Original Paper

Early Word Productions in 8 to 12 Month Old Typically Developing Malayalam Learning Children: An Exploratory Study

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Abstract

Infants start to vocalize recognizable words at an early age. Early linguistic interactions with the parents and caregivers is certainly important to establish these early linguistic abilities. Some word like forms do appear to have meaningful correlation with the infants primary language. With this reference, it is essential to investigate the early word productions during the babbling phase to their first word productions. The present paper highlights on the occurrence of early word productions in 8 to 12month old infants in Malayalam language. The participants consisted of 20 typically developing native speaking Malayalam infants. Vihman and McCune's (1994) criteria was utilized to determine the early words after the audio recordings were carried out and transcribed. The transcribed data was analyzed in IPA to acquire the frequency of the early word productions.

Keywords

early words, Malayalam, babbling, phonological development

1. Introduction

A child's first meaningful productions have been labeled protowords (Menn, 1983). Proto words are also known as vocables (Ferguson, 1978), phonetically consistent forms (Dore, Franklin, Miller, & Ramer, 1976), invented words (Locke, 1983), sensori-motor phonemes (Carter, 1979) and quasi-words (Stoel-Gammon & Cooper, 1984); they are vocalizations with no recognizable adult model that are

consistently produced by the infant. However, they cannot be considered babbling either because they have some phonetic consistency (Stoel-Gammon & Dunn, 1985). Protowords are the language which are invented by the child's own and differs from babbling (Blak & Fink, 1987). This was also described by Ferguson (1978) that protowords as "babbling-like sounds used meaningfully". Protowords are frequently tied to a specific context and are often accompanied by a consistent gesture. These vocal productions have frequently been considered the link between babbling and adult-like speech. Researchers have reported four phonetic forms that are frequently used in protowords: (1) syllabic nasals, (2) syllabic fricatives, and (3) single or repeated consonant-vowel syllables in which the consonant is a nasal or a stop (Ferguson, 1978; Halliday, 1975; Lewis, 1951; Vihman & Miller, 1988).

Carter (1979) observed the transition of protowords to true words in a single subject. The subject's productions were termed as "sensori-motormorphemes". Elbers and Ton (1985) recorded play-pen monologues of a 1 year old Dutch boy for 20-30 minutes each day, for a period of 6 weeks. The mother kept a diary and noted the occurrence of new words. During the study, the infant acquired 4 new words, and it was found that prior babbling "prepared for" the selection and production of these true words.

Stoel-Gammon and Cooper (1984) studied 3 infants' productions in English, from late babbling to the acquisition of the first 50 words. The goal of the study was to determine the relationship between word acquisition and phonological development. In their study, they distinguished between babbling, acquisition of adult words and creation of child based "quasi-words". They found that the vocalizations produced by infants were not the same as in English and therefore concluded that they would not appear in real words. They also concluded that the infants use a limited number of "patterns" in the first words.

Laakso et al. (2010) studied the patterns of protowords in the interaction with parents. The study revealed that at the age of twelve months children start to acknowledge or reject parental interpretations. The patterns consisted of acquisition of shared meanings embedded in the sequences of first proto-utterances and their interpretations in the course of daily activities at home.

Gotzke and Goose (2007), during the 7-9 month period, infants may produce protowords or phonetically consistent forms of vocalizations with consistent structures that do not resemble an adult model (Menn & Stoel-Gammon, 2005; Sachs, 2005). These protowords may be recognized as an important step towards first words, as they suggest that the infants to have some degree of voluntary control over the vocal mechanisms and a certain degree understanding that sound sequences have unique meanings. Infants begin to produce consistent vocal patterns as that function as words early as nine months (Owens, 2001).

By the end of 10 to 12 months, most infants produce their first words (Owens, 2001; Sachs, 2005). The first word may be the name of a toy, food or family member (Owens, 2001) or may be a greeting, farewell or other social phrase such as peek—a-boo (Menn & Stoel-Gammon, 2005). These first words may be used to gain attention. According to Pan (2005), first words tend to be similar for toddlers across cultures.

In the Indian context, a study conducted by Rupela and Manjula (2006) on 30 Kannada-speaking children from the age range of 0 to 5 years revealed bisyllabic words emerging at 6-12 month and increased by 18 months. This revealed the fact that as children grow they learn to carry out their vocal mechanism efficiently, thereby increasing their word length and complexity. Shishira (2013) carried out a study on the early phonetic repertoire in typically developing native Kannada-speaking children in the age range of 12 to 18 months. Results were analysed based on criteria given by Vihman and McCune (1994).

2. Method

The researchers in the present study have included older research findings as there is a dearth of recent Indian studies in this particular area of research on early word productions in children below 12 months. The older references have findings on children in the higher age ranges and have also included them in this study as it's a preliminary study.

2.1 Participants

The participants included 20 native Malayalam speaking infants. 10 participants were included in Group I (8-10 months) and 10 in Group II (10-12 months). A written consent was obtained by the parents for the participation of the infants.

The infants were identified from native Malayalam speaking families. They were screened using the Developmental Screening Checklist (Swapna, Jayaram, Prema, & Geetha, 2010). It was ensured that both the parents were educated upto a minimum of 10th grade and were from middle socio-economic status. The proficiency of the native language of the parents was assessed using the Language Proficiency Questionnaire: An adaptation of LEAP-Q in the Indian context by Maitreyee and Goswami (2009). A score of "5" would indicate the parent/caregiver to be a "perfect" native speaker.

2.2 Data Collection

The audio recordings were carried out in a quiet room with minimal distractions in the homes of the participants. Parents or caregivers were requested to interact with the infants naturally. Each infant was recorded using a hand held MZ-55 digital voice recorder with an integrated microphone placed at a reasonable distance so as not to cause any distraction. Samples obtained were then transferred to a computer that had a VLC media player software for analysis. No additional play materials were used in the environment so that infants' utterances would reflect their typical productions in familiar surroundings.

Parents were interviewed to establish the type and frequency of early words uttered by the infant. Vihman and McCune (1994) have put forth certain criteria or the identification of true words, which were considered in the present study. 1) Determinative context—at least one use that occurs in a context which strongly suggests a word. 2) Maternal identification—the mother identifies at least one instance of the form of the word which either involves acknowledging or rejecting the word choice. 3) Multiple use-the child uses the target form/word more than once, and 4) Multiple episodes—more than

one episode of use.

The researcher then classified them into protowords or true words. This was carried out during parent-child interaction. Two Speech Language Pathologists and the 1st author served as judges for determining inter-subject reliability for the language. 10% of each of the subject sample was transcribed by each of the three judges. The researcher transcribed 10% of each of the subject sample for intra judge reliability. Cronbach's alpha co-efficient was consistent and found to be 0.70 and 0.75 for inter and intra transcriber reliability respectively.

2.3 Data Analysis

The study consists of a small number of participants, hence non parametric tests were carried out. Descriptive statistics for median percentage and Inter-quartile range was determined. A 60% criteria was utilized in the study, i.e., the frequency and type of the early words produced by 6 out of the 10 participants.

3. Results & Discussion

3.1 Comparison of Early Words Across Age in Malayalam Infants

Although the early word productions appeared from 8 months onwards, they were produced by few participants with 3 proto words and 3 true words. The 60% criteria was met by the oldest age Group IV (10 to 12 months), for true words (24) but not for proto words. In the present study, protowords were found to include one-two syllable productions to approximate more true speech like patterns rather than just a few random series of verbal strings. This is in consonance with the findings put forth by Menn (1983); Laakso et al. (2010); Shishira, Sushma, and Sreedevi (2014) who report protowords to comprise of just 1-2 syllables with limited articulatory movements performed but which closely approximate adult speech like productions and have a concrete linguistic communicative meaning to the child. The median (Mdn) percent score of boys and girls for early word forms are depicted in Table 1.

Table 1. Descriptive Statistics of Early Word Forms for the Oldest Age Group

Early word forms	Malayalam	
	Age range(in months)	
	>10;0 to ≤ 12:0	
	Group IV	
N=10	*Mdn*	IQR
Proto words	00.00	0.00-44.64
True words	100.00	55.35-100.00

As observed from Table 1 and Figure 1 the oldest age group 10 to 12 months had a higher production

of proto words and true words albeit with a higher standard deviation. This implies syllabic patterns formed concrete and meaningful complex utterances of the infants' vocabulary with advance in age. True words were present in all infants and were relatively higher in their frequency as compared to the proto words.
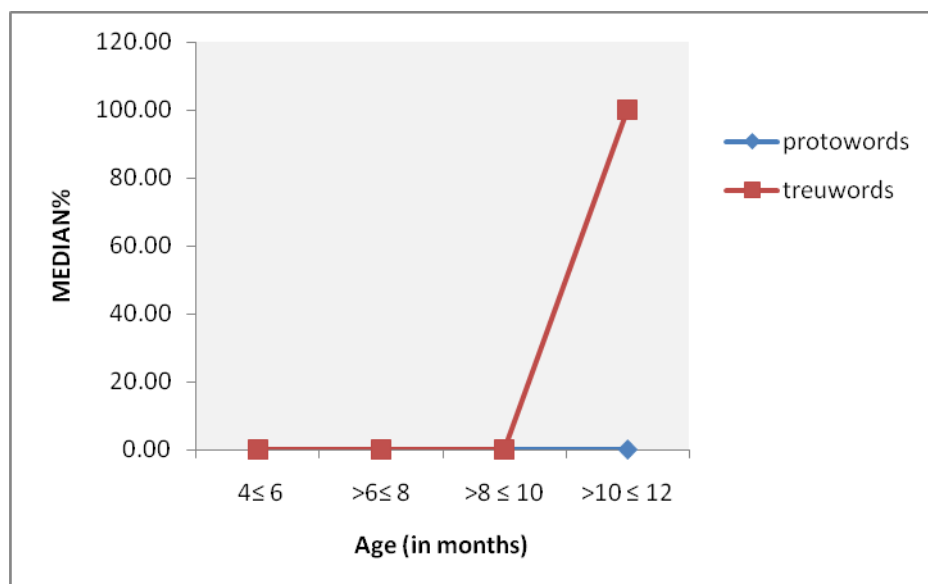

Figure 1. Early Word Forms in Malayalam

The participants in the oldest age group (10 to 12 months) demonstrated more of monosyllabic and bisyllabic true words (Appendix A) which were similar to reduplicated babbling like strings of phonemes. This finding is in accordance with a study by Stoel Gammon and Cooper (1984) who report infants use a limited number of patterns during their first few words. This finding is further augmented by a report by Elbers and Ton (1985) who recorded play pen monologues of a one year Dutch boy and found that the infant had learnt four new words in a span of six weeks, the selection and production of which were all based on the prior babbling strings. Bisyllabic words with occasional occurrence of multisyllabic words were evidently seen in the participants. These findings are in accord with Rupela and Manjula's (2006) study, where in bisyllabic true words were found to emerge at 6-12 months; becoming predominant by 18 months. In the present study, reflecting on the grammatical category, true words were mainly noun class of words in the younger age group with the grammatical class extending to verbs, tenses, gender markers etc in greater frequencies in the older age groups which were also analogous to the reports of Rupela and Manjula (2006); Shishira, Sushma, and Sreedevi (2014) in Kannada learning children. Statistical comparison was not carried out as only the infants of 10-12 months group had significant productions and the hypothesis could not be tested.

In conclusion, the present study revealed significant emergence of proto and true words from 8 months onwards which correlate with the reports of Bergelson and Swingely (2012) stating that infants from

this age are known to be capable of learning the sound forms of words and retaining them over long intervals whereas infants of 6 months and below have shown limited word form knowledge. Another remarkable finding of the present study was the steady rise in the frequency of varied word shapes and complex consonantal combinations in the older participants which was also similar to the reports of Shishira, Sushma, and Sreedevi (2014). Vihman and Kunnari (2006) explained children's emerging word learning skills and accurate consonant production skill on word learning to occur on the basis of "Vocal Motor Schemes" (VMS). These were explained as generalized articulator plans indexed by children's ability to consistently produce a given consonant over a period of time. Thus as children grow, they are able to efficiently carry out the vocal motor schemes thereby exhibiting increased word and consonant production skills. Thus, the present study contributes to our better understanding of language acquisition that an early age of 8 months, infants have already begun to link words to their referents.

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Appendix A

Protowords and True Word Productions in Malayalam Learning Infants

Age Groups	Protowords	Truewords
8;0 to ≤ 10: 0 months	/am: ma/-mom, /əba/-bye, /mImI/-fish	/mam: ma/-mom/vava/-baby, /bɛbI/-baby
>10;0 to ≤ 12 months	/əmma/-mom, /kəkə/-crow, /kakɛ/-crow, /papa/-papaya, /ɛḏɛ/-give	/atʃa:/-dad, /am: a/-mom, /amma/-mom, /appa/-dad, /amma/-mom, /kaka/-crow, /əmma/-mom, /umma/-mom, /ma:/-mom, /papa/-daddy, /ma/-mom,/papa/-dad, /æma:/-mom, /æ: ppa/-dad