

Acquisition of Case Markers in Down's Syndrome Children with Mental Age 3-8 Years

Nandhu S Mohan, Vishnu V.K., Sreelakshmi R., and Satish Kumaraswamy

Abstract

This study aims at establishing a descriptive data on Acquisition of case markers in Down's syndrome Malayalam speaking subjects within the mental age of 3-8 years. Fifty Down syndrome subjects were assigned into five groups based on mental age. Different case markers in Malayalam language were identified and picture stimuli of those were developed. Subjects were provided with picture description task and responses were separately marked on worksheet and were analyzed. Results revealed that the Down's syndrome subjects with higher mental age showed better production of case markers i.e. as mental age increased the ability to use correct case marker improved.

Key words: Down's Syndrome, morphosyntax, Malayalam , case markers.

Morphology is the aspect of language concerned with the rule governing change in word meaning. The morpho-syntactical aspects include plural markers, case markers, PNG markers etc. Case markers are the suffixes or prefixes which shows the type of relationship they bear to nouns, verbs etc.

Malayalam is a language of the Dravidian family and is one of the four major languages of this family with a rich literary tradition. Malayalam has a rich morphology, and identifying the morphological suffixes of Malayalam verbs and nouns is a tough task.

Downs Syndrome

Downs syndrome, a genetic disorder caused when abnormal cell division results in extra genetic material from chromosome 21, which varies in severity. It causes lifelong intellectual disability and developmental delays, and in some people it causes health problems.

The greatest detriment is apparent in language development out of the many deficits observed in children with Down syndrome. As language bridges most people together through communication, language delays may have damaging effects on future abilities such as independent living and complete acceptance into their immediate environment (Abbeduto, et al., 2007). Kumin (1998) argues that speech and language characteristics are not unique to children with Down syndrome, as similar delays are displayed in typically developing children. A variety of language difficulties are present among children with Down syndrome, but Kumin (1998) believes that children with Down syndrome do not present consistent speech and language characteristics.

Syntax Difficulties

Syntax difficulties in spoken language may be more present than expressive and receptive vocabulary problems (Martin et al., 2009) in children with Down syndrome. Owens (2010) suggested that children with Down syndrome may also present less mature syntax in association with the use of jargon, perseveration and difficulties with presuppositions. Roberts et al. (2007) agree with these findings as they note delays in transitioning from one to two words in speech. Furthermore, this type of delay progresses into multi-word speech evidenced by a decreased mean length of utterance (MLU).

Malayalam as a Dravidian Language

Malayalam is a language of the Dravidian family which is complex in morphology. Identifying the morphological suffixes of Malayalam verbs and nouns is a tough task. Hence, morpho-syntactical studies are less in Malayalam. More morpho-syntactical studies in the Indian context would aid in assessment and help in establishing the baseline to set goals for morphological intervention in Down syndrome children. Acquisition of case markers in Malayalam is less studied in Down syndrome children. Hence there is a need for studying children with Down syndrome for establishing intervention and management in morpho-syntactical aspects.

Review of Literature

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Children with Down syndrome reveal greatest detriment in language development out of the many deficits observed in children. As language bridges most people together through communication, language delays may have damaging effects on future abilities such as independent living and complete acceptance into their immediate environment (Abbeduto et al., 2007). Kumin (1998) argues that speech and language characteristics are not unique to children with Down syndrome, as similar delays are displayed in typically developing children. A variety of language difficulties are present among children with Down syndrome, but Kumin (1998) believes that children with Down syndrome do not present consistent speech and language characteristics.

Syntax difficulties in spoken language may be more present than expressive and receptive vocabulary problems (Martin et al., 2009) in children with Down syndrome. Owens (2010) suggested that, children with Down syndrome may also present with less mature syntax in association with the use of jargon, perseveration and difficulties with presuppositions. Roberts et al. (2007) agree with these findings as they note delays in transitioning from one to two words in speech. Furthermore, this type of delay progresses into multi-word speech evidenced by a decreased mean length of utterance (MLU).

According to Owens (2010), children with Down syndrome may also present less mature syntax in association with the use of jargon, perseveration and difficulties with presuppositions. Roberts et al. (2007) support these findings as they note delays in transitioning from one to two words in speech.

Price (2007) found that boys with DS scored lower on comprehension of grammatical morphology (prepositions and bound morphemes) than younger typically developing boys of similar nonverbal mental age. Considerable evidence points to productive syntax deficits in young individuals with DS that cannot be described by cognitive level. The occurrence of two-word combinations is delayed in young children with DS (Iverson et al., 2003), and children and adolescents with DS continue to produce shorter and less complex utterances than typically developing children of the same nonverbal mental age as they get older (Caselli et al., 2008; Chapman et al., 1998; Price et al., 2008; Rosin et al., 1988).

Seung and Chapman (2004) examined the sentence memory of the individual with Down syndrome and typically developing children. The study evaluated the Baddeley models claiming that the verbal short-term memory deficits might arise from slower speaking rate by using the sentence memory subtest of the Stanford Binet. Thirty individual with DS were compared to two control groups on the sentence span and speaking rate for the longest verbatim recalled sentence. Sentence stimuli were presented at a normal speaking rate. Results showed that the DS group had shorter sentence memory span than the MA-matched group and a faster, rather than slower, speaking rate (syllables per second) than the MLU matched controls.

Ring and Clahsen (2005) studied distinct pattern of language impairment in Down syndrome. The study presented experimental results on syntactic binding of reflexive and non-reflexive pronouns and on the comprehension of active and passive sentence in eight adolescents with Down syndrome and 10 with William syndrome. Authors proposed a syntactic account of the difficulties of people with DS in these domains. Distinct patterns of linguistic impairment were found for these developmental disorders indicating that at least in these syntactic domains different genetic etiologies are associated with different specifically linguistic patterns of impairment.

Charles, Kristina & Sophie (2012) studied the growth of reading skills in children with Down syndrome in a two-year longitudinal study of 49 children with similar initial levels of reading skill. Phoneme awareness and vocabulary were strong concurrent predictors of initial levels of reading skill in both groups. However, longitudinally phoneme awareness was a predictor of the growth of reading skills in TD children but in children with DS, there was a very high degree of longitudinal stability in reading skills, and initial levels of reading skills seemed to be highly constrained by general language skills, as indexed by vocabulary knowledge, in this population. They conclude that reading development in children with DS shows similarities and difference to the pattern observed in TD children and that phoneme awareness appears to be a less powerful influence on the development of reading skills in children with DS.

Sarah, Bernstein and Rochelle (2012) studied the verb comprehension and use in children and adults with Down syndrome. The authors have examined verb and argument structure retrieval in 18 individuals, 9 with DS, age 11;11 (years; months) to 32;10 and 9 receptive vocabulary age matched typically developing (TD) children, age 3;2 to 13;16. Participants completed verb and noun comprehension task, a working memory assessment, verb and noun naming task, grammaticality judgment, and narrative tasks. Result: Neither single verb comprehension nor single verb naming differentiated the DS and TD group. Individuals with DS omitted verbs in elicited narratives significantly more often than individuals who are TD, specifically when production of 2-place and 3-place verbs was attempted. Individuals with DS also omitted other necessary elements of argument structure, such as subject, in sentences, in sentences containing 2-place and 3 -place verbs significantly more often than individuals who are TD. Performance who are TD. Performance was not related to working memory skills.

Perovic (2006) analyzed the syntactic deficits in Down syndrome .The study reports finding from an experimental investigation into the knowledge of binding (the model of grammar regulating the distribution of reflexives and pronouns), in the group of young adults with Down syndrome. Participants with DS were found to have difficulties comprehending reflexives, but not pronouns. In contrast with pronouns which are interpreted by invoking extra-syntactic mechanisms, the interpretation of reflexives depends on a syntactic relation between the reflexive element and its antecedent. This point to the deficits in DS being a syntactic in nature. Such a pattern is exactly the opposite to that found in atypically developing English children, who obey the syntactic constructs on the distribution of reflexives early on, but have a trouble applying the co-reference rule, a constructs outside a syntactic proper that regulate the interpretation of pronouns . The results provide the evidence that language in DS is not nearly delayed, as a traditionally described, but also deficient in important respects; the deficits amount to an inability to establish the syntactic relation between the anaphor and its antecedent.

Laws & Bishop, 2003 reported frequent omission of grammatical morphemes in Down syndrome, but the precise nature and extent of these omissions has thus far not been clearly delineated.

Malayalam is a language of the Dravidian family and is one of the four major languages of this family with a rich literary tradition, Malayalam has a rich morphology, and categorizing the morphological suffixes of Malayalam verbs and nouns are tougher tasks.

In Malayalam case system various suffixes are added to noun stem to indicate different relationships between the noun and other constituents of the sentence. The various case markers are Nominative, Accusative, Genitive, Dative, Instrumental, Locative and Sociative.

- Nominative case marker: usually denotes the subject. There is no specific case marking in Malayalam for denoting nominative case marker

Examples: /kutti a:dunnu/ - The child is dancing.

/avalkarayunnu/ - she is crying

- Accusative case marker: is used to indicate that a noun is an object of action of the verb. Usually denoted by /e/

Examples: /kuttiyethalli/ - The child was beaten.

Here /kutti/-object and /e/ is the Accusative marker

- Genitive case marker: indicates possession and is usually marked with /ude/ or /nte/
/gandhijiyude vadi/ - Gandhi's stick
/ramante chatti/ - rama's pot

- Dative case marker: indicates purpose like when a noun is the goal of a verb of motion or when a noun is the recipient of benefaction such as when something is given to someone or something. Usually indicated by /ke/ or /ne/ /avanu paniyanu/ -the boy is having fever
/aanaik karimbu ishtamanu/ - elephant likes sugarcane.

- Instrumental case: denotes the agent of action .usually indicated by /aal/
/ravanam ramanal kollapettu/ - Ravana was killed by Rama.

- Locative case markers: indicate place or situation marking done by /il/ or /kal /

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/vathilkalkili irikkunnu /.

/marathil kuruvi irikkunnu / - the bird is sitting on the tree.

- Sociative case marker: Denote social action /od/
/ kuttyammayod pokan paranju/

The significance as well as the morphemes used in Malayalam for representing each case marker is presented below.

Case markers	Significance	Malayalam	English
Nominative	Denote subject	-	-
Accusative	Denote object	എ /e/	-
Genitive	Denote possession	ഉടെ /ude/,ന്റെ/nte/	Of ,belongs to
Dative	Indicate purpose	ക്കു /ke/,നു/ne/	To , for
Instrumental	Denote agent	ആൽ/aal/	With,by
Locative1	Denote place or situation	ഇൽ /il/	In, on, among, between
Locative2	Denote place or situation	കൽ/kal/	In, on, among, between
Sociative	Denote social action	ഒട്റ്റ്/od/	-

Centers for Disease Control and Prevention (2006) identified Down syndrome as the major cause of intellectual disability, occurring in approximately 1 in 700 live births. Research has revealed that syntactical difficulties in spoken language may be more present than expressive and receptive vocabulary problems (Martin et al., 2009) in children with Down syndrome. Treasa & Shyamala (2013) attempted to study the expressive bound morpheme deficits in Malayalam speaking children with autism spectrum disorders and specific language impairment. They used the Sentence Imitation Test-Malayalam SIT-M, Treasa & Shyamala, 2013) which was standardized on 120 typically developing Malayalam speaking children aged between 3-6 years.

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SIT-M has six subtests having 10 test sentences each to examine the productive use of 6 Malayalam bound morphemes i.e., one Plural- /kal/, four Case markers- Accusative /e/, Locative /il/, Genitive /ute/, Dative /kkə or nə/, and one Conjunction /um/.

Need for the Study

Malayalam is a language of the Dravidian family which is rich morphology and identifying the morphological suffixes of Malayalam verbs and nouns are quiet tough task. Hence, morpho-syntactical studies are less in Malayalam. Morpho-syntactical studies in the Indian context have focused only on mean length of utterance or syntactic comprehension probably due to lack of suitable assessment tool. More morpho-syntactical studies in the Indian context would aid in assessment and help in establishing the baseline to set goals for morphological intervention in Down syndrome children. Acquisition of case markers in Malayalam are less studied in Down syndrome children, hence, there is a need of studying those for establishing intervention and management in morpho-syntactical aspects.

Aim of the Study

The aim of the present study is to report the acquisition of case markers in Down Syndrome children in Malayalam speaking children of mental age range of 3-8years.

Methodology

Subject Selection

The present study included 50 children, aged 6 - 18 years, diagnosed with DS according to DSM-IV and ICD-10 as participants of the study. The participants belonged to different age ranges with mental age between 3-8 years and were assigned into 5 groups according to their mental age as 3-4 years, 4-5 years, 5-6 years, 6-7 years and 7-8 years.

All the participants had a verbal repertoire of two-word phrases and were monolingual speakers of Malayalam. The clinical group children were receiving speech, language and psychological intervention at the time of testing.

Preparation of Material for Data Analysis

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Common case markers of Malayalam were selected from <http://www.scribd.com/doc/96257753/Grammar-Malayalam-SANDHI#scribd>.

Recording Environment

The entire session was audio recorded using microphone attached to Micromax A117 smart phone .The recording environment was a quiet room in the school building.

Data Collection

The participants were individually tested by presenting picture stimuli via PowerPoint presentation in Dell Vostro 14 3000 series laptop and were instructed to describe the picture in sentence. Responses with appropriate case markers were considered as correct response .Inappropriate case markers as well as omission of case markers were considered as incorrect response.

Analysis

The study was designed for obtaining an audio taped conversational sample with Down syndrome Malayalam speaking children. The audio taped samples were analyzed at syntactic levels primarily focusing on case markers. The presence of unit of analysis was noted and marked as '1' and absence or usage of inappropriate case marker was noted and marked as '0'. The total number of each case markers were tabulated

Results and Discussion

The DS children with mental age of 3-4 years Showed 70% acquisition of nominative whereas all other case markers were present less than 50%.

Accusative, Dative, Instrumental and Locative 1 showed 50%,30%, 20% and 20% respectively. Genitive, Sociative and Locative 2 case markers types were not present among these participants.

Children with mental age of 4-5 year showed significant acquisition of nominative Accusative and Dative types with 70% , 60% and 60% respectively.

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All other case marker type showed less than 30% acquisition. Locative 2 was not present among these groups.

Apart from the group of 3-4 years and 4-5yrs, the group of participants with the mental age of 5-6yrs showed significant increase in the percentage of acquisition of nominative, Accusative, Dative, instrumental, Locative and Sociative with 90%, 60%, 70%, 40%, 50% and 30% respectively.

Children with mental age of 6-7 years showed acquisition of nominative as 100%, accusative as 60%, Dative as 70%, Genitive as 20%, instrumental 70%, Locative1 as 50%, and Sociative as 30%.

DS children with mental age 7-8 years were the eldest among the group and showed significant increment in the results comparing to all other groups.

Acquisition of nominative showed 100%, Accusative as 70%, Dative as 90%, Genitive as 20%, and Instrumental as 70%, Locative 1 as 50% and Sociative as 40%. Locative 2 were not present in this group.

Locative 2 was not present among any of this group.

Exceptional Cases

An exceptional observation was made from the figures that Locative 2 case markers (/kal/) is not used by any of the age groups. This odd finding can be due to the fact that this particular case marker is not commonly used even by adults in normal conversation.

Discussion

The present study aimed at reporting the acquisition of case markers in Down Syndrome Malayalam speaking children in the mental age range of 3-8 years. The results showed that there

is a general increase in the acquisition as well as frequency of usage of some type of case markers with increase in the mental age of the children.

The DS children with mental age of 3-4 years Showed 70% acquisition of nominative whereas all other case markers were present less than 50%. Accusative, Dative, Instrumental and Locative 1 showed 50%, 30%, 20% and 20% respectively. Genitive, Sociative and Locative 2 case markers types were not present among these participants.

Children with mental age of 4-5 year showed significant acquisition of nominative, Accusative and Dative types with 70%, 60% and 60% respectively.

Apart from the group of 3-4 years and 4-5 years, the group of participants with the mental age of 5-6 years showed significant increase in the percentage of acquisition.

Children with mental age of 6-7 years showed acquisition of nominative as 100%, Accusative as 60%, Dative as 70%, Genitive as 20%, instrumental 70%, Locative 1 as 50%, and Sociative as 30% whereas DS children with mental age 7-8 years showed significant increment in the results comparing to all other groups i.e. acquisition of nominative showed 100%, Accusative as 70%, Dative as 90%, Genitive as 20%, Instrumental as 70%, Locative 1 as 50% and Sociative as 40%. Locative 2 case markers (/kal/) were not used by any of the age groups

Summary and Conclusion

Malayalam is an agglutinative, morphologically rich language in which identifying the morphological suffixes of Malayalam verbs and nouns is a tough task. Case marker is a system of marking dependent nouns for the type of relationship they bear to their heads.

Down syndrome, a genetic disorder caused when an abnormal cell division results in extra genetic material from chromosome 21, varies in severity and causes lifelong intellectual disability and developmental delays, and in some people it causes health problems. Children with Down syndrome may also have less mature syntax in association with the use of jargon, perseveration and difficulties with presuppositions.

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The present study aimed at reporting the acquisition of case markers in Down Syndrome Malayalam speaking children in the mental age range of 3-8 years.

The results showed that there is a general increase in the acquisition as well as frequency of usage of some type of case markers with increase in the mental age of the children. Nominative, Dative and acquisitive case marker types are the most developed type of case markers in all the age ranges.

Instrumental, Genitive, Sociative and Dative are not developed in any age group compared to other case marker types.

Hence, these case markers should be taken for intervention only when all other types of case markers have been acquired.

Limitations

- The small sample size
- The subjects were taken from the similar community, i.e., from a single dialectal population.

Future Implications

1. To include more number of subjects as well as include various dialectal communities.
2. More research work needed in other disordered populations.

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