

# RECEPTIVE VOCABULARY SKILLS OF 5- TO 6-YEAR-OLD BANGLA SPEAKING CHILDREN WITH OR WITHOUT CEREBRAL PALSY

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## Abstract

Vocabulary is an important aspect of children's overall language acquisition and literacy achievement. Although many children are affected by various kinds of language disorders in Bangladesh, no studies so far have been conducted to investigate children's vocabulary skills and development. This study aims to investigate the receptive vocabulary skills of typically developing Bangla speaking children at the age of 5 to 6 years and to compare their performance to that of children with cerebral palsy having mild language delay. The cross-sectional comparative study design was conducted to compare the receptive vocabulary skills of typically developing Bangla speaking children and children with cerebral palsy. In total, 30 children (15 typically developing and 15 with cerebral palsy) of 5-6 years old were selected using nonrandom purposive sampling from the Centre for the Rehabilitation of the Paralyzed, Bangladesh. The receptive vocabulary subtest of the Wechsler Preschool and Primary Scale of Intelligence-III (WPPSI-III, Bangla version) scale was used for measuring children's receptive vocabulary skills. A highly significant difference was found in receptive vocabulary skills between typically developing children and children with cerebral palsy. Moreover, there was scarcely overlap in the performance of the two groups. In general, typically developing children's performance was higher on nouns and verbs. In contrast, there is some evidence that children with cerebral palsy outperform typically developing children on adjective and shape items.

**Keywords:** Vocabulary, Receptive vocabulary skills, Cerebral palsy

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## Introduction

Bangladesh is a small but densely populated country in South Asia with a population of over 160 million (United Nations, 2019) where nearly one third (29.3%) of the population are aged 15 years and younger which accounts nearly 47 million children (Bangladesh Bureau of Statistics, 2018). Although the exact data regarding the prevalence of children with delayed/disordered language development in Bangladesh is lacking, it can be estimated that the number is significantly high. Moreover, there is no standard norm for language development in Bangla speaking children. All these factors hinder early identification and intervention for this large cohort in Bangladesh. This might impact on their overall educational and or social achievement or success in later life (Jones, Mcallister, & Lyle, 2018).

Like many developing countries, Cerebral Palsy (CP) is the most common cause of childhood physical disability in Bangladesh. It is a common neuromotor developmental disability (Lepage, Noreau, Bernard, & Fougereyrollas, 1998) and can have a severe impact on all the aspects of children's life (Kennes et al., 2002). CP can affect between 1.2 and 3.0 per 1000 live births in advanced countries (Odding, Roebroek, & Stam, 2006). Although it is estimated that the frequency of CP in the developing countries is higher than the developed countries, the exact data in most of the developing countries is lacking and Bangladesh is not an exception (Cruz, Jenkins, & Silberberg, 2006). However, a study conducted by Murthy et al. (2014) using Key Informant Method (KIM) reported an estimated prevalence of CP up to 3.7/1000 children in Bangladesh (95 % CI 3.5-3.9). According to this conservative estimate, there are ~260,000 children with CP in Bangladesh. However, the study was conducted only in three districts of northern Bangladesh and thus the result cannot be generalized for the whole country.

Speech and language difficulties are common for children with CP. A study based on a large data set of CP children in Europe estimated that 60 percent of children with CP have some types of communication deficits (Bax, Tydeman, & Flodmark, 2006). Another study, conducted in the UK, found 38-55 percent of children with cerebral palsy had some kind of speech and language difficulty (Parkes, Hill, Platt, & Donnelly, 2010). The precise nature of these difficulties has not been studied systematically. However, research has revealed that communication problems might have a range of negative effects on children with CP, which can result in differences in social communication and in quality of life (Pennington & McConachie, 2001; Dickinson et al., 2007). In Bangladesh, no study so far explained the nature of speech and or language difficulties of children with cerebral palsy.

Nevertheless, a population-based survey identified speech difficulties as highest (67.6%) among the other difficulties; intellectual (39%), epilepsy (23.7%), visual (10.2%) and hearing (10.2%) [Khandaker et al., 2019]. Although the Bangladesh study revealed similar result for speech problems as the study of Europe and UK (Pennington & McConachie, 2001; Dickinson et al., 2007), it was only conducted in one district of Bangladesh without involving any speech therapist during the assessment. Moreover, the nature of speech difficulties data was collected only by asking parents and using no structured assessment tool. Language abilities, specifically receptive vocabulary skills, are of particular interest for this study. There is a substantial lack of research specifically on receptive vocabulary skills of children with cerebral palsy not only in Bangladesh but also in other parts of the world.

Vocabulary is an important aspect of children's overall language acquisition and literacy achievement (Qian, & Schedl, 2004). Research has shown that children's vocabulary attainment is a complex procedure which involves correlation among concepts, organization of concepts, increasing and filtering of knowledge relating to specific words (Beck, & McKeown, 1996). Children go through four stages to learn a specific word. At the very first stage children do not know the word as they never encountered it before. In the second stage, they hear the word but do not know the meaning of it. In the third phase, they identify the word in the environment. Finally, at the last step they come to know the word very well (Beck, & McKeown, 1996).

Receptive vocabulary refers to the words that a child can comprehend and respond to, even if the child cannot produce those words. This can comprise spoken, written, or manually signed words (Armbruster, Lehr, & Osborn, 2001). It is apparent that vocabulary acquisition varies from child to child and a child's learning of vocabulary may be influenced by different factors. In general, receptive vocabulary appears to develop before expressive vocabulary over the course of early language development, and receptive vocabulary is generally larger than expressive vocabulary (Okalidou, Syrika, Beckman, & Edwards, 2011). Children's knowledge of word meaning starts to develop at around eight months, well before they produce their first word at approximately twelve months (Bates, Bretherton, & Snyder, 1988; Fenson et al., 1994; Taylor, Christensen, Lawrence, Mitrou, & Zubrick, 2013). Beginning in infancy, receptive vocabulary develops very fast in the preschool and school years, from approximately 200 words in the second year (Fenson et al., 2007) to 20,000 words at eight years (Anglin, Miller, & Wakefield, 1993). Typically developing children learn a projected vocabulary of between 7,000

and 14,000 words throughout the first 6 years of life (Templin, 1957). However, the receptive vocabulary development of children with language difficulties does not follow the pace of children with typical language development as they have greater difficulties in following directions, understanding concepts and retain information when listening to speech or text (Gottesman, & Kelly, 2001).

Children's vocabulary development is robustly associated with their overall language acquisition and literacy achievement (Hindman, Skibbe, Miller, & Zimmerman, 2010). Children with strong word knowledge can decode a written word more quickly as they understand the word they are sounding out very rapidly (Perfetti, 2010). Moreover, such children can understand the meaning of the text easily, which is a prime goal for a child's reading (Hindman, & Wasik, 2013). Vocabulary is also useful for children to comprehend science and mathematics (LeFevre et al., 2010) and can help to make good rapport with their peers (Menting, Van Lier, & Koot, 2011). Therefore, initial vocabulary deserves special attention as a crucial school readiness skill. Vocabulary is one of the robust indicators for children's school accomplishment and understanding of words is a prerequisite for children to learn different reading and writing tasks (Owens, 1984).

While there is a small amount of published research on Bangla speaking children's syntax development (Stokes, 2012), no publications were found on receptive vocabulary skills (RVS) of Bangla speaking children. The core task of this study was to measure the RVS of typically Bangla speaking children at the age of 5 to 6 years and to compare their performance to that of children with cerebral palsy. The findings of the study would provide an insight into receptive vocabulary skills of Bangla speaking children. They would also give some information about the potential usefulness of the test for clinical purposes.

## **Methodology**

### ***Participants***

A cross-sectional study design was used to attain the aim of the research. The study was conducted at Center for the Rehabilitation of the Paralyzed (CRP), Savar, Dhaka, Bangladesh. Children were recruited from the pediatric unit of the speech and language therapy (SLT) department and mainstream school of CRP. All the children were assessed in a quiet room at the SLT department. The participants of this study were Typically Developing (TD) children (n=15) and children with Cerebral Palsy (CP) (n=15) having mild language difficulties who are 5 to 6 years old, all recruited from the CRP using a non-random purposive sampling method.

All the participants were of Bangladeshi background and spoke Bangla as their first language.

TD children were recruited from the mainstream school of CRP. TD children were identified firstly by their teachers and parents and secondly by a speech and language therapist. Inclusion criteria for TD children included normal hearing and vision.

Children with CP having mild language difficulties were recruited from the pediatric unit of the SLT department at CRP. Children with CP having mild language difficulties were selected to compare the performance of TD children with them (CP) and to investigate the applicability of the tool to find out the difference between the two groups. Cerebral palsy was diagnosed by the pediatric neurologist from CRP. Then, children with CP were identified by their speech and language therapists as only having mild language difficulties, without other learning difficulties. All these children were screened by a qualified speech and language therapist in terms of identifying the children's severity of language difficulties; this is a routine procedure in the department. The screening was conducted using the speech and language therapy assessment form which is regularly used in the department for this group of children. This is a comprehensive tool which includes expressive and receptive language, speech production, oral motor skills and connected speech. However, this is not a standardized test, and psychometric properties are lacking. Children diagnosed with CP with moderate and severe language difficulties and other learning, or cognitive difficulties were excluded from this study. Selection was based on child's attendance to the SLT department for therapy and their speech therapist's diagnosis; no formal test criterion was used at this stage.

Among the 15 children in the typically developing group, eleven (73.3%) were boys and four (26.7%) were girls. There were seven (46.7%) boys and eight (53.3%) girls among the 15 children with cerebral palsy. Both the groups were similar in terms of their age range. The average age of typically developing group was 65.33 months ( $SD= 3.87$ ) and for cerebral palsy group it was 65.67 months ( $SD= 4.47$ ).

Ethical permission was obtained from the research and evaluation department of CRP to collect data from the SLT department and the mainstream school. Parents of the children were asked to provide written informed consent or fingertips (for the parents who are not literate) to indicate whether they would be willing for their child to participate in this research project. The information was read aloud for the

parents who are not literate. Parent information sheet and the consent form were developed in the Bangla language.

### ***Data collection tool***

Children's receptive vocabulary skills were assessed using the Bangla version of Wechsler Preschool and Primary Scale of Intelligence (WPPSI-III, 2002). Wechsler Preschool and Primary Scale of Intelligence is a psychological assessment tool originally published in the USA in 1967. Internationally, this test has been used to assess cognitive development of children of 2.5 years to 7.3 years. It has two age bands: 2.6 years to 3.11 years and 4 years to 7.3 years (Ottem, 2003). There are 14 subtests in this assessment: block design, information, matrix reasoning, vocabulary, picture concepts, symbol search, word reasoning, coding, comprehension, picture completion, similarities, receptive vocabulary, object assembly and picture naming (Wechsler, 2002a). To assess children's RVS, only the receptive vocabulary section of vocabulary subtest was used in this study.

Thirty-eight words are spoken aloud, and the child is required to point to one of four pictures showing the word or to explain what he/she understands by the word. In the test, mostly the semantic distractor was used. For example, the item number 13 had four different pictures of vehicles (MOTORBIKE, BICYCLE, RICKSHAW and TRAIN) and the child was asked to point the RICKSHAW. Words become progressively more difficult (Wechsler, 2002b). Though the total item was 38 in the receptive vocabulary subtest, for 5 to 6 years old children, assessment started from item number 6, in accordance with the rules of the test. Thus, the total words or items for 5 to 6 years old children were 33.

Two different studies have been conducted for the cultural adaptation and validation of WPPSI-III in Bangladesh. One study (Yesmin et al., 2011) was conducted to adapt this tool for 2.6 years to 3.11 years old children. In the other study (Shiraji et al., 2009) WPPSI was translated into Bangla, modified, tested and re-tested for Bangladesh and used in studies by the International Centre for Diarrheal Disease Research, Bangladesh (ICDDR, B) at Matalab. It was validated to use with Bangladeshi children aged 4 years to 6 years. Pearson's product-moment correlations between test-retest measures were conducted for full-scale IQ. Strong relationships were observed (verbal IQ;  $r = 0.89$ ,  $p = 0.01$ ), and the reliability for the vocabulary items was also strong ( $r = 0.79$ ,  $p = 0.01$ ). However, in those two studies, the tool was tested only in two sub districts in Bangladesh and thus lacks the generalizability of the test result.

The Bangla version of WPPSI-III was used in this study, as there was no assessment test was available in Bangladesh during the study period to measure receptive vocabulary skills of Bangla speaking children. Moreover, no information was available about Bangladeshi children's vocabulary development. Although test-retest measures were conducted, strong relationships were observed among the items and the reliability for the vocabulary items was also strong in the Bangla version, there is no idea about the usefulness of the tool. So, the test was used in this study to investigate whether the vocabulary section of the test is useful or not to identify the Bangla speaking children's (both typically and atypically developing children) receptive vocabulary development.

### ***Data collection procedure***

All the children were assessed in a quiet room at the SLT department. All toys, food and any other materials were removed from the room to create a distraction free environment. Children sat in front of the therapist and the stimulus book was provided just before the children. The scoring book was available to the therapist for scoring the child's response. For each test item, the child was provided with a group of four pictures and required to point to the one the therapist named aloud. On the scoring sheet, the four pictures were labeled from 1 to 4. There was also an option for a 'don't know' response. The child's response for each item was marked by circling the corresponding word label number (1 or 2 or 3 or 4 or 'don't know'). No repetitions or cues were provided during the assessment. For each item, a correct response was scored as 1 and an incorrect response was scored as 0. Each child took approximately 25 to 30 minutes to complete all the items. Some children attended the session on their own whilst others attended with a parent. When a parent was present, they were instructed not to help their child.

At the start of the session, it was explained to the children that they must complete the task after which they would be given a reward. Instructions were given by the speech therapist before each item began. To ensure the child fully understood the task, two practice items were presented before beginning the 33 task items. Items were presented individually; the next item only being presented after the child had responded. Throughout the task, gentle verbal encouragement and reminder of the reward were provided to maintain the child's attention.

### **Results**

The 30 children's scores on receptive vocabulary task were entered into the IBM SPSS (Statistical Package for the Social Sciences) statistics 21 software for data

analysis. Frequency distribution and descriptive analysis were conducted to assess normal distribution of the data. The major analyses examined the differences in receptive vocabulary skills between TD children and children with CP having mild language difficulties.

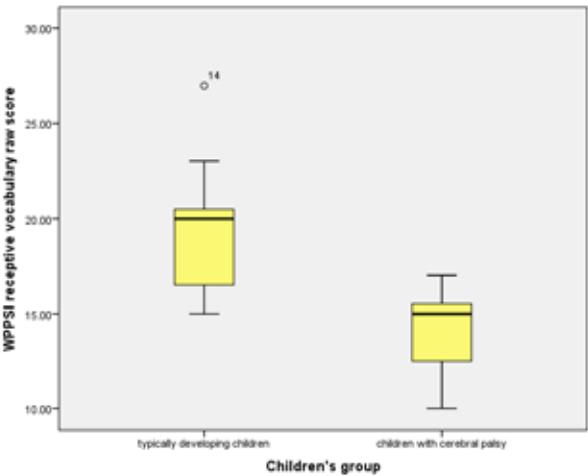
Table 1 and 2 illustrate the performance of both the groups on receptive vocabulary items. The children with CP scored approximately five units below the TD children. The difference in performance of both the groups is also reflected in their range of scores. Figure 1 also shows TD and CP children’s scores on WPPSI receptive vocabulary tasks. It illustrates that there was little overlap between the scores of the two groups.

**Table 1: Descriptive statistics for receptive vocabulary score of TD children**

	Minimum	Maximum	Mean	Std. Deviation
WPPSI receptive vocabulary raw score	15.00	27.00	19.2667	3.21751

**Table 2: Descriptive statistics for receptive vocabulary score of children with CP**

	Minimum	Maximum	Mean	Std. Deviation
WPPSI receptive vocabulary raw score	10.00	17.00	14.0667	2.43389



**Figure 1: Box plots showing TD and CP children’s scores on WPPSI receptive vocabulary tasks**



The scores of both groups were not normally distributed. To answer the research question, ‘what are the differences in receptive vocabulary skills between typically developing Bangla speaking children and children with cerebral palsy with mild language difficulties?’, the Mann-Whitney U test, a non-parametric test, was therefore used.  $P<0.05$  was considered as level of significance at 95% confidence level.

Table 3 demonstrates that the difference between the two groups was highly significant ( $p<.001$ ). Furthermore, the effect size value ‘ $r$ ’ ( $r=.69$ ) suggests a large practical significance for the TD children’s superiority in receptive vocabulary.

**Table 3: Comparison of receptive vocabulary skills of TD children and children with CP**

Variable	Mean T children	Mean D CP children	Mann-Whitney results	U E f f e c t size ( $r$ )
<i>R e c e p t i v e vocabulary</i>	19.26	14.06	U = 21.500, z = -3.810, p <.001	- .69

The next analysis will focus on both groups’ response on each receptive vocabulary task item to identify qualitative differences in performances.

Table 4 demonstrates the comparison of correct responses between two groups and order of items based on difference scores. Typically developing children made higher correct responses on most of the receptive vocabulary items except item no. 20, 25, 27, 33, 36, 37 and 38. On these items the percentage of correct response is higher for children with CP. Both the groups made the same number of correct responses on item 21, 22 and 32. The green and blue highlighted items show when there is a sizable difference (i.e. 20% or more) between groups. The yellow highlighted items show when the difference is small or no difference (e.g. less than 20%). Table 4 also reflects that TD group made higher score on most of the items (23 out of 33; 69.6%). On the other hand, children with CP made higher scores on 7 items out of 33 (21.2%). However, both the groups got the same score on three items (9.09%).

**Table 4: Percentage of correct response of both groups on receptive vocabulary task items and order of items based on difference in scores**

<b>Receptive vocabulary task item</b>	<b>Translated word</b>	<b>TD group correct response %</b>	<b>CP group correct response %</b>	<b>Difference between groups %</b>
8 (noun)	Spider	100	13.3	+86.7
9 (verb)	Raining	93.3	26.7	+66.6
19 (verb)	Seeing patient	73.3	13.3	+60
13 (verb)	Kicking	80	33.3	+46.7
17 (verb)	Carrying	80	33.3	+46.7
28 (noun)	Bulldozer	46.7	13.3	+33.4
30 (verb)	Chewing	66.7	33.3	+33.4
35 (shape)	Parallel	46.7	13.3	+33.4
6 (verb)	Drawing	60	33.3	+26.7
7 (noun)	Tube well	86.7	60	+26.7
12 (noun)	Lamp	66.7	46.7	+20
16 (verb)	Laying	93.3	73.3	+20
18 (noun)	Desert	53.3	33.3	+20
34 (verb)	Clenched	53.3	33.3	+20
24 (noun)	Drums	46.7	33.3	+13.4
29 (noun)	Blackboard	46.7	33.3	+13.4
10 (noun)	Match	93.3	80	+13.3
26 (adjective)	Hairy	60	46.7	+13.3
11 (noun)	Rickshaw	100	93.3	+6.7
14 (shape)	Triangle	46.7	40	+6.7
31 (verb)	Making even	46.7	40	+6.7
15 (verb)	Waving	53.3	46.7	+6.6
23 (preposition)	Under	73.3	66.7	+6.6
21 (noun)	Watch	93.3	93.3	0
22 (noun)	Binocular	60	60	0
32 (verb)	Lie in wait	40	40	0
36 (shape)	Cylinder	46.7	53.3	-6.6
25 (adjective)	Bright	33.3	40	-6.7
20 (adjective)	Bend tail	33.3	40	-6.7
27 (verb)	Balance	26.7	46.7	-20
33 (verb)	Dancing	13.3	33.3	-20
37 (shape)	Equivalent	6.7	26.7	-20
38 (shape)	Horizontal	6.7	40	-33.3

Key: TD=Typically Developing; CP=Cerebral Palsy; += when TD group scored higher; -= when CP group scored higher; 0= no difference.

Table 5 shows that TD children made higher correct responses on noun items (72.1%) than CP children (50.8%). Similarly, table 4 demonstrates that TD children made higher correct responses compared to children with CP on all the noun items except the item number 21 (WATCH) and 22 (BINOCULAR). Both the groups made similar correct responses on these two nouns. On the verb items, TD children made greater accurate responses (59.9%) than CP children (37.4%). Similarly, table 4 shows that the percentage of correct responses on all the verb items is higher for the TD group compared to CP group except the item 33 (DANCING). On this item, CP group responded more accurately than the TD group. On the other hand, CP group made higher correct responses on shape items (34.6%) in comparison to TD group (30.7%). In the same way, table 4 reflects that child with CP made higher correct responses on most of the shape items except item 14 (TRIANGLE) and 35 (PARALLEL). On these two items, TD group performed higher than CP group.

**Table 5: Correct response of both groups according to category of items**

Category of items		% of correct response (TD group)	% of correct response (CP group)	% of correct response (combined)
Grammatical	Semantic			
Noun	concrete objects	72.1	50.8	61.5
Verb	action word	59.9	37.4	48.7
Adjective	attribute	42.2	42.2	42.2
Shape	Abstract noun	30.7	34.6	32.6
Preposition		73.3	66.7	70

There was only one preposition item among the 33 items (item no 23: UNDER). In this item TD children scored better (73.3%) than children with CP (66.7%). There were three items on adjectives (20, 25 and 26) and children with CP made greater correct response on two items and TD children made higher correct response on one item (Table 4). However, table 5 shows that both the groups made nearly similar correct responses on adjectives items (TD group=42.2% and CP group=42.23%).

Table 5 also demonstrates that the percentage of correct response of combined group was higher on noun items which represent concrete objects (61.5%) and lower on shape items which represent more abstract concepts (32.6%). For verb (or action words) and adjectives (or attributes) the score was 48.7 and 42.2 respectively. Although both groups made higher score on preposition (70%) item, it was not included in the analysis as there was only one item in this category.

## Discussion

This study was conducted to determine the receptive vocabulary skills (RVS) of five to six years old typically developing (TD) Bangla speaking children and children with cerebral palsy (CP). It was hypothesized that using the Bangla version WPPSI test children's performance on receptive vocabulary tasks will differ. This was investigated to identify the appropriateness of the tool in Bangladeshi clinical settings. This study found a significant difference in receptive vocabulary skills between the groups. Moreover, there was a little overlap in the performance of the groups. So, this suggests that it can be used in the clinical setting to assess five to six years old Bangla-speaking children's receptive vocabulary skills.

The result showed a substantial difference in the receptive vocabulary abilities between the two groups. The possible underlying reasons for this difference are explained below:

The first reason for this difference is likely to be the difference between the children selected for each group. CP children are vulnerable to language difficulties. This was part of the selection criteria for the CP group. So, the group difference result was expected. Researchers have stated that children with CP are vulnerable to receptive language difficulties that might presumably affect their receptive vocabulary acquisition (Bax et al., 2006; Pennington, 2008; Mutlu, Akmeşe, & Kayhan, 2012). Furthermore, children with CP having language delay or disorder might have varieties of deficits specific to vocabulary learning. They have a lexicon with limited vocabulary and word classes such as nouns and verbs. They have a tendency to use only high frequency words, i.e. commonly used words in our day-to-day conversation such as BALL, TABLE, FOOD etc., with fewer instances of lower frequency words i.e. less common words such as EXAMINE, QUESTIONABLE etc. (Leonard, Camarata, Rowan, & Chapman, 1982). Additionally, their vocabulary abilities or growth may be restricted due to the lack of exposure from the home environment (Girolametto, Pearce, & Weitzman, 1996). Stokes and Klee (2009) identified language delay as one of the factors that influence vocabulary development in two years old children. Due to the above reasons children with CP with mild language delay might have performed lower than TD children on most of the receptive vocabulary items.

The other important factor might be children's exposure to words. In this study, this might be one of the robust factors for children with CP. In the Bangladeshi context, this group of children is usually isolated from the mainstream of the family and society and does not get much exposure to learn language. In the family, they do

not get the opportunity to interact with their parents and siblings sufficiently which might contribute to the lack of their vocabulary acquisition and abilities.

The results showed children from both groups demonstrated variable performance in comprehending different word categories. The receptive vocabulary items contained nouns, verbs, adjectives, preposition and shape. Item analysis showed that there is variability in understanding of the words in both groups. Among the 33 items there were 11 noun items, and it was one of the largest in the category of words. Combining the two groups, children made higher correct response (61.5%) on noun items in comparison to other items. However, the sizable difference (20% or more) in the response of the groups was only for five noun items out of eleven items. Research has shown that nouns are the part of speech that children learn first, and it is the largest category of words in children's early vocabulary. Moreover, nouns are the largest category of words that parents use with their children during normal conversation (Bloom, Tinker, & Margulis, 1993). The theory on early presence of nouns in children's vocabulary also supports this finding.

The other largest category of words was verbs (13 items). Combining the two groups, children had a higher percentage of correct response on verb (48.7%) than shape (32.6%) and adjective items (42.2%). However, the sizable difference (20% or more) in the response of the groups was for ten verb items out of thirteen items. It means children made noticeable difference in their responses on verb items. There is a dearth of research on children's acquisition of verbs compared to acquisition of nouns. The few studies that have compared the differences between noun and verb acquisition found that verbs enter the lexicon after the noun and at a slower rate than noun (Benedict, 1979; Gentner, 1982). An experimental study (Leonard, Schwartz, Morris, & Chapman, 1981) found that children were more likely to learn nouns than verbs at the age of twelve months when they were provided similar learning opportunities and similar phonology.

The other category of words was shape. Across the two groups, children made the lowest number of accurate responses (32.6%) on these words in comparison to other categories. Shape is an important lexical category in children's vocabulary as it helps the child to recognize the same categories of objects with different shapes. Although children were between five to six years old in this study, they made the lowest correct response on shape items. The first reason underpinning this might be shapes are nonconcrete compared to nouns or objects. Moreover, children need more cognitive competencies to perform on shape items than other items. The second reason might be that for children to identify the shape of a particular object,

they need to have proper perceptual abilities about that object. It is assumed that children had difficulties making the correct response on the shape items due to problems in selecting the perceptual properties appropriately (Landau, Smith, & Jones, 1988). So, it is interesting that the CP children were relatively good at the task.

The other cluster of receptive vocabulary was adjectives. Although the difference was not sizeable, this study found that children made fewer correct responses on adjectives than noun and verb items. One possible reason for this might be that children cannot acquire adjectives and verbs unless they first acquire nouns properly (O'Grady, 1987).

So far, differences among the children on different items (and categories of items) have been discussed. In the following section some possible underlying reasons are suggested for these differences.

The first reason might be the types of words. Children from both groups performed better on concrete objects (noun) compared to attributes (adjectives) and abstract noun (shape). The possible reason behind it might be that children have more exposure to these words in day-to-day real life. Children see the concrete words around them more often and can remember better. Children can also hear, feel and touch these words as objects in the real world and can memorize better than abstract words (Hulstijn, 1997).

The second possible cause for the differences in the performance of children across the word groups might be a child's following of sequence in word acquisition. At first children acquire and understand simple words (Biemiller, 2006). After that children learn those words, they hear frequently. Finally, at a later stage children learn those words which have cognitively complex meaning. If we see the sequence of performance of the children in this study, then children performed better on noun and verb (these are the words that children encounter more in their real communicative environment) compared to shape words (these words are more cognitively complex than the other words).

### **Limitation of the Study**

This study has some limitations. First, the number of participants was small. Moreover, the participants were selected using non-random purposive sampling that may not represent all the five to six years old typically children and children with cerebral palsy in Bangladesh as they came only from one rehabilitation

center. Moreover, Socio-economic status (SES), which could not be controlled in this study, may confound the results since most of the CP children came from lower SES families than the TD children. Thirdly, no psychological assessment was conducted to identify the cognitive ability of CP children. Additionally, to determine the severity of language difficulties of CP children no formal test criterion was used by the speech and language therapist and the number of observations was limited. Finally, some other influential factors for children's vocabulary growth were not measured and controlled in systematic way such as children's phonological abilities, verbal memory, literacy skills, communicative environment and parent's education.

## Conclusion

This was an initial exploratory study of children's receptive vocabulary skills in Bangladesh. The results of the study provide a reflection of receptive vocabulary skills of five to six years old Bangla speaking typically developing children and children with cerebral palsy having mild language delay, as well as the differences in receptive vocabulary skills between these two groups of children. It has been found through this study that there is a substantial difference in the performance between the two groups. This indicates that the test can be used in the clinical setting of Bangladesh to assess the receptive vocabulary skills of five to six years old children. In general, typically developing children performed higher compared to children with cerebral palsy, which was anticipated. Children from both groups made a higher correct response on noun items and then respectively on verbs, adjectives and shape items. Although the study findings might not be representative for the whole population due to limited number and non-randomization of the participant's selection, in this context, this study can be used as a baseline document for further insight study on children's receptive vocabulary skills and development.

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