in the L2. Nation claims educated L1 English speakers to have around 20,000 word families, with an addition of an average of 1,000 word families each year[3]; while L2 learners have over 2,000 most high frequency words, with a greater potential to communicate more ideas in the L2 using more elaborate grammatical structures. However, these data do appear to be irregular with a large variation being present between individuals. Although the lexical structure of L1 does benefit in constructing lexical networks in L2, it sometimes also does provide learners with misrepresentation of permissible L2 word combinations.[17] Since the input in bilingual children is spread between two languages, these children receive less input in each of their two languages making it more challenging. However, bilingual children tend to possess a far more advanced semantic network than their monolingual peers.[19] Several bilingual studies propose the existence of different types of networks between words present in L1 and L2.[20] Even though the existence of two separate lexicons may be hypothesized, the words in each language forms connections at many linguistic levels: at lemma level,[21] at word form level,[22] and a level wherein the two lexical systems are associated to general cognition.[22,23]

Although developmental bilingual studies on lexical knowledge are at the forefront especially in western countries, there exists a dearth of studies done in India pertaining to the same. Several languages and dialects are spoken in the Southern part of India, with the district of Dakshina Kannada being a prime focus, merely because of the multitude of languages spoken in a small geographical area. Mangaluru being a multilingual city, is one among seven taluks under the Dakshina Kannada district, wherein several prominent regional languages are spoken, one of them being Konkani. The Konkani language is an Indo-Aryan language with many fractured dialects that are spoken along and beyond the Konkan, from Damaon in the north to Cochin in the South. With the development of lexical breadth and depth being interdependent,[24,25] and considering the vast diversity of language and culture that exists, it would be interesting to know if a difference exists between the lexical processing abilities of typically developing school going Konkani (L1) and English (L2) language speaking children between 5 and 11 years of age using the lexical breadth and lexical depth task.

Method

The present study followed a cross-sectional design and was performed in regular English medium schools following the State Board curriculum in Mangaluru city. The study was approved by the Institutional Ethical Committee of Kasturba Medical College, Manipal Academy of Higher Education, Mangalore, Karnataka, India.

Participants

A total of 72 typically developing school going bilingual children between 5.0 and 10.11 years of age participated in the present study. The sample size was calculated using $n = 2\,(z\alpha + z\beta)2 * \sigma 2/d2$, where $z\alpha = 95\%$ confidence (1.96), $z\beta$ = power (0.84), σ = standard deviation, and d = mean difference based on a reference study.[26] The participants were selected using a nonrandom convenient sampling procedure and were divided into 6 age groups (5.0–5.11, 6.0–6.11, 7.0–7.11, 8.0–8.11, 9.0–9.11, and 10.0–10.11 year olds), with each group comprising of 12 participants.

Selection Criteria

The participants were selected using a stringent criterion. Typically developing children (ascertained by the Assessment of Language Development[27]) attending regular English medium schools, those who fit the age criteria, and those with Konkani as their native language (L1) and English as L2 (ascertained by Child Language Experience and Proficiency Questionnaire[28]–Adapted version of Rochanavibhata, Kaushanskaya, and Marian) were recruited for the study. Children from a middle-socioeconomic status were recruited for the study using the modified Kuppuswamy socioeconomic scale.[29] Children with history/complaint of any deficits in speech and language, cognitive, vision, hearing, epilepsy, learning, and others, based on the

administration of World Health Organization Ten Questions Screen[30] were excluded from the study. Prior to the conduction of the study, school authorities were explained the purpose of the study and a written permission was obtained from them. An informed consent was obtained from all the participants involved in the research prior to their inclusion in the study.

Procedure

The current study was performed in three phases. The phase 1 of the study primarily focused on developing two experimental tasks (lexical breadth and lexical depth) to explore the lexical processing abilities. The task 1 (lexical breadth task) included participants to verbally produce as many words as possible under a specific semantic category within a duration of 60 seconds. This task was formulated in both English and the Konkani language. A total of five semantic categories were selected in English—*furniture*, *animals*, *fruits*, *vehicles*, and *family relations*. Language equivalent categories were selected in Konkani—*/ʃʒ:nlʧθ/ (furniture)*, */m^nzaʈ/(animals)*, */ʃolvosʈ/ (fruits)*, */gadi/ (vehicles)*, and */samb^nð/ (family relations)* as well. The task 2 (lexical depth task) included participants to verbally narrate about a specific theme in his/her own words, without any time constraints. This task was also formulated in both English and the Konkani language. A total of five semantic themes were selected in English—*house*, *school*, *television*, *beach*, and *mobile*. Language equivalent themes were selected in Konkani—*/g^{h}ar/ (house)*, */es^{kh}al/ (school)*, */tɛlIvIʒan/ (television)*, */ɖ^rIyo/ (beach)*, and */mobIl/ (mobile)* as well. The potentiality of the five semantic categories and themes in both English and Konkani were scrutinized by experienced speech language pathologists on the basis of age appropriateness of vocabulary and uniqueness.

Phase 2 included the data collection which was performed in a relatively quiet room within the school premises, with each participant being individually assessed. The participants were comfortably seated on a chair, and the experimenter engaged in rapport building, which took around 5 to 10 minutes before the commencement of the procedure, after which appropriate instructions were provided for both tasks. The tasks were sequentially presented by the examiner, with each task being initially presented in English followed by Konkani. A 1-minute break was provided after obtaining the responses of each category and theme. The responses were recorded using a hand-held audio recorder (Sony ICD-UX560F Stereo IC recorder 4 GB). For the lexical breath task, the total number of words under each category for each language was obtained. Similarly, for the lexical depth task, the verbally generated narrative samples under each theme for each language were obtained.

Phase 3 comprised of the manual transcription of the narrative samples and subjecting it to further data analysis. The verbally generated responses under each category for both languages were recorded. For example, in English for the category "*animals*" responses generated were *dog*, *cat*, *donkey*, *elephant*, *horse*, *tiger*, and *lion*. Here, the total numbers of words produced were 7. In Konkani, the responses generated were */peto/ (dog)*, */mazar/ (cat)*, */masli/ (fish)*, */du^{kh}or/ (pig)*, and */godo/ (horse)*. The total number of words measured was 5 for one category. Similarly, the total number of words was calculated for each category, and a mean of all categories (per language) were taken to account for the lexical breath in English and Konkani for each age group. Each correct response was allotted a score of 1, regardless of the type of pronunciation. Likewise, the verbally generated responses were recorded under each theme for both languages. The total number of words and the total number of different words were measured as the response. For example, in English for the theme "*mobile*," one of the responses generated by the participants were "*In my house we have two mobiles. My father has a big mobile. I play in mobile. We can message others in mobile. We can call others in mobile*." Here, the total number of different words was measured to be 19, while the total number of words was 29. In Konkani, the responses generated were "*/mobilanʈ/ /song/ /galʈaʈ/. /amka/ /dusraink/ /col/ /karvieʈ/ ./mesege/ /koruvieʈ/./uluvieʈ/. /photo/ /poluvieʈ/*" *(in mobile we can listen to songs, we can call others, message others, talk to others and se.. see photos in mobile)*. Here, the total number of different words measured was 10, and total numbers of words were 12. Similarly, the total number of words and the total number of different words were calculated for each theme, and a mean of all categories (per language) were taken to account for the lexical depth in English and Konkani for each age group. Any incorrect, incomplete, or nonsense words/sentences were not considered as a correct response in either of the two experimental tasks.

Following the data analysis, the data was then subjected to statistical tests using SPSS (version 17.0). The total number of words and total number of different words formed the dependent variables; while the six age groups formed the independent variables. Descriptive statistics was performed to obtain the mean and SD of the total number of words, and total number of different words. Two-way repeated measures analysis of variance (ANOVA) was done to determine the level of significance across the age groups for the lexical depth and lexical breath tasks. A paired *t*-test was done to assess the interaction effect between age and language for both lexical depth and lexical breath tasks.

Results

Lexical Breadth

The mean total number of words (lexical breadth) obtained by the six groups in Konkani and English is shown in ►**Fig. 1**.

An overall increase was observed in lexical breadth across the six groups for English and Konkani. When considering the development in total number of words in English, group I attained the lowest means (SD) of 6.78 ($\pm$1.50), while group V and VI attained the similar highest mean (SD) of 16.02 ($\pm$2.71). In Konkani, a similar increase in the total number of words was observed, wherein group I attained the lowest of 4.68 ($\pm$1.75), while group VI attained the highest mean (SD) of 17.74 ($\pm$5.23). Group III and IV attained near similar mean scores of 8. A comparatively higher score was observed in English over Konkani across group I to V, except for group VI which was observed otherwise. The results of the repeated measures ANOVA revealed that there was an overall main effect of the age groups ($F(5, 24) = 10.260$,

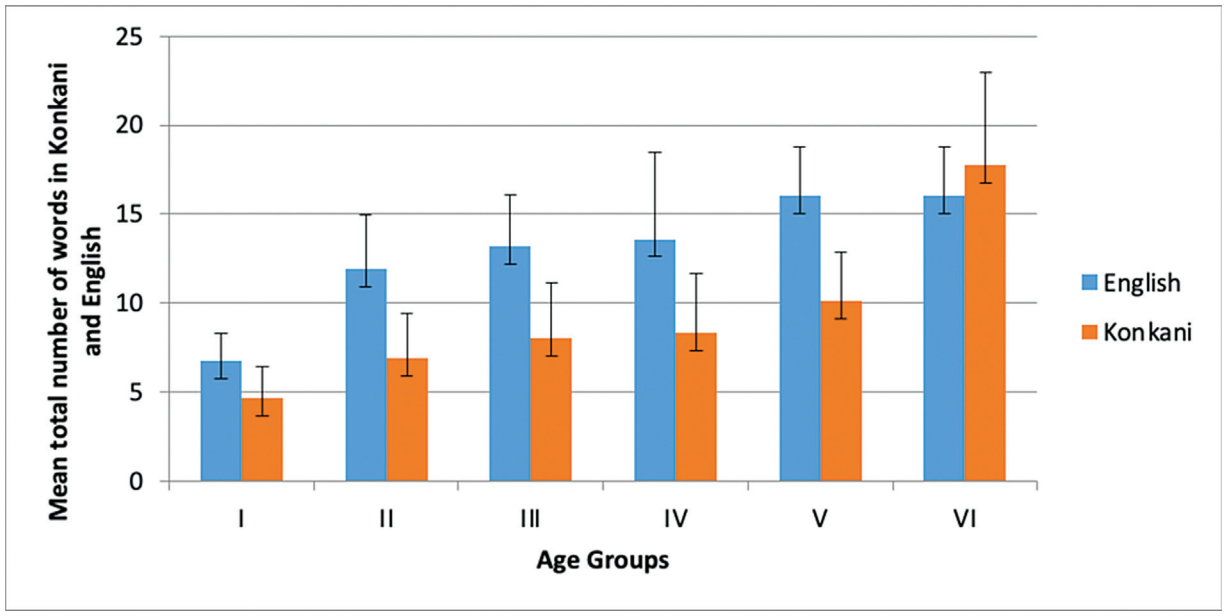

Fig. 1 The mean total number of words in Konkani and English obtained by the six groups. This figure illustrates the developmental trend of the lexical breadth in Konkani and English for all six groups.

$p = 0.000$) and languages (English and Konkani) ($F(1, 24) = 27.844$, $p = 0.000$). An interaction effect ($F(5, 24) = 3.050$, $p = 0.029$) was observed between the language and age groups. ►**Table 1** illustrates the results of the paired *t*-test which was done to determine the level of significance between the languages (English and Konkani) for each age group of the lexical breadth task.

Lexical Depth

The mean total number of words and total number of different words (lexical depth) obtained by the six groups in English and Konkani are shown in ►**Fig. 2**.

An overall increase in the total number of words was observed across the six groups in both the languages (English and Konkani). When considering the development of the total number of different words in English, group I attained the lowest mean (SD) of 3.30 (±1.15), while group VI attained the highest mean (SD) of 16.26 (±4.97). In Konkani, a similar trend was observed where group I attained a lowest mean (SD) of 3.93 (±0.67) while group VI attained a highest mean (SD) of 21.49 (±1.54). For the total number of words in English there was an increasing pattern observed with group I attaining a mean (SD) score of 13.58 (±5.13), and group V attaining the highest mean (SD) score of 49.16 (±9.27) compared with its following group (group VI) which exhibited a lower mean (SD) score of 43.26 (±11.31). In the Konkani language, a similar increase in the total number of words was observed with group I attaining the lowest mean (SD) of 21.59 (±4.10), and group V and VI attaining the highest mean (SD) of 39.59 (±3.87).

The results of the repeated measures ANOVA revealed that there was an overall main effect of the age groups for the total number of different words ($F(5, 24) = 63.315$, $p = 0.000$) and total number of words ($F(5, 24) = 12.023$, $p = 0.000$). In addition, an overall main effect was observed for English and Konkani for the total number of different words ($F(1, 24) = 10.439$, $p = 0.004$) and for total number of words ($F(1, 24) = 19.508$, $p = 0.000$). An interaction effect was observed

Table 1 The mean (SD) of the total number of words (in English and Konkani) obtained across the groups, and the *t* values (total number of words) obtained between groups for the lexical breadth task

Group	Mean (SD)		*t*	df	Significance (two-tailed)
	English	Konkani			
I	6.78 (±1.50)	4.68 (±1.75)	2.237	4	0.089
II	11.89 (±3.02)	6.89 (±2.55)	3.274	4	0.031
III	13.19 (±2.90)	8.02 (±3.08)	3.390	4	0.028
IV	13.59 (±4.86)	8.33 (±3.32)	2.250	4	0.088
V	16.02 (±2.71)	10.11 (±2.74)	4.535	4	0.011
VI	16.02 (±2.71)	17.74 (±5.23)	0.836	4	0.450

Abbreviations: df, degrees of freedom; SD, standard deviation.
Note: Level of significance is maintained at $p < 0.05$.

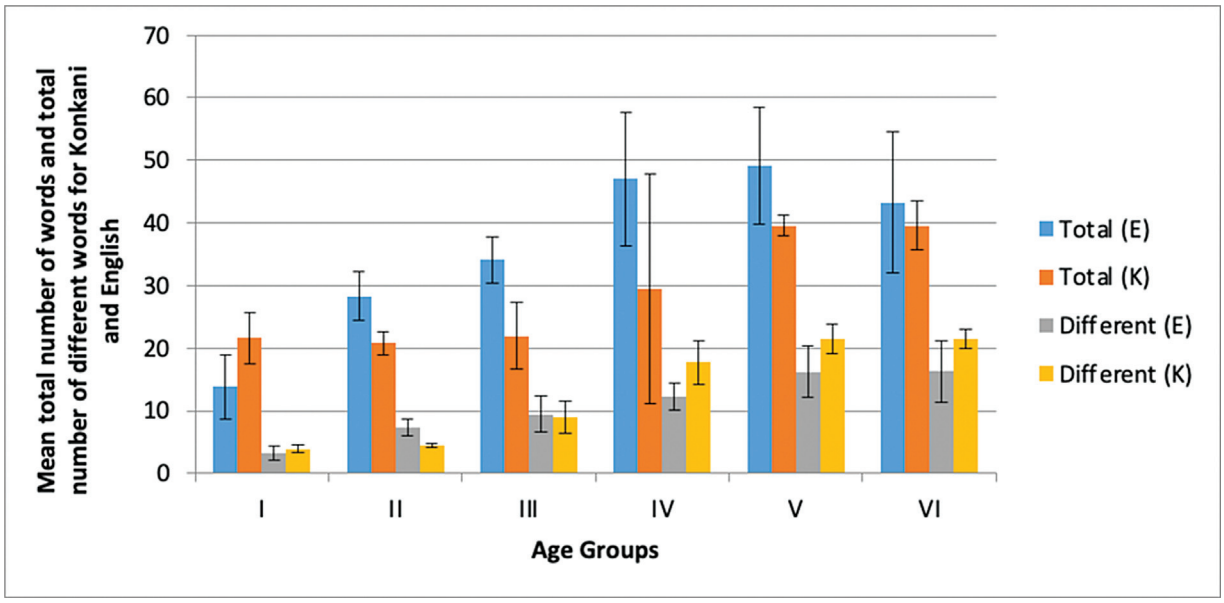

Fig. 2 The mean total number of different words and total number of words obtained by the six groups. This figure illustrates the developmental trend obtained of lexical depth in Konkani and English for all six groups. E, English; K, Konkani.

($F(5, 24) = 4.654$, $p = 0.004$) for the total number of different words and total number of words ($F(5, 24) = 4.785$, $p = 0.004$) between the language and age groups. ►**Table 2** illustrates the results of the paired *t*-test which was done to determine the level of significance between the languages (English and Konkani) for each age group for the lexical depth task (total number of different words and total number of words).

Discussion

Lexical Breadth

As observed in the present research, an incremental developmental pattern was evident across the groups in both the Konkani (L1) and English (L2) languages. The overall low scores secured by the 5-year-olds can be attributed to the children finding the task difficult to comprehend, as a consequence of having underdeveloped prelinguistic skills, limited vocabulary, and/or having an initial entry into an informal mode of education. The 5-year-olds (L2) generated an average of 5 to 6 content words which were related to the specific category of interest (*furniture*, *animals*, *fruits*, *vehicles*, and *family relations*). Apart from the accurately generated responses, the participants produced erroneous words that did not belong to the specific category. For example, mentioning '*tomato*" under the category of fruits. A similar error pattern was evident in L1, with the 5-year-olds producing /baḍam/ (nuts) under the category of

Table 2 The mean (SD) of the total number of words and total number of different words (in English and Konkani) obtained across the groups, and the *t* values (total number of different words and total number of words) obtained between groups for the lexical depth task

Groups	Total number of words						Total number of different words			
	Mean (SD)		*t*	df	Significance (two-tailed)	Mean (SD)		*t*	df	Significance (two-tailed)
	English	Konkani				English	Konkani			
I	13.85 (±5.13)	21.59 (±4.1)	5.499	4	0.005	3.3 (±1.15)	3.93 (±0.67)	1.229	4	0.286
II	28.33 (±3.83)	20.83 (±1.85)	5.595	4	0.005	7.32 (±1.27)	4.46 (±0.32)	5.693	4	0.005
III	34.13 (±3.67)	21.93 (±5.29)	3.383	4	0.028	9.46 (±2.80)	8.96 (±2.5)	.419	4	0.697
IV	47.03 (±10.68)	29.46 (±18.41)	2.754	4	0.051	12.33 (±2.17)	17.73 (±3.43)	2.995	4	0.040
V	49.16 (±9.27)	39.59 (±1.66)	2.436	4	0.071	16.25 (±4.0)	21.46 (±2.31)	2.091	4	0.105
VI	43.26 (±11.31)	39.59 (±3.87)	0.803	4	0.467	16.26 (±4.97)	21.49 (±1.54)	2.321	4	0.081

Abbreviations: df, degrees of freedom; SD, standard deviation.

fruits. An overall of 20% error rate was obtained by the 5-year-olds (L1 and L2 groups). The 6-year-olds (L1) produced similar error patterns with an error rate of 20%. However, such erroneous responses were not evident in the 7-, 8-, 9-, and 10-year-olds. Therefore, it was observed that there was a corresponding reduction in the error rates in both languages (L1 and L2) with age, indicating that children were able to accurately categorize words into their specific category with time, with an increase in the usage of content words being observed with age.[31] The findings of the present research are at par with the conclusions of White,[32] who reported an increase in the lexical breath with age. Studies propose that children refine their category information with age, owing to the repeated encounters with concepts, words, and related words.[33]

An interaction effect ($p < 0.05$) was observed between L1 and L2, indicating a difference in the performance of both languages across all age groups for the total number of words produced. The results indicated the performance in L2 to be better compared with L1 across the 5- and 9-year-olds. The 5-year-olds did experience a transition from their native language/L1 (Konkani) toward L2 (English), the latter which is formally introduced in Indian schools, eventually resulting in L1 becoming the minority language and L2 a majority language. On similar lines, Mohamad Nor and Rashid[17] did claim that individuals succeed in L2 learning (English in the current study), provided they (L2 learners) are exposed to a nonthreatening and a fostering environment (such as school). A similar study did reveal bilinguals to exhibit an incomplete acquisition or loss of their native language under situations of use and exposure of the majority language.[34] Contrastively, the responses generated in L1 by the 10-year-olds were higher than its English counterpart. This abrupt increase in the scores in Konkani (L1) compared with English (L2), could be attributed to the 10-year-olds who achieved a substantial level of proficiency in Konkani for developing close social bonds at school, and also the length of experience with the language[35] at home. Umbel et al[36] found bilingual Hispanic children (first graders) to have a better receptive knowledge of English (L1) words than their second language (L2) speaking age mates. McLaughlin[37] does support that if in instances the exposure to L1 and L2 languages are less balanced (which may be true in the current study), a continual linguistic transfer of high frequency vocabulary may exist from L2 into the grammatical system of L1 (English [L2] to Konkani [L1] in the current study) or vice versa.

Lexical Depth

The 5-year-olds attained the lowest mean scores (total number of words and total number of different words) in L2, indicating that their ability to generate a narrative sample pertaining to a specific semantic theme was limited, when compared with its succeeding group (6-year-olds) who performed better. As stated previously, this underperformance by the 5-year-olds can be attributed to the limited vocabulary, and/or having an initial entry into an informal mode of education, as it is indicated that both lexical depth and breadth are interdependent to each other.[24,25] The 5-year-olds performed better in L1 than L2, for the total number of words and total number of different words. However, the responses across the 6- and 10-year-olds for the total number of words were better in L2 when compared with L1. This suggested that the children's ability to respond were purely based on their capability to comprehend the underlying instructions, thereby having enhanced narrative skills which is in line with the work of, DeVilliers and DeVilliers,[38] who suggested that mastery in the comprehension and production of complement structures of 6-year-olds predicted the success rates of their performance.

The 8-, 9-, and 10-year-olds were found to perform better in L1 for the total number of different words compared with L2, suggesting an increase in the proficiency of their heritage/native language (Konkani). The higher scores obtained by these older children implied the demand of L1 usage in their community (home, religious places, and other public places), which they get to realize with age. These children acquire higher vigilance with greater semantic and syntactic abilities, enabling them to keep track of their narration skills despite increasing the complexity of language. While considering the scores in L1 for the total number of words and total number of different words, the 5-year-olds attained the lowest score. However, the responses in L2 were found to be better than L1 (total number of words) across the 6- and 10-year-olds, and for the total number of different words across the 6- and 7-year-olds. An interesting finding here was that the although the 8-, 9-, and 10-year-olds reported to exhibit higher scores in the total number of different words in L1 compared with L2, this was not the same when considering the total number of words, wherein an inferior performance was noted in L1 compared with L2. This could be attributed to the dominant use of English (L2) in their school, wherein children are exposed to English in different forms (reading, writing, speaking, and listening). Moreover, English being a more formal language that is enforced in school than Konkani, the use of the different forms of words becomes inevitable. The acculturation theory,[39] claims a proportionate increase in language acquisition to take place with a greater contact with L2 speakers and culture. The gradually increasing developmental trend observed in L1 (Konkani) and L2 (English) languages can be attributed to the increase in lexical diversity and maturing mental state beliefs.[40] These findings are at par with the Piagetian model which suggested children between 6 and 7 years of age to exhibit a rapid escalation in the linguistic skills, marked by flourishing abilities of mental representations, along with symbol to object associations and increased memory power. These abilities have been found to enhance the communication scenarios by allowing their thoughts to become faster and more efficient as they are no longer required to be dependent on actual physical manipulation of objects in the environment.

It was observed that the 5-year-olds produced (in L1) only content words such as "mobile," "message," "photo," "display," etc. (in L2) and /vidos/ (videos), /gams/ (games), /ʃlam/ (alarm), etc. However, across the 6- and 10-year-olds, a combination of both content and function words were generated. The examples of function words included "is," "the," and "if" (English), and /magir/ (after), /kad/ (take), and

/karvit/ (do) (in L1). The 5- and 6-year-olds produced different content words which were abstract nouns and verbs. Conversely, the 7- and 8-year-olds produced different function words which were both concrete and abstract nouns, verbs, adjectives, and prepositions. For example, the 5-year-olds generated an abstract word such as "*ringing*" for the theme "*mobile*" in L2. Similarly, for the L1 language, the 5-year-olds generated the word such as /un:/ (heat). The generated abstract words were found to increase with age[41] in both the languages (L1 and L2).[42] Apart from the accurately generated responses, the participants did produce errors comprising of incomplete sentences, missing words, mispronunciation, misspellings, repetition of words, and sentences. This type of misinformation evident in L2 (Konkani) has been claimed to originate from the collocational knowledge used to express rudimentary concepts in L1 (English), indicating the phenomenon of "false friends," in which the learner mistakenly assumes that a probable cognate in their L1 can be used in a similar way in the L2.[18] Children also produced incomplete sentences which were evident in both the L1 and L2 languages. For example, the 5-year-olds produced "In my house there are two" under the theme mobile. A similar pattern was observed in L1 /mobilanʈ/ /mosʈu/ /ʂps/ ("In mobile many apps"). Though the responses across 6- and 8-year-olds did include a similar error pattern, it was however found to reduce with age in both the languages.

An interaction effect ($p < 0.05$) was observed between the L1 and L2 languages indicating a difference in the performance of both languages across all age groups for the total number of words and total number of different words. Research supports the maturational state hypothesis which claims children to have the capacity of acquiring language whether the language is first or second language depending on when the second language was acquired.[43] According to the bilingual interactive model, the difference between the lexical and semantic level does suggest that the organization and vocabulary size does reflect the complex lexical network, indicating the mental lexicon to be an active system with new links that are formed perpetually.[44] Research on bilingual mental lexicon does suggest that the L1 and L2 lexicon are intricately related based on word relationships, with free association tasks (lexical depth and lexical breadth) such as the ones used in the current study, indicating the L2 lexical network to be significantly influenced by the native language (L1).[13] Wolter[18] does conclude that the multifaceted set of assumptions for integration and shaping L2 lexical knowledge is already ready, even before they learn the first word in the L2. This is largely possible with the complex knowledge network that s/he has acquired through his/her L1. In the current study, the overall better performance observed in English (L2) in both tasks could be attributed to the ongoing exposure to this language in school, and also since English is primarily spoken in school compared with Konkani (L1). To complicate matters, the Konkani (L1) language lacks a standard script compared with English (L2), resulting in the learning process of Konkani (L1) to possibly deescalate with the inclusion of English (L2) which is introduced in all modalities (reading, writing, and listening). Considering the lexical networks of Konkani (L1) and English (L2) to be quite distinct based on the type of language family they belong to, one may not be able to bypass the L2 acquisition process, solely relying on the L1 lexical network knowledge.[18] Instead, such bilinguals may develop two separate lexical systems for L1 and L2 to make implications about the structural organization of both languages.[37]

Conclusion

Exposure to two different languages during early childhood is inevitable in a multilingual country like India. The present study attempted to explore the lexical knowledge of Konkani (L1) and English (L2) bilingual children using two experimental tasks (lexical breadth and lexical depth). With a multitude of variables influencing the complex interaction of these two languages in typically developing children, it becomes challenging for speech language pathologists to address these issues in children with language disabilities. The findings of this study may help pave way to future explorations to cater to these issues.

Authors' Contributions
P.P.R. was involved in data collection. S.K. and J.S.B. were involved in conceptual planning, analysis, manuscript preparation, and overall proofreading.

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