



Research Article – Phonology

Person, number and gender markers among hindi speaking typically developing children

Ramandeep Kaur^{1*}, K.V. Jiji², T.A Subba Rao¹

¹Dr. MVST College of Speech and Hearing, Kavoov, Mangalore-575015, Karnataka, India

²BASLP, Speranza, Bendorewell-575002, Mangalore, Karnataka, India

¹Dr. MVST College of Speech and Hearing, Kavoov, Mangalore-575015, Karnataka, India

Abstract

Language is a human system of communication that uses arbitrary signal such as voice sounds, gestures and or written symbols. Language acquisition refers to the way the child acquires or learns a language. It is a hierarchical process which has specific age for achieving each process. Syntax, a component of language is defined as the study of principles and process by which sentences are constructed in particular languages. Understanding language development and syntax levels helps us determine the child's language adequacy. Solid syntactic skills require an understanding and use of correct word order and organisation in phrases and sentences with appropriate morphosyntactic operations. The morpho syntactical language includes plural markers, case markers, PNG markers etc. the study focuses on development of PNG markers among children who are native speakers of Hindi language. The study highlights the need to carry out more research in this area for better understanding of language acquisition among these children in order to develop both assessments and intervention programmes. Presently, the lack of acquisition data has hindered the development of any standardized tests in Hindi. Thereby, the study aims to explore PNG markers in Hindi speaking typically developing children with the objective of analysing the data of among these children across 4 to 6 yrs. The results show that most of these markers developed by 4 years of age. Most importantly as age increased these markers also increased. By 6 years of age most of these markers developed completely. The study also discusses various studies supporting the results.

Key words: PNG markers, syntax, Hindi, typically developing children

Introduction

Language is a human system of communication that uses arbitrary signal such as voice sounds, gestures and or written symbols. Chomsky believes "Language to be a set (finite or infinite) of sentences each finite in length and constricted out of finite set of elements (Syntactic structure 1957)". Language acquisition refers to the way the child acquires or learns their language. It is a hierarchical process which has specific age for achieving each process. The earliest form of language acquisition is considered to be babbling

because sounds are produced by infants based on the language input they receive. By 4-6 months a child begins to babble until the first words arrive at 1-1.6 years. Babbling appears to lead the child into words. Before words appear, children seem to have already acquired some communicative skills, generally requesting and asserting skills (Bruner, 1975; Bates, 1976). Consequently, the first words are produced between 10-15 months of age. These are hard to distinguish from the 'protowords'. These words may be context bound, situation-specific or function-specific and referential (Hoff, 2009). Among initial words, the noun meanings are much consistent to verb meanings (Gertner and Boroditsky, 2001).

Language development is a process starting early in human life. Infants start without language,

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*Corresponding Author

Ramandeep Kaur, Dr. MVST College of Speech and Hearing, Kavoov, Mangalore-575015, Karnataka, India

yet by 4 months of age, babies discriminate speech sounds and engage in babbling. The goal for many researchers who study language development is perhaps less grandiose than discovering how the mind works, but is more immediate. Success in modern industrialized society depends on good verbal skills and acquiring the verbal skills that society requires is problematic for some children (Hoff, 2009). Initial one word sentences are monosyllabic and in consonant vowel cluster form. Child does not use any syntactic or morphological markers during the two word stage.

Development of syntax

Syntax is the study of principles and process by which sentences are constructed in particular languages (Noam Chomsky, syntactic structures 1971). Understanding language development and syntax levels can help you to determine whether your child is on track of her age. According to Brown's stage of syntax and morphological development (1973) children between the ages of 15 and 30 months should have a vocabulary of about 50-60 words. Children at this stage should be using the words in their vocabulary to form simple phrases such as "the car", "more juice" and "bridie go". According to various speech language pathologists, these sentence demonstrate an understanding of the deeper meaning of the words and shows in simple form what the child might say if she was more mature and able to talk in complete sentence.

From 28 to 36 months of age, your child uses consistent word order when making simple sentences. Sentences now reflect a simple understanding of tense, as children add "ing" to the ends of words. Although not yet used correctly, adding the present perfect to words shows growth in how your child is working to be understood. Children's Speech and Language Services indicates that children during this stage will also use a rising tone at the end of a phrase when asking a question and add present tense helping verbs such as "is" and "does" to their sentences.

Stage 3 of Brown's Stages of Syntax occurs between the ages of 36 and 42 months. During this stage, your child begins to use past tense, although not always in the right form. Phrases such as "me

fell down," or "me go home" shows your child is beginning to understand the concepts of "how" and "when." According to Bowen, children will also begin to use possessive forms of words, such as "girl's" and "boy's" when referring to objects that belong to someone else.

By ages 40 to 52 months and beyond, of Brown's Syntax Stages, your child will add articles such as "a", "an" and "the" to sentences. She is also using regular past-tense combinations such as "she jumped" and questions such as "are you going?" in the right order. Children's Speech and Language Services indicates that "to be" verbs are also added during this time, as are third-person communicating and passive sentences such as "She is going" or "I will be going later."

Person, Number, Gender Markers

Solid syntactic skills require an understanding and use of correct word order and organisation in phrases and sentences (and also the ability to use increasingly complex sentences as language develops) with appropriate morphosyntactic operations. The morpho syntactical language includes plural markers, case markers, PNG markers.

Agreement or concord (abbreviated AGR) happens when a word changes form depending on the other words to which it relates. It is an instance of inflection, and usually involves making the value of some grammatical category (such as gender or person) "agree" between varied words or parts of the sentence.

For example, in Standard English, one may say I am or he is, but not "I is" or "he am". This is because the grammar of the language requires that the verb and its subject agree in person. The pronouns I and he are first and third person respectively, as are the verb forms am and is. The verb form must be selected so that it has the same person as the subject. The agreement based on overt grammatical categories as above is formal agreement, in contrast to notional agreement, which is based on meaning. For instance, in American English the phrase the United Nations is treated as singular for purposes of agreement even though it is formally plural. Person number gender markers are agreement that happens between verb and a subject when a word changes form

depending on the other word to which it relates. Typically developing children learn the concord between the person noun and gender through trial and error method. The development of PNG markers starts with the appearance of pronouns.

Agreement generally involves matching the value of some grammatical category between different constituents of a sentence (or sometimes between sentences, as in some cases where a pronoun is required to agree with its antecedent or referent). Some categories that commonly trigger grammatical agreement are noted below.

Person: Agreement based on grammatical person is found mostly between verb and subject. An example from English (I am vs. he is) has been given in the introduction to this article. Agreement between pronoun (or corresponding possessive adjective) and antecedent also requires the selection of the correct person. For example, if the antecedent is the first person noun phrase Mary and I, then a first person pronoun (we/us/our) is required; however, most noun phrases (the dog, my cats, Jack and Jill, etc.) are third person, and are replaced by a third person pronoun (he/she/it/they etc.).

Number: Agreement based on grammatical number can occur between verb and subject, as in the case of grammatical person discussed above. In fact the two categories are often conflated within verb conjugation patterns: there are specific verb forms for first person singular, second person plural and so on. Some examples:

- I really am (1st pers. singular) vs. We really are (1st pers. plural)
- The boy sings (3rd pers. singular) vs. The boys sing (3rd pers. plural)

Again as with person, there is agreement in number between pronouns (or their corresponding possessives) and antecedents:

- The girl did her job vs. The girls did their job

Agreement also occurs between nouns and their specifier and modifiers, in some situations. This is common in languages such as French, where articles, determiners and adjectives (both attributive and predicative) agree in number with the nouns they qualify:

- le grand homme ("the great man") vs. les grands hommes ("the great men")

In English this is not such a common feature, although there are certain determiners that occur specifically with singular or plural nouns only:

- One big car vs. Two big cars
- Much great work vs. Many great works

Gender: In languages in which grammatical gender plays a significant role, there is often agreement in gender between a noun and its modifiers. For example, in French:

- le grand homme ("the big man"; homme is masculine) vs. la grande chaise ("the big chair"; chaise is feminine)

Such agreement is also found with predicate adjectives: l'homme est grand ("the man is big") vs. la chaise est grande ("the chair is big"). (However, in some languages, such as German, this is not the case; only attributive modifiers show agreement.)

In the case of verbs, gender agreement is less common, although it may still occur. For example, in the French compound past tense, the past participle agrees in certain circumstances with the subject or with an object. In Russian and most other Slavic languages, the form of the past tense agrees in gender with the subject. There is also agreement in gender between pronouns and antecedents. Examples of this can be found in English (although English pronouns principally follow natural gender rather than grammatical gender):

- The man reached his destination vs. The ship reached her/its destination

Hindi Language

Hindi, or more precisely *Modern Standard Hindi*, is a standardized and Sanskritized register of the Hindustani language (Hindi-Urdu). Hindustani is the native language of people living in Delhi, Haryana, Western Uttar Pradesh, Bihar, north-eastern Madhya Pradesh, and parts of eastern Rajasthan, and Hindi is one of the official languages of India. Hindi is the fourth largest language in the world by native speakers. People who identify as native speakers of Hindi include not only speakers of Standard Hindi, but also

many speakers of Hindi languages family, who consider their speech to be a dialect of Hindi. In the 2001 Indian census, 258 million people in India reported Hindi to be their native language; as of 2009, the best figure *Ethnologue* could find for speakers of actual Hindustani Hindi (effectively Khariboli dialect less Urdu) was a 1991 figure of 180 million. The Constitution of India has effectively instituted the usage of Hindi and English as the two languages of communication for the Union Government. Most government documentation is prepared in three languages: English, Hindi, and the primary official language of the local state, if it is not Hindi or English.

As evident from above information, among the above studies no language data on children with intellectual disability is available in Hindi language. Hence, it is difficult to visualise and describe plural markers developed during language acquisition among the Hindi-speaking intellectually disabled children. It is essential that systematic, observational and experimental study of language acquisition in children in these Hindi-speaking children needs to be conducted for developing both assessments and intervention programmes. Thereby, the present study keeps in mind the above limitations and thus tries to improvise the description of PNG markers in language data among Hindi-speaking typically developing children.

Need for the study

Morpho-syntactical studies in the Indian context would aid in assessment and help in establishing the baseline to set goals for morphological intervention in disabled children. The lack of acquisition data has hinged in the development of any standardized tests in Hindi. There is a need of more normative data of acquisition grammatical in Hindi language. The present study attempts to understand the PNG markers in Hindi speaking typically developing children when compared.

Aim of the study

The study aims to explore PNG markers in Hindi speaking typically developing children with

the objective of analysing the data of among these children across various age levels

Methodology

Participants

The study included twenty typically developing children. These children were selected from districts of Haryana and Delhi. All these children were native speakers of Hindi language.

Selection Criteria

Typically Developing Children

Typically developing school going children were recruited from Hindi-medium schools within the age range of four to six years. The children within four to six years were preferred for the study because by four years a reasonable amount of language development occurs in a child that can be compared to adult language patterns. Thus, the mental age range of four to six years needs largest attention for remediation of children with language disorders. Prior to conduction of the research, school authorities were explained about the purpose of the research and a written permission was obtained from them.

Inclusion Criteria

- Children between four to six years of age
- Children who speak Hindi as their native language
- Children, selected by teachers, who best suited the criteria for recording of language samples

Exclusion Criteria

- Children with a history/complaint of any speech and/or language deficits
- Children with a history/complaint of any reading and/or writing problems
- Children who had any history/complaint of acquired hearing loss
- Children with complaints of cognitive deficits such as poor memory, attention deficit, organizational and/or sequencing issues
- Children with a history of any transfer from more than one school
- Children with a history of any shift in the medium of instruction
- Children with a history of any academic failures.

Post-selection, these children were divided into four subgroups, *Group 1 (4-4.5years)*, *Group 2 (4.6-5years)*, *Group 3 (5-5.5years)*, and *Group 4 (5.6-6years)*.

Table 3.1: Age/sex distribution of 4-6 year old typically developing children

S. No.	Age Group	Child	Age (years)	Sex	Mean Age
1.		AK	4.2	F	
2.	I.	FM	4.3	M	
3.	(4-4.5 years)	DS	4.1	M	4.2
4.		GB	4.0	F	
5.		PK	4.4	F	
6.		MN	4.7	M	
7.		YS	4.6	M	
8.	II.	PT	4.5	F	
9.	(4.5-5 years)	HM	4.9	M	4.7
10.		HK	4.8	F	
11.		RD	5.4	M	
12.	III.	MA	5.2	M	
13.	(5-5.5 years)	AP	5.3	F	5.32
14.		SK	5.5	F	
15.		OM	5.2	F	
16.		RH	5.6	F	
17.	IV.	IP	5.8	M	
18.	(5.5-6 years)	JK	5.9	M	5.8
19.		DJ	5.7	F	
20.		KM	6.0	M	

3.3 Language Data Collection

Natural conversational samples were video recorded, during clinician-child and parent-child interactions at the time of play. Each sample was recorded in a quiet corner room within the school premises, with limited auditory and visual distraction.

Table 3.3: Toys and materials used for Language Data Collection

Category	Materials
Toys and Play Materials	Doll House Building blocks Toy Cars and Toy Train Kitchen Set Paper-pencil
List of Pictures	Road Traffic Village Scene Birthday Party City Scene
Topics for elicited Responses	Family School Life Television Programmes and Cartoon Scenes Favourite clothes/music

The recordings were a minimum of 25 to 30 minutes targeting one child at a time. During the recording therapist/parent gave minimal instructions and focussed on eliciting maximum natural responses from the child based on the stimuli (toys/pictures) presented.

Various materials including toys, books and pictures were used to elicit language responses from children. A list of materials is provided in Table 3.3. All the subjects interacted using the same stimuli material. Additional notes regarding the recording situations and activities were taken by a second researcher at the time of recording itself.

3.4 Language Analysis

The recorded language samples were transcribed verbatim. Each of the utterance produced by Therapist (T) and Pupil/subject (P) was transcribed within few hours of recording on the same day. The utterances were written down on a separate line and marked as either T's or P's utterance appropriately. Any interaction or clues provided during the recording session were also written down during transcription. Thus, overall guidelines provided by LARSP were followed.

Language Assessment, Remediation and Screening Procedure [LARSP]:

LARSP is a guide for analysis of the grammar and morphology of children's spontaneous language samples. It has been described by Crystal, Fletcher & Garman (1976) & Crystal (1979). It is a linguistic profile, used by researchers and clinicians to carry out a comprehensive and consistent linguistic analysis (Ball, 1999). It was developed as a single procedure, integrating the clinical operations of screening, assessment and remediation in the area of grammar. It includes identification of sentences and analysing them at clause, phrase and word levels. The LARSP procedure involves seven stages of transcription, grammatical analysis, structure count, pattern evaluation, statement of remedial goals, and statement of remedial procedures. The presence of a unit was denoted as '+' and absence as '-' for ease of understanding. Thus, marked data was transferred on to a smaller profile for analysis purposes. The structures for plural markers were selected from various explanations of Hindi syntax by Koul (2008) and

also Bhartiya Saahitya Sangrah (2005). The following scans were made on each of the transcripts.

Scan 1: Discriminating Analysable and Non-analysable Utterances

This scan focused at separating various utterances as analysable and non-analysable. The non-analysable utterances included three categories:-

- (a) Partially/wholly unintelligible utterances
- (b) Presence of unwanted noise like vehicle noises and/or vegetative sounds
- (c) Deviant, incomplete, unfinished and ambiguous utterances

Scan-2: Type of Response

This Scan analysed various sentences, as being spontaneous ones or response to therapist's utterances. Spontaneous sentences were distinguished from responses. Any extra sentence other than the response sentence produced immediately following a stimulus was considered as a spontaneous sentence. The response utterances were the ones that occurred in relation to therapist's utterances. The response patterns were classified under 'normal response type' and 'abnormal'. Normal responses were of 3 types:

- (i) Full major sentence
- (ii) Elliptical major sentence: When exact number of words omitted can be recalled by referring to previous sentence. *Eg: If one word of the sentence is remaining it is elliptical 1*
- (iii) Minor sentence: usually /uhm, nahi/ (no), /mhm, haan/ (yes).

A broad category of repetitions was also classified. This included responses similar to echolalia and also elicited imitations. In case of any confusion or uncertainty, the sentences were placed under 'problem' category.

Scan 3- PNG Markers

In Hindi, the verb ending must agree with the subject in number and gender as follows:

- 1) Use of |ta: |, |t e|, |t i|
- a) For Masculine singular, |t a: | is added to the verb.

Example:|m æ dʒa: t a: hu|
"I am going"
|ladka: dʒa: t a: h æ |
"boy is going"

- b) For Masculine plural, |t e | is added to the verb.

Example:|vehdʒa: t e h æ |
"they are going"
|ladkedʒa: t e h æ |
"boys are going"

- c) For Feminine singular and plural, |t i: | is added to the verb.

Example:|m æ dʒa: t i hu |
"I am going"
|ladkiyadʒa: t i: h æ |
"Girls are going"

- 2) Use of |raha: |, |rahe|, |rahi:| in case of present progressive tense

- a) In case of Masculine singular |raha: | is used
Example:|m æ dʒa: raha: hu|
"I am going"

- b) In case of Masculine plural |rahe | is used
Example:|hum dʒa: rahe h æ |
"we are going"

- c) In case of Feminine singular and plural |rahi | is used

Example:|m æ dʒa: rahihu |
"I am going"
|vehdʒa: rahi h æ |
"they are going"

- 3) Words like |na: | are used for wishful sentences
Example:|m æ ha:rkhari:dna:ʃ'a:hti: hu|
"I want to buy the necklace"

Statistical Analyses

After Transcription and analyzing the recorded data, the record sheets were further subjected to statistical analysis. For this the Fisher's Exact Test was used in order to compare results within each group during tense analyses. The results are expected to strengthen linguistic profiling of Hindi speaking children between 4-6years. Such profiling is expected to increase our understanding of disordered language in this group and also help in planning remediation. The detailed interpretation of data analysed is described in the section that follows.

Table 6.1 Development of PNG markers across age levels in typically developing children

PNG Markers		4-4.5 years		4.5-5 Years		5-5.5 years		5.5-6 years		Fisher's Exact Test
	count	%	count	%	count	%	count	%	P value	
Ta	2	40	3	60	2	40	4	80	0.528	
Te	2	40	4	80	4	80	5	100	0.167	
Ti	3	60	5	100	5	100	5	100	0.083	
Raha	2	40	1	20	3	60	5	100	0.070	
Rahe	2	40	2	40	4	80	4	80	0.343	
Rahi	4	80	4	80	4	80	5	100	0.759	
Na	0	0	0	0	1	20	3	60	0.058	

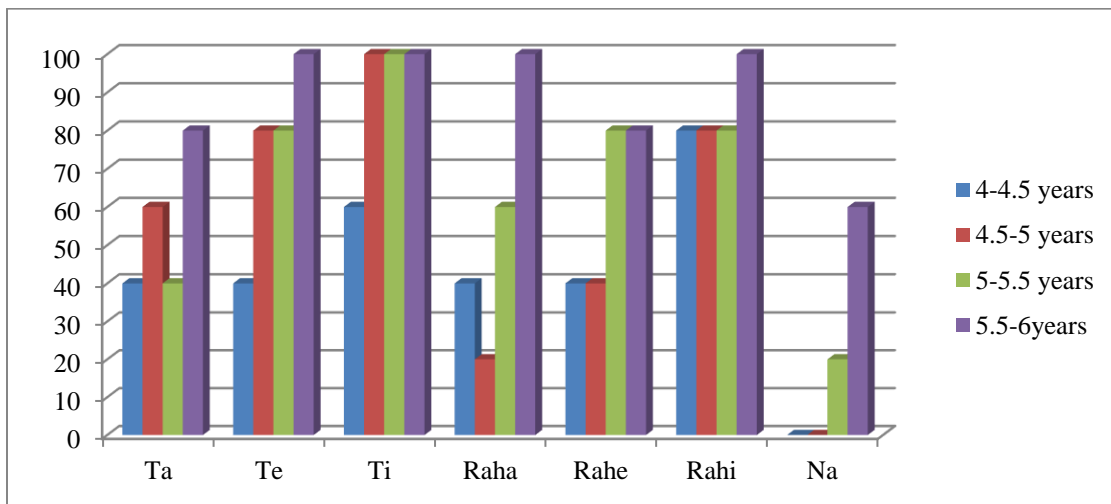


Figure 6.1 Development of PNG markers across age levels in typically developing children

Results

The markers which provides information about person, number and gender are /ta:/, /te/./ti/. /ta:/ indicates masculine singular/te/ indicates masculine plurals, /ti/ indicates feminine singular and plurals. Second class of markers are /raha/, /rahe/, /rahi/. The marker /raha/ is used as a masculine singular, /rahe/ as masculine plurals and /rahi/ as feminine singular and plural. Also for wishful sentences another PNG marker /na:/ is used.

Analysing PNG markers among typically developing children shows that except for wishful markers all markers develop by 4yrs. As age increases these markers keep increasing. By 6 yrs of age most of these markers develop completely. This includes /ta:/, /ti/ /raha/ and /rahi/. A few markers, however does not complete their development even till 6yrs of age. These are /ta:/, /rahe/. One marker which does not appear until 5yrs is /na/ used for wishful sentences. As seen in other syntactic categories, PNG markers also show

an overall increase with age. However this is evident only between 4-5 yrs. After 5 yrs most of the marker appears to show limited variations with age. In case of wishful markers/na/ the development does not complete even after 6yrs of age though they show a drastic increase at 5.5 to 6yrs.

At 4yrs of age /raha/ seems to be the most frequently used marker. By 4.5yrs, children mostly start using /ti/ markers which is used consistently until 6yrs. By 5.5 to 6 yrs most of the markers are used at high frequency by typically developing children. Results on PNG marker analyses presented a predictable picture of increasing performance of typically developing children as age increases from 4years to 6years. This performance, however, is not uniform across all the categories.

Discussion

It is observed that typically developing children completed the development of syntax

mostly by 6years of age. Some areas did remain underdeveloped but these were minimal. The data collected in the present study served as good reference in order to understand the language aspects among typically developing children and also in children with communication disorders.

In PNG markers, marker /ta/, /ti/ and /raha/, /rahi/ were used the most. The wishful marker /na/ was least used. PNG markers in the present study were found to be present in both first person and second person. Only marker not seen in the language of 4-6year old children was the wishful marker /na/. This finding was contradicting with earlier studies by Prema (1979) which highlighted an unstable use of PNG markers among 6 year olds. Also, Subbarao (1995) claimed the use of first persn PNG markers more than second person, which was insignificant in the present study.

The result of present study agreed with few studies done in other languages like Kannada, Malayalam etc. (Tasneem, 1972; Sridevi, 1976; Subramaniam, 1978; Uma, 1993; Suchitra&Karanth, 1990; Subbarao, 1995; Kaur, 2015; Verma, 1980; Krupa, 2009). On syntactic markers, the present study found use of regular plurals most often, with very minimal incidents of irregular plural forms. This was observed in various other studies done in Indian languages (Subbarao, 1995; Kaur& Shiny, 2017). Among the tense markers also, the present study was in agreement with other studies, as most of the studies showed present tense to be more prominent in speech of typically developing children (Subbarao, 1995; Kaur, Shiny, Subbarao, 2017). On summarizing syntactic development among 4-6year old Hindi speaking TDC, Crystal, Fletcher& Garman (1989) made similar observation by about 4-5year when children developed syntax completely. The study correlates with that of Nippold, Hesketch, Duthie, Mansfield (2005) who reported that syntax developed by 6years of age but various complex features of syntax continued to develop beyond 6years till adolescence and even till early adulthood (20-29 years) and then remained stable till middle age (40-49years).

Conclusion

The present study included subjects from middle-class families. The variables that affect

spoken language forms, especially Hindi dialect are Urban versus Rural (Eg. Hindi speaking urban children use a different dialect in Haryana and Delhi, compared to rural children), illiterate versus literate, educated versus uneducated and caste hierarchy. The changes in language used among rural and urban children are evident from a study done in Hindi languages across rural and urban children (Kaur, Anand&Subbarao, 2017). This also correlates with Western studies as in Pungello, Iruka, Dotterer, Koonce, &Reznick (2009). On summarizing syntactic development among 4-6year old Hindi speaking TDC, Crystal, Fletcher& Garman (1989) made similar observation by about 4-5year when children developed syntax completely. The study correlates with that of Nippold, Hesketch, Duthie, Mansfield (2005) who reported that syntax developed by 6years of age but various complex features of syntax continued to develop beyond 6years till adolescence and even till early adulthood (20-29 years) and then remained stable till middle age (40-49years).

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