A Comparative Study of the Production of Spatial Terms by Meiteilon-Speaking Children with Intellectual Disability and Typically Growing Children

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Abstract

This paper presents the result of an investigation on the elicited production of the spatial terms by a group of Meiteilon-speaking children with severe intellectual disability (ID) and a group of childrenwithout any disability in the same age range of 5-8 years. The finding shows that there is a difference in the production rate of the spatial terms by the two groups. The finding also shows that the children with intellectual disability manifest a significant difference when compared to the typically growing children. The ID group not only has lower production rate but they also lack in several concepts. This group use generic terms as a substitute to specific terms when compared with the other group.

Introduction

Over the years, there has been a rise in the new attempt to examine the nature of the language and the linguistic impairment of the children with intellectual disability (ID) from a linguistic point of view. Language of the person with ID is recognized to be marked with features of deviation and retardation. A child with ID is the one who falls in the lower end of the range of intelligence, usually with an intelligence quotient (IQ) below 70 on some standardized IQ tests and limitation in some adaptive behaviour. The onset is before the age of 18 years. Persons with ID have been categorized into mild, moderate, severe and profound categories depending on the level of severity. The present study has tried to examine the nature and function of spatial terms in the Meiteilon-speaking children with ID and compare it with the language of the typically growing children. The subjects in the study include a group of children in the range of severe ID and a control group which are the typically growing children. The two groups have been compared according to the age. The main reason for choosing the severe group within the groups in ID is that severe subjects show striking linguistic patterns (Sharma, 1977).

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Spatial Expression

Spatial expressions are used to describe the relationship among the objects. It describes the relationship between referents rather than the referents themselves. Spatial expressions are usually expressed by spatial terms. In this study, only the spatial terms that refer to the notion of location such as on, in, below have been considered. The terms that refer to the notion of direction such as left, right have not been used in this study. In eliciting data for these terms, it has to keep in mind that there is a chance of creating ambiguity and confusion. To avoid ambiguity, observer's point of view may have to be considered. For example, the statement "Y is in front of X" is not absolute. Y may be in front of one observer but it may be not for another. It may be behind the other observer (Cox and Richardson, 1985).

In Meiteilon, locative relations are marked by a locative marker '*-tə ~ -də*' on the referent object.

(1) *yum-də*

house-LOC

'in/at the house'

In addition, the specific relation is expressed by combining a directional or place markerwhich are nominal with the locative marker '*-tə ~ -də*'.

(2) *yum-giməmaŋ-də*

house-Gen front-LOC

'in front of the house'

Meiteilon-specific Spatial Terms Used in the Study

nakən -də	'beside'
mənak-tə	'nearby'
məmaŋ -də	'in front of, before'
məniŋ -də	'behind, in back of'
mənuŋ -də	'in, inside'
məpan -də	'outside, out'

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mətʰək-tə   'on, above, top, up'

məkʰa-də   'below, down, under'

məyay-də   'in the middle, in the center'

These spatial terms help in expressing the location of an object with a greater precision. The location will be left unspecific if only the locative marker–*də* is used. Examples:

(3) *lairik tebəl-də*   *ləy-y*

book table-LOC   be-Nonfut

"The book is on the table."

(4) *lairik tebəl-gi*   *məyay-də*   *ləy-y*

book table-Gen   middle-LOC   be-Nonfut

"The book is in the middle of the table."

In example (3), the position of the book is not specified. It can be anywhere on the table. In example (4), the position of the book is specified. It is in the middle of the table.

The main issues investigated were:

There ought to be a definite difference in the production of the spatial terms by the two groups. The ability of the children with an ID to indicate location of an object is limited. They might not be able to convey the exact location and might employ deictic prolocative, e.g., "here" and "there" to convey the location. The ability of the severe ID group to produce a particular spatial term will depend on the kind of relation the term expresses. Therefore, different terms will have different production levels. Some of the spatial terms may turn out to be easier to produce than others.

Method

Subject

The data for this study have been collected from nine children with an ID within the IQ range of 21–34 and nine typically growing children.

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Children with ID have been selected from a special co-educational school for persons with an ID, at Imphal, BB Paul Mental Development Home, Mongshangei, Manipur and also from a special co-educational residential centre, for persons with ID, Samarth Based Scheme Hostel, Mongshangei, Manipur. All subjects who have been chosen for the study, thus, are the native speakers of Meiteilon. The subjects who have been included in the study are already diagnosed with ID and after examining the case profiles of the students available in the school and the hostel, nine subjects were chosen for the study. While selecting the student, it has been ensured that none of them has either speech defects or other physical defects. All the subjects are right handed, and this has been again done consciously for the purpose of keeping the uniformity in place and thus left- handed subjects have not been included in the study.

Total no. of subjects	9
No. of boys	3
No. of girls	6
Day scholars	1
Hostellers	8
Chronological age	5–8
Mental age	1–4
IQ range	21–34

Table 1.Brief descriptive information about the subjects in severe ID group

The control group is selected from a locality in Imphal, Manipur. There are also nine subjects in this group. They are selected according to their age and all of them are native speaker of Meiteilon. The children are in the age range of 5–8 years.

Tools

The data have been collected by using a set of pictures similar in nature to those that have been used in some earlier studies of person with ID (Sharma, 1974, 1987; Koopai, 1988 and Bansal, 1989). These studies have shown that subjects with an ID can respond to picture tests quite well. The test materials were prepared based on the materials used in the earlier

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studies for the children with ID. The test materials consist of picture sheets concerning the spatial expression in Meiteilon. The pictures have been made keeping in mind the point that the construction of spatial relationships among objects minimally involves the following two elements:

(a) Subject (the object being talked about; the figure).

(b) Landmark or reference object (the object relative to which the subject is located, the ground). (Lindstromberg, 2010)

For example, in the picture for *"mət^{h}ək- tə"* 'on, above, top, up', there is a book on the table.

(5) *lairik tebəl-gi*   *mət^{h}ək-tə*   *ləy-y*

   book table-Gen   on-LOC   be-NonFut

"The book is on the table."

In the above example, the book is the subject and the table is the landmark. *mət^{h}ək-tə* is the specific locative term which is showing the relationship between the subject and the landmark.

Another point that has been considered while making the pictures is that it is easier to describe an aspect of events when they are contrasted with others (Eisenbeiss, 2009). As Meiteilon spatial terms form a dimension of **'mət^{h}ək- tə'** 'on' and **mək^{h}a-də'** 'under', they have been compared. For example, in one picture there is a book **on** the table which is a test for **'mət^{h}ək- tə'** 'on' and in another picture there is a book **under** the table which is a test for **'mək^{h}a-də'** 'under'. In these two pictures, the subject (the book) and the landmark (the table) remain the same, the difference is in the location of the subject (the book).

In this way, there are three pictures for each of the nine spatial terms. In total, 27 picture sheets have been used for the study to ascertain the production of spatial terms by the Meiteilon-speaking children with an ID.

Procedure

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Based on the spatial terms, a picture test has been set up. Considering the requirement of the test, the subjects for the group with severe ID are selected from a special school. All the subjects have been tested in a familiar environment, under controlled conditions. The data have been collected individually from each subject. Day scholars have been tested in their class room and the hostellers in their common room. Before the test is conducted, the researcher has tried to build up rapport with the children by having conversation with them, seeking necessary information by asking, "What is your name? What did you eat for lunch? Do you like drawing pictures?" etc. The researcher, having been introduced to the subjects, told them that they are going to look at some pictures and each of them will look at all the pictures one by one.

The researcher sat opposite to the subject on a table and showed them the pictures. After the pictures are shown to the subjects, they are required to answer questions about the position of an object in relation to the referent object. As we have already said earlier that in all the pictures, the spatial relations are shown by using two objects. One is the object being talked about and another is the one where the object is located. In the picture for *məkʰa – də*, there is a book under the table, where the book is the object being talked about and the table is the locus where the book is located. They have been asked to respond to the questions such as "Where is the book?" "Where is the ball?" The questions have been formulated in accordance with the pictures.

In cases, when the researcher has not been able to get the answer, i.e., when the subjects have provided non-verbal answers or used only the deictic pro-locatives, "here" or "there", additional probes have been used to encourage them to give specific responses on the test. The researcher has given other spatial term instead of the correct answer and has asked whether it is the correct answer or not. Accordingly, the responses of the subjects can be categorized into different groups. Some subjects gave the correct expected spatial terms such as on, below. Some answer has been "here" and "there". Some of them described the object instead of giving the specific spatial terms. In some cases, the answer has been opposite of the expected terms, example "on" instead of "down" or other incorrect answer such as "beside" instead of "in".

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The responses of the subjects have been evaluated and marked by using a notation (√) or (X) according to the answer. The answers have been documented in the notebook. The correct answers have been marked as (√) and the incorrect ones as (X). Responses without mention of the reference object were accepted as correct, i.e., if the subject answer on the specific spatial term, then it is considered as correct. In order to find out the score, the data have been analyzed and each correct answer has been assigned (1) and each incorrect answer has been assigned (0). The mean value of all the spatial term in each group has been calculated. The mean value has been computed using SPSS (Statistical Package for the Social Sciences). The *t*-Test has been conducted online using easycalculation.com. (www.Graphpad.com/quickcals/ttest2.cfm. Quickscales.Online calculation for scientists.)

Observation

Production Rate of Spatial Terms by the Two Groups

The Severe ID group

As shown in Figure 1, the production of all the spatial terms is less than 10% in the severe ID group. There is no manifestation of *nakən-də* "beside", *mənak-tə* "near", *məmaŋ-də* "in front of", *məkʰa-də* "below, under" and *məyay-də* "in the middle" in this group. The rate of production of the rest of the specific spatial terms is very low if at all they have been produced. *məpan-də* "outside, out" has the highest rate of production in this group. *məniŋ-də* "behind, in the back", *mənuŋ-də* "in, inside" and *mətʰək-tə* "on, above" have the same rate of production.

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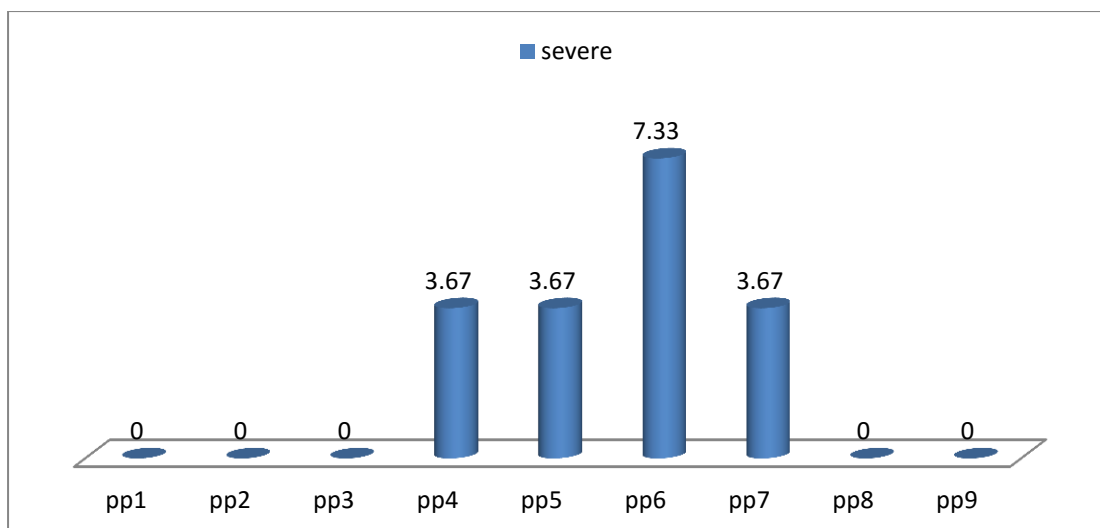
Fig. 1   Production of spatial terms by the severe group

pp1: *nakən-də*; pp2: *mənak-tə*; pp3: *məmaŋ-də*; pp4: *məniŋ-də*; pp5: *mənuŋ-də* ; pp6: *məpan-də*; pp7: *mətʰək-tə* ; pp8: *məkʰa-də* ; pp9: *məyay-də*

The Control Group

Figure 2 provides the rate of production of locative terms in Meiteilon by the second group, i.e., control group. The highest production rate is 100% and the lowest production rate is around 45%. In this group, *mətʰək-tə* 'on, above' and *məkʰa-də* 'below, under' have 100% production rate. For this group, the manifestation of these terms is clearly visible as the rate of production is high. It is all above 50% except for the *nakən-də* 'beside' which is below 50%.
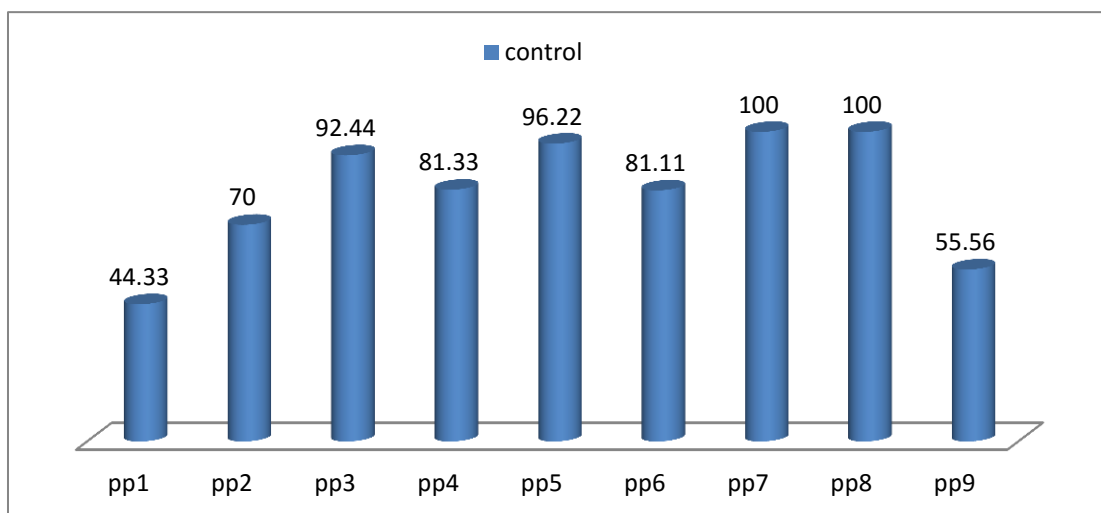
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Fig. 2   Production of spatial terms by the control group

Comparison of the Two Groups

When all the spatial terms are compared between the two groups, we have observed that almost in all instances, the control group has higher production rate than the severe ID group. As shown in Fig.3, Severe ID group has very low production for all the spatial terms that have been tasted in the present work when compared with the control group.
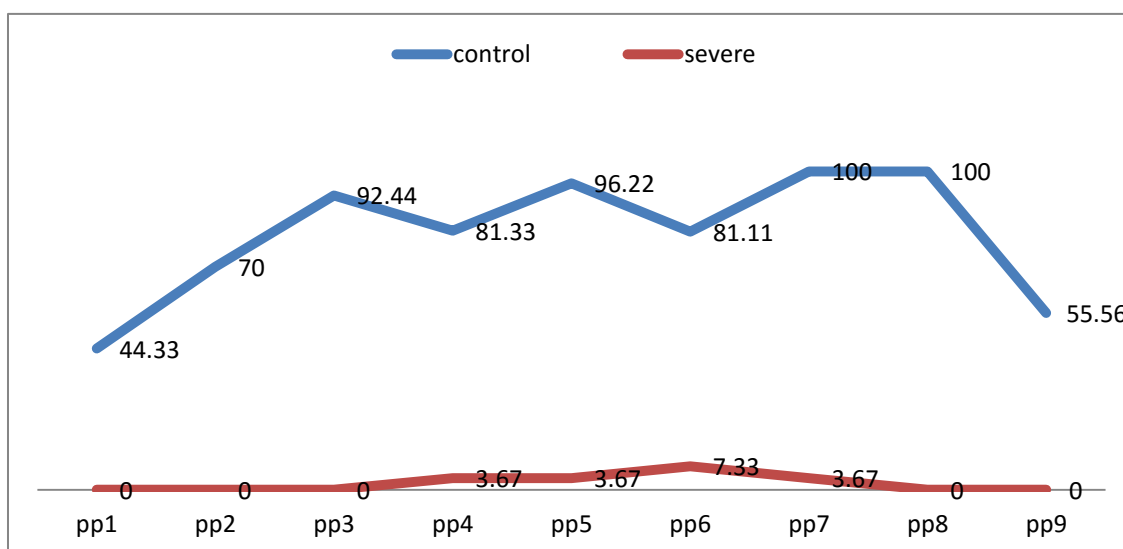

Fig. 3   Comparison of the production of the spatial terms by the two groups

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Result

Result of *t*- test

We have made the comparison between the groups using *t*- test. *t*-test has been conducted to see the significance of the difference of 'MEAN' between two groups. *t*-test has been applied for comparing group 1 and group 2 (i.e., severe ID and control). *t*-test has also been conducted to compare each of the spatial terms for severe group with control group in order to find out the significance of the difference of MEAN for the nine Meiteilon specific spatial terms that have been chosen for the study. Table 2 provides the results of the *t*-test comparison between the groups and the results obtained by the *t*-test comparison between the spatial terms are given in Table 3.

Table 2 reveals the following observations:

The computed *t*-value for the comparison of the severe ID group and control group is 6.7596 which is greater than the tabulated *t*-value, i.e., 2.120 at df 16, *p* =0.05. So, it shows that there is significant difference between the groups in terms of the production of the locative term.

Groups	*t*-value
severe ID and control	6.7596

Table 2.Calculated *t*-value comparing the two groups

Table 3 gives the results of the comparison for the significant difference of MEAN between the two groups with regard to each spatial term. The following observations have been revealed in this table.

The computed *t*-value, to check the significance of the difference of MEAN for all the terms in the severe ID group and the control group is more than the tabulated *t*-value as shown in Table 3. Thus, the difference of the MEAN is significant everywhere. The *t*-test is not only significant between the severe ID group and the control group with regard to *məmaŋ-də*'in front of" *,mənuŋ-də*'in, inside' and *mət^hək-tə*'on, above' butthe difference isalso so enormousandhigh because severeID group has almost negligible presence of such spatial

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expressions as far as the spatial terms of these kindsareconcerned. Because of this reason, it comes to 18.4966 for *məmaŋdə*'in front of' and 17.5799 for *mənuŋ-də*'in, inside' and 26.2718 for *mətʰɔk-tə*'on, above'. The comparison for the significance of the difference of MEAN between the severe ID group and the control group with regard to *məkʰa-də*'below, under' becomes meaningless as the variable becomes constant and the gap is very huge and thus the difference between the two groups is also noticeable. Hence, there is no comparison for *məkʰa-də* 'below, under' in the severe and the control groups.

	nakən-də	mənak-tə	məmaŋ-də	məniŋ-də	mənuŋ-də	məpan-də	mətʰək-tə	məkʰa-də	məyay-də
Severe and control	2.8228	8.0076	18.4966	6.5428	17.5799	7.8006	26.2718	------	3.1628

Table 3:Result of the *t*-test comparing each spatial terms in the two groups

Discussion

Analysis of the observations of the data of the two groups in the present study brings out certain facts that need to be discussed. The first point is the difference in the language behaviour of the children with an ID and the typically growing children. As earlier studies have already shown that the language of the person with an ID shows deviation in comparison to the language of the normal person (Schiefelbusch, 1972; Schiefelbusch, Copeland and Smith, 1967; Sharma, 1974, 1976, 1987; Suri, 1977; Safari, 1988). The present study also shows remarkable difference between the children with an ID and typically growing children in terms of the production of spatial terms.

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Examination of the data reveals that the group of the children with IDmostly use the general locative term *-də* instead of the specific spatial terms. Examination of the data collected from the children with ID provides the evidence that they lack in several concepts and use generic terms as a substitute to specific terms. They have the tendency of describing the object instead of giving the specific words. They compensate their lack of adequate specific word bytheuse of the functionally and perceptually based descriptions for the concept which are referred by the single lexical items by the children who are typically growing. For example, one of the subjects of group 1 gave a detailed description of where she kept the ball when a picture of a ball kept on a table was shown to her. This picture has been used to elicit data for the spatial term *mətʰɔk-tə*'on'. There are also other cases where the subject describes the objects in the picture instead of giving the relationship between the object.

Earlier research has shown that person with an ID can be grouped according to their IQ, as development of language depends on severity (Sharma 1976, 1977). They have proved that person with an ID do not form a homogeneous group in terms of their language development. Their language development or level of language impairment can vary depending on the severity. So, this present study cannot be generalised for all the group of ID. The findings and the observations is only in comparison with the group of severe ID.

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Abbreviations

Gen: Genitive marker; Loc: Locative marker; Nonfut: Nonfuture

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