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Bangla Tense Inflections Productivity among Pre-School Children[1]

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Abstract

Although there have been different types of studies regarding Bangla verbs, acquisition of Bangla verbs and different types of Bangla tenses; there is a lack of research on the relationship between age and productive tense inflections and development of these inflections for Bangla speaking children. This paper studies the relation between age and productivity of tense inflections of typically developing Bangla speaking pre-school children. The data have been collected from speech samples of 30 children aged 24 months to 48 months through elicited production method. The study finds out the different age range when different tense inflections become productive. It proposes an order of use of the morphological verb inflections of tense and tense inflections for the 30 children in this study. In addition, it explores the probability of a developmental sequence in these inflections in relation to *Tomasello's* (2008) *usage-based approach* for typically developing Bangla speaking pre-school children. The findings of this research can be used to help future studies in the field of Bangla Tense acquisition as well as to create a profile for typically developing children. Moreover, studies dealing with children with language impairments may benefit from the findings.

Keywords Tense inflections; Bangla Tense; Productivity; Bangla Verbal Morphology; First Language Acquisition

1. Introduction

In Bangla language, different morphological inflections are used with bare verb stems to denote different types of tenses. As a result, Bangla tense system is extraordinarily complex including different range of morphological verb inflections. Sultana (2016) asserted that in Bangla language, an in-depth scenario of typical growth in language has not been established by analysing child language data. This research will measure typical Bangla speaking children's productive use of tense inflections in relation to age. It will conduct a comparative analysis of the usage of the productive morphological verb inflections of Bangla tense to propose a developmental

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trend in these inflections which can be later used to create assessments and interventions for children with language impairment. The researchers have tried to figure out the answers to these questions:

a. When do children start to use different tense inflections productively?
b. What is the comparative range of usage of the productive morphological verb inflections of Bangla tense among the children?
c. Is there any developmental trend in the productive verb inflections of tenses in relation to Tomasello's (2008) *usage-based approach*; for typically developing Bangla speaking pre-school children?

1.1. Bangla Tense

Rácová (2009) mentioned that there are eight tenses in Bangla language; simple present, present imperfect or present continuous or present progressive, present perfect, preterite or simple past, past imperfect or past continuous or past progressive, pluperfect or past perfect, past habitual, and future. In Bangla language, finite verb forms are marked for person, tense, aspect, and honour features, each attaching itself to the verb stem in a fixed order (Kar, 2009; Thompson, 2012). Unlike English, they are unmarked for plurality or gender. The markers attach to the verb in an incremental or agglutinative fashion (Kar, 2009). In Bangla language, the finite verb form not only includes the root morpheme which has the lexical meaning of the verb but also, tense marking grammatical morpheme + aspect marking grammatical morpheme + personal endings (Rácová, 2009; Sultana et al., 2016). Therefore, the designations of finite verbal forms include information about the aspect as well as the tense (e.g., present perfect, past imperfect or past continuous etc.) (Rácová, 2009). In case of present tense, verbs do not have overt tense markers. Also, aspect markers are seen in case of only two contexts; progressive and perfective. There are distinct person markers to indicate first, second, and third person agents (Sultana et al., 2016), and young children tend to acquire third person marker comparatively easily (Sanjana, 2018). Also, Paramita (2006) explained that in Bangla, each tense is incorporated with a set of five term person morphemes which include the honour features. They are, person 1 (p1), person 2. status 1 (p2sl), person 2 status 2 (p2s2), person 2 status 3 (p2s3) and person 3 (p3). It is possible for these tense-person morphemes to have some allomorphs that might be suffixed to the verb root. Bangla tense-aspect paradigm in all the three persons is included in Appendix A.

Chakraborty and Leonard's study (2012) found present progressive and past progressive forms to gain high accuracy. In her study, Sultana (2016) found that present perfect form is produced in the highest number (over 92%) by the children. Present progressive verb forms in Bangla obtains a moderate production score. Performance of the children has suggested that they frequently substitute past simple verb forms by the present perfect forms. The overall production of past progressive and past perfect verb forms is incredibly low due to their structural and cognitive demands. Another study by Sultana et al. (2016) stated that the highest accuracy of acquisition is in present simple forms (88%), then in present progressive forms (67%), and the lowest in past progressive forms (44%).

1.2. Bangla Verbal System

There are two types of verbs in Bangla verbal system; simple verbs and complex verbs which refer to both conjunct and compound verbs (Chatterjee, 2014). Complex verbs can be of several constrictions as well. For example; Noun/Adjective + do type, Noun/Adjective + do + Verb type and Verb + Verb type. N/A + do and N/A + do + V constructions are called conjunct verbs whereas, V+V constructions are called compound verbs (Thompson 2012). Bangla language has a limited use of simple verbs and abundant usage of conjunct verbs. In two-part conjunct verbs, noun or adjectives appear with a helping verb such as, *kora* (do). For example, *bhul kora* (to mistake). Here, the helping verb bears tense, person and aspect inflection. In three-part conjunct verbs, noun or adjectives appear with two verbs; a helping verb such as, *kora* (do) and a vector verb such, *neya* (to take). For example, *bhul kore niyechi* (to take mistakenly). Here, the helping verb is in the perfective participle form, whereas the vector verb bears tense, person and aspect inflection (Chatterjee, 2014). Ramchand (1990) viewed that the vector verb also affects the aktionsart or the lexical aspect, and provides semantic meaning (as cited in Chatterjee, 2014).

Compound verbs contain two verbs to express a single action. The first or the main verb is in nonfinite perfective participle form which is known as the pole. The second verb is a light verb which bears tense, aspect and person inflection is known as the vector verb (Butt, 2010). In these types of verbs, the pole always bears conjunctive participial form "-e" or infinitive form "-te" (Paul, 2003) despite the kind of aspect the vector has. For example, *pore giyeche* (have fallen). The vector verbs in compound verbs carry inflections and affects the aktionsart of the verbal construction (Chatterjee, 2014; Paul, 2003).

(1) Por-chi-l-am (Bangla)
/por-/ is the verb stem 'to read'; /-chi/ denotes the progressive aspect marker; /-l-/ is the past tense marker; and /-am/ is the first-person marker.
I was reading.

Hopper and Traugott (1993) explained that verbs which occur as a pole or simple verb contains its full meaning (as cited in Chatterjee, 2014). However, as vectors, these verbs tend to lose their inherent meanings and create slight difference in meaning (Chatterjee, 2014; Paul 2003). Bangla language has 16 vector verbs in total (Paul, 2003).

1.3. Usage-based Approach

According to Tomasello (2008), usage-based approach to language acquisition views that children acquire language structure from language use and frame language based on their general cognitive skills. Tomasello (2000a; 2008) viewed that instead of learning words directly, children try to understand adult utterances which results into comprehension of a word by deciding its functional role in the utterance and commonalities of this functional role across utterances (2008). Tomasello (2000a) further explained that when children want to communicate, they use these set expressions

which they have already mastered from their "stored linguistic experience" (p. 76). However, when there is no ready set expression, they modify their already mastered previous utterances or stored linguistic experiences to produce new utterances. This is known as "usage based syntactic operations" (Tomasello, 2000a, p.76); which explains that children create their new utterances by assorting or "cutting and pasting" their "pre-existing psycholinguistic units" according to the communicative situation; instead of building their utterances from scratch, morpheme by morpheme. According to usage-based model, children's early linguistic knowledge involves an "inventory of item-based constructions" which includes "utterance schemas" to structure new whole utterances (Tomasello, 2000a, p.77). These processes of continuous learning, chunking, making categories, and inferencing, in addition to fragmental or complete repetition later result into establishment of the language categories and structures (Bybee & Beckner, 2009).

1.4. Item Based Approach

According to Tomasello (2000b), in early language acquisition period children follow an item-based approach. Their early utterance includes particular words and phrases which lacks "system-wide syntactic categories or schemas" (p.156). Owens Jr. (2014) also mentioned that children observe the patterns of language in use in the environment around them and form a "hypothesis" about the rules of the patterns and test them in their own speech. As the child reaches cognitive and social maturity, he/she learns to use the "linguistic codes" with sophistication in his/her speech (p.294). MacWhinney (2005) went on stating that in each item-based construction there is a set of specific slots. In the initial phase, children's comprehension of the first words encountered in these slots assign the features of these slots. Thus, item-based learning is an ongoing process of generalisation of the semantic features of the arguments, where each item-based construction is related to a particular lexical item. This approach towards language acquisition inspired Tomasello (2000b) to propose a "usage based model" which argued that children learn new linguistic expressions naturally by imitating language around them and using cognitive and social-cognitive skills to "categorise, schematise and creatively combine" these new expressions in order to reach adult like competence (p.156).

1.5. Productivity

Yang (2005) explained that a structure or rule is productive when it can be automatically used with a set of lexical items having properties and can be used with novel items having similar properties. Brandt et al. (2011) explained that language acquisition, comprehension and production include three main processes which are segmentation, categorisation, and recombination. Children's productive acquisition takes place in rapid rate in a morphologically rich language (Xanthos et al., 2011). Hohenstein & Akhtar (2007) mentioned that children's vocabulary includes verbs only in the ways they have experienced them to be used around them as long as they do not experience other verbs. Here, Sultana (2016) mentioned that the children's early morphological production is strongly determined by the structural and the cognitive complexities of the target forms, where usually the structure of

substitute verb forms are simpler than the target forms. In case of Bangla, study shows that the productivity in early verb paradigm significantly increases with increasing age (Sanjana & Sultana, 2019). It is to be mentioned that simply adding inflections to verb stems does not mean that the child can use verbal inflections productively, since using appropriate inflection in the relevant syntactic context is important (Hohenstein & Akhter, 2007).

2. Methodology

Burns, Grove & Gray (2015) interpreted research design as, "a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings" (p. 195). This research has been designed to understand the productive nature of tense inflections in relation to age, and to find a developmental pattern in these inflections. To investigate these issues, the researchers have collected language data from 30 typically developing Bangla speaking pre-school children aged 24 months to 48 months (age 2 to 4) from 3-day care centers in Dhaka. The language data is collected through elicited production. Elicited production or narrative is a data collection measure used for various numbers of purposes which includes eliciting particular structure or narrative from the participants by placing them in a discourse scenario where the target response is particularly appropriate (Ambridge, 2012; Mackey & Gass, 2005). Elicited production methods can lie along with a continuum from least to most structured. Moreover, sentence or stem completion technique can allow the researcher to exert more control (Ambridge & Rowland, 2013). Ambridge (2012) viewed that this paradigm is useful when the researcher wants to investigate children's acquisition of rarely used structures. Furthermore, the researchers have done a complete morphological transcription of the language data in order to analyse them to answer the research questions stated for this study. The data collected from the sample has been analysed following the *usage-based approach* proposed by Tomasello (2008). Frequency is one of the main factors in a usage based model to explain the productivity of language schemas, and structures as well as the abstractness of these language structures (Brandt et al., 2011; Bybee 2008). Frequency can be further divided into token and type frequency (Brandt et al., 2011; Bybee 2008). Yang (2005) mentioned that constitution of early vocabulary is directly related to token frequency, whereas productivity is depended on the type frequency of words in the early child vocabulary. Here, token frequency includes how many times a specific item is used in a specific pattern (Brandt et al., 2011; Ellis & Collins, 2009). It can refer to the number of times a lexical item occurs in child language data, i.e., a specific verb. Compared to low token frequency words, high token frequency items are strongly represented in memory, and are easily accessible (Rispens & De Bree, 2014). On the other hand, type frequency is a characteristic of patterns or constructions. It deals with a number of distinct items which either occur in the open slot of a construction or occur to create a pattern (Bybee & Beckner, 2009; Ellis & Collins, 2009). In general sense, type frequency includes the number of different lexical items which are used in a specific pattern, i.e., a suffix. (Brandt et al., 2011; Bybee, 2007). Rispens & De Bree

(2014) further mentioned that morphological productivity is highly influenced by type frequency. In this study, an inflection that has been used with even one verb stem is considered as productive use of that inflection. Moreover, the researchers have tried to connect the findings of this research with the existing literature in the same field.

2.1. Participants

The participants of this research are 30 children from 3 government operated day care centres in Dhaka city who are aged from 24 months to 48 months (age 2 to 4). With the permission from the authority, this study has been conducted. Table 1 gives information about the participants.

Table 1

Age Profile of Children

Children Age (Months)	Mean (N= 30)	Standard Deviation	Age Range (Maximum Age-Minimum Age)
	36.33	7.82	48-24= 24

A 20-minute language sample is collected through elicited production method from each of the 30 children (Mean= 36.33, Standard Deviation= 7.82). The three-day care centres are identified as: X, Y, and Z. The ratio of number of participants from each day care, X: Y: Z = 10: 11: 9. All the participants are identified as typically developing children by the caregivers in the day care centres. The authority of the day care centres has confirmed that the participants included in this study have no reported speech and/or language delay.

2.2. Data collection and processing

To elicit children responses for this research, the researchers have created a set of questions (see Appendix B). Sultana (2016) in her study with Bangla speaking children found only administering structured probes is fruitless to elicit the target verb forms. She recommended a spontaneous conversation framework using structured probes with very young children. The questions thus have been designed to elicit responses from the children which contain the verb forms in the target 8 tenses. Similar to Sultana's (2016) study the questions included target morphological forms used with non-target finite verbs. The researchers are native Bangla-speakers themselves. Therefore, they have used their intuition and have chosen those verbs with which young children are familiar; such as, *kanna kora* (to cry), *boka deowa* (to scold), *katukutu deowa* (to tickle). However, during data collection children are also given scope for natural language production. At one end, the children are given the scope for natural production; on the other end, the researchers exert control by constraining questions. During elicited production procedure, to engage the children in conversation, the researcher has used a set of toys including a car, a stuffed elephant and a teddy bear. The researcher has given the toys gradually to the children to engage them in a play session. The pre-planned question included questions related with

the toys to capture the interest of the children. The conversations have been video recorded with a digital camera and a mobile phone.

The setting of this study is the three-day care centres. While conducting the study it is necessary that the recording of child language data takes place in a place which is familiar to the participants (Eisenbeiss, 2010). As the children stay in the day cares for a significant amount of time, it can be assumed that the place will be familiar to and comfortable for them. In a familiar surrounding the children will not be intimidated and will willingly take part in the study. Eisenbeiss (2010) also mentioned that observer effect will be stronger if the researcher remains a stranger to the participants of the research before the actual recording takes place. Therefore, the researcher who has collected the data has made herself familiar with the children in the place where the study has taken place. Otherwise, the language sample will be unreliable containing insignificant data as the children will be frightened to take part in the elicitation process.

Eisenbeiss (2010) explained that researchers can use orthographic transcriptions combined with additional conventions for capturing deviations from the target forms by also incorporating target like forms and the properties of the children's spoken speech sample, e.g., pauses, hesitations, gestures, etc. which can be sometimes relevant for its interpretation. For this study, a complete morphological transcription of the language data has been done.

2.3. Data analysis

The transcribed language data have been analysed following several steps. First of all, only simple verbs and conjunct verbs with Noun/Adjective+ do type (verb) have been included in the analysis. Then, to analyse the data the researchers have calculated frequencies. Eisenbeiss (2010) explained that type frequency includes the calculation of frequency of morphological verb inflections and token frequency includes the calculation of frequency of individual tense inflected verb forms which the children will produce. For this study, an inflection that has been used with even one verb stem is considered productive use of that inflection. While calculating frequency of productive inflections, same inflection produced with the same verb stem as well as different verb stems has been considered a different item in every single use. To measure the use of verb inflections, inflections are written in standard Bangla to keep the tense markers consistent throughout the paper. All the varieties (standard and colloquial) produced by the children are included in Appendix A. Production score of tense inflections has been generated by calculating mean score and standard deviation. Mackey & Gass (2005) mentioned that mean or arithmetic average is a commonly used measure of central tendency. Mean or arithmetic average despite being commonly used, is sensitive to extreme scores when the number of participants is small. Measure of central tendency can be useful to show the typical behaviour of a group, but it tends to ignore some vital information. Mean score does not show how the scores are dispersed around the mean. In order to measure variability or dispersion it is necessary to measure standard deviation. A smaller standard deviation means that in terms of a particular behaviour the groups is more homogenous, and vice versa. The

smaller the standard deviation, the better the mean indicates the behaviour of group. Thus, measures of dispersion serve as a quality control for measures of central tendency. Besides, comparison has been made between 4 age groups. These 30 children have been divided into 4 age groups (see Table 2). From group A to group D, the age of the children increases.

Table 2

Age groups

Group	Number of Children (N= 30)	Age range (Months)
A	8	24 - <30
B	6	30 - <36
C	6	36 - <42
D	10	42 - < 48

Graphical representation of the data collected from the sample has been done using Microsoft Excel.

3. Findings

In total, 29 different morphological verb inflections for 8 tenses are found to be productive in this study. For a better representation, they have been shown under their particular tense inflection (see Table 3). For example, four morphological verb inflections (-i, -o, -e, -en) represent simple present tense; and they are shown under that particular tense inflection.

Table 3

Productivity of Tense Inflections and Their Frequency of Use for Each Child

No.	Children's Age in Months	Tense Inflections							
		Simple Present	Present Progressive	Present Perfect	Simple Past	Past Progressive	Past Perfect	Past Habitual	Future
1	24	5	0	2	0	0	0	0	1
2	24	10	0	1	0	0	0	0	2
3	26	16	1	2	0	0	0	0	1
4	26	15	4	1	1	0	0	0	4
5	27	13	0	3	0	0	0	1	1
6	28	12	0	1	0	0	0	0	2
7	28	9	2	8	3	0	1	0	5
8	29	14	3	5	0	0	3	1	4
9	30	12	5	3	0	2	6	2	3
10	31	12	0	11	1	1	1	1	3
11	32	16	1	6	0	1	1	1	4
12	33	15	4	8	2	0	3	1	5

13	34	23	2	9	2	2	5	0	1
14	35	27	2	14	0	1	3	3	3
15	36	28	5	12	3	2	6	2	6
16	37	25	7	15	0	1	0	3	5
17	38	37	6	12	2	0	8	1	5
18	39	36	6	11	2	1	7	1	2
19	40	39	6	20	1	2	0	0	5
20	41	59	4	14	1	1	7	3	6
21	42	32	7	11	3	0	0	3	5
22	43	31	8	11	2	1	6	2	12
23	44	32	9	22	1	0	7	5	11
24	44	25	8	18	2	0	5	4	8
25	45	32	9	27	2	1	6	4	7
26	45	50	11	19	6	0	3	5	16
27	46	49	11	21	3	10	29	5	14
28	47	80	12	27	5	6	16	21	13
29	48	82	13	19	15	15	5	9	14
30	48	79	17	42	9	4	12	5	12

Apart from that, Table 4 represents the production scores of tense inflections across age groups. Here, mean score and standard deviation of productive tense inflections have been measured for each group.

Table 4

Mean Score and Standard Deviation of Tense Inflections Across Age Group

		Age Groups			
		A	B	C	D
Inflections of Simple Present Tense	Mean Score	11.75	17.50	37.33	49.20
	Standard Deviation	3.62	6.16	11.94	22.89
Inflections of Present Progressive Tense	Mean Score	1.25	2.33	5.67	10.50
	Standard Deviation	1.58	1.86	1.03	2.99
Inflections of Present Perfect Tense	Mean Score	2.88	8.50	14	21.70
	Standard Deviation	2.47	3.83	3.29	8.98
Inflections of Simple Past Tense	Mean Score	0.5	0.83	1.50	4.80
	Standard Deviation	1.07	0.98	1.05	4.32
Inflections of Past Progressive Tense	Mean Score	0	1.17	1.17	3.70
	Standard Deviation	0	0.75	0.75	5.19
Inflections of Past Perfect Tense	Mean Score	0.5	3.17	4.67	8.90
	Standard Deviation	1.07	2.04	3.67	8.36

Inflections of Past Habitual Tense	Mean Score	0.25	1.33	1.67	6.30
	Standard Deviation	0.46	1.03	1.21	5.48
Inflections of Future Tense	Mean Score	2.50	3.17	4.83	11.20
	Standard Deviation	1.60	1.33	1.47	3.49

From the group data (see Table 4), it is also shown that productivity increases as the age of the children increases.
Some of these productive morphological verb inflections of tenses have been more frequent and some of them have been less frequent. Below, the total number of productive morphological inflections of verb for tenses and the number of productive tenses for each child is shown (see Table 5).

Table 5

Productive Tenses and Productive Morphological Inflections of Verb for Bangla Tenses

Children	No. of Productive Tenses	No. of Productive Inflections of Verb	Children	No. of Productive Tenses	No. of Productive Inflections of Verb
1 (24 months)	3	3	16 (37 months)	6	11
2 (24 months)	3	5	17 (38 months)	7	14
3 (26 months)	4	5	18 (39 months)	8	13
4 (26 months)	5	7	19 (40 months)	6	15
5 (27 months)	4	7	20 (41 months)	8	18
6 (28 months)	3	4	21 (42 months)	6	14
7 (28 months)	6	10	22 (43 months)	8	20
8 (29 months)	6	11	23 (44 months)	7	18
9 (30 months)	7	12	24 (44 months)	7	16
10 (31 months)	7	10	25 (45 months)	8	19
11 (32 months)	7	11	26 (45 months)	7	18
12 (33 months)	7	13	27 (46 months)	8	23
13 (34 months)	7	13	28 (47 months)	8	22

14 (35 months)	7	13	29 (48 months)	8	20
15 (36 months)	8	18	30 (48 months)	8	26

Table 6 represents total number of produced productive inflections of verb for tense and productive tenses across age groups. Here, mean score and standard deviation of the produced inflections and tenses have been measured for each age group.

Table 6

Mean Score and Standard Deviation of the Total Number of Productive Tenses and Productive Morphological Inflections of Verb for Tense across Age Groups

Group	Number of Children	Age Range (Months)	No. of Tenses		No. of Productive Inflections of Verb	
			Mean Score	Standard Deviation	Mean Score	Standard Deviation
A	8	24 - <30	4.25	1.82	6.5	2.83
B	6	30 - <36	7	0	12	1.26
C	6	36 - <42	7. 17	0.98	14.83	2.79
D	10	42 - < 48	7.5	0.71	19.6	3.47

Table 7 provides information about frequency of total number of use of productive morphological verb inflections of Bangla tenses. For one verb inflection of tense, the number of children who have used that inflection productively during the elicitation task has been taken as frequency of total number of child use for that particular inflection.

Table 7

Usage of verb inflections among children

Verb Inflection of Tense	Total Number of Child Use	Percentage (%)	Verb Inflection of Tense	Total Number of Child Use	Percentage (%)
-i	29	96.67			
-o	16	53.33	-len	3	10.00
-e	29	96.67	-chilam	11	36.67
-en	2	6.67	-chilo	7	23.33
-chi	19	63.33	-chile	2	6.67
-cho	1	3.33	-echilam	19	63.33
-che	23	76.67	-echile	4	13.33
-chen	1	3.33	-echilo	12	40.00
-echi	28	93.33	-tam	15	50.00

-echo	11	36.67	-te	4	13.33
-eche	24	80.00	-to	15	50.00
-echen	3	10.00	-bo	28	93.33
-lam	11	36.67	-ba	9	30.00
-le	10	33.33	-be	16	53.33
-lo	12	40.00	-ben	1	3.33

4. Analysis

4.1. Productivity of tense inflections

4.1.1. Present and Future Tense

From the study, it is found that inflections of present simple tense, present perfect tense and future tense start to be used productively from the earliest period (24 months) by the children (see Table 3). Looking at the group data from Table 4, there is a gradual increase of mean score in the age groups. In case of age group D which includes the highest number of children, a significantly high standard deviation is observed for all the tenses. It suggests that the productive tense inflection scores fluctuated among the children. For example, in Table 3, in case of Simple Present, child 24 scores 25, whereas, the highest score in this age group is 82 (from Table 1). It can be due to individual personality trait (such as, shyness) or their preference to not engage during the data collection procedure. Some children have talked more whereas some have been reluctant to respond. Therefore, they may have not productively used some morphological forms which are present to them.

Four verb inflections (-i, -o, -e, en) of simple present tense, four verb inflections (-echi, -echo, -eche, -echen) of present perfect tense, and four verb inflections (-bo, -ba, -be, -ben) of future tense have been productive among the children in this study. However, inflections of present simple tense are found to be most productive in this study. Two of the simple present tense inflection (-i and -e) are used by 96.67% of the total sample in this study (see Table 7). On the contrary, *-cho, -chen, -ben* verb inflections have been used by only one child (3.33%). This is different than English language where children's early utterances include present progressive tense the most (Brown, 1973). The reason which makes it the "earliest developing form" is that the structure of this form is the simplest and requires the least complex tense and aspect markers (Sultana et al., 2016, p.14). The researchers also feel that cultural learning plays an important role in acquisition of productive tense inflections (Ghalebi & Sadighi, 2015). In the early years, children are exposed to these tense inflections more than other tense inflections in their social and linguistic environment.

Inflections of present progressive tense become productive later than these 3 tenses; from around the age of 26 months with some exceptions (see Table 3). There is a gradual increase of mean score in the age groups as well (see Table 4). Four verb inflections (-chi, -cho, -che, -chen) of present progressive tense have been productive among the children in this study. It has been observed by the researchers that children have tended to use present perfect tense in the context of present progressive tense. Again, this may be due to the relative complexity of the present progressive tense inflections than the

perfect ones (-echi, -echo, -eche, -echen > -chi, -cho, -che, -chen). Although children start to use future tense inflections before tense inflections of present progressive tense (see Table 3), there production scores are quite similar. Again, this can be due to the children's avoidance of talking about incidents in the future in the study. Moreover, in the context of future tense children have tended to use present tenses.

4.1.2. Past Tenses

For elicited production, questions have been included to elicit inflections of simple past tense before the questions to elicit other past tenses as inflections of simple past tense have been expected to be productive before those inflections (see Appendix B; question f). However, it is seen that inflections of past perfect tense and past habitual (from the age of 28 months and 29 months respectively) are productive earlier than simple past tense inflection (see Table 3). There is a gradual increase of mean score in the age groups (see Table 4). Three verb inflections (-echilam, -echile, -echilo) of past perfect tense, and three verb inflections (-tam, -te, -to) of past habitual tense have been productive among the children in this study.

In most cases, children start to use inflections of simple past tense productively from around 33 months (see Table 3). There is a gradual increase of mean score in the age groups for these tenses as well (see Table 4). Four verb inflections (-lam, -le, -lo, -len) of simple past tense have been productive among the children in this study. As anticipated, inflections of past progressive tense become productive later than all the other tense inflections- from around 46 months (see Table 3). Before that age, there have been some limited productive use of the inflections of this tense. There is no reported use of this tense for age group A, and productivity increases for age group D, before being somewhat limited in both age group B and C (see Table 4). Three verb inflections (-chilam, -chilo, -chile) of past progressive tense have been productive. Sultana et al. (2016) explains that these forms can be cognitively challenging for the children and they often can be replaced by non-target forms. In Sultana's (2016) study, past progressive and past perfect verb forms were very low due to their structural and cognitive demands. In Chakraborty and Leonard's (2012) study past progressive forms were highly accurate. The researchers in this study have also found the accurate but very limited use of past progressive tense inflections by the children.

4.2. Comparative usage among children

From Table 5, it is found that there is an increase in the number of productive verb inflections for tense and productive tenses along with the increase of age in the children. There has been a strong positive correlation between children's age and their productive tenses, $r = .78$, $p < 0.000005$. A one-way ANOVA run with age groups as independent, and number of productive tense inflections as dependent variables further shows that the age groups have a significant effect on productivity of tense inflections ($F_{3,26} = 32.32$, $p < 0.00000005$). Children create categories and slots as they learn new inflections, and later test them in conversational context; finally form a generalisation about the semantic features. While doing so, they are bound

to make mistakes, which is why production of tense has gone through fluctuation from 37 months to 45 months. Thus, the findings in this research implies that linguistic acquisition and production of children involves consciously learning linguistic terms and their constructions in order to gradually reconstruct them to form more "abstract and word general" linguistic items. (Wittek & Tomasello, 2002, p.586). It is to be noted that the researchers have not explored other situational, cognitive and individual aspects which can affect the production of target tense forms. Therefore, from the current study it was not possible to propose an exact developmental trend in productive tense inflections. However, there is a certain pattern in the productive use of the tense inflections which is observed during this study. First of all, from Table 5 it can be seen that the number of productive verb inflections of tenses starts to increase as the age of the children increase. However, this increase in productive tense inflections does not necessarily mean that productive tense increases along with age. As seen from Table 5, there is a fluctuation of number of tenses produced by the children. From 37 months to 45 months, the number of tenses produced varied from 6 to 8. In group data (see Table 6), we can see these trends very clearly. The mean score of number of tenses and inflections produced increases along with age.

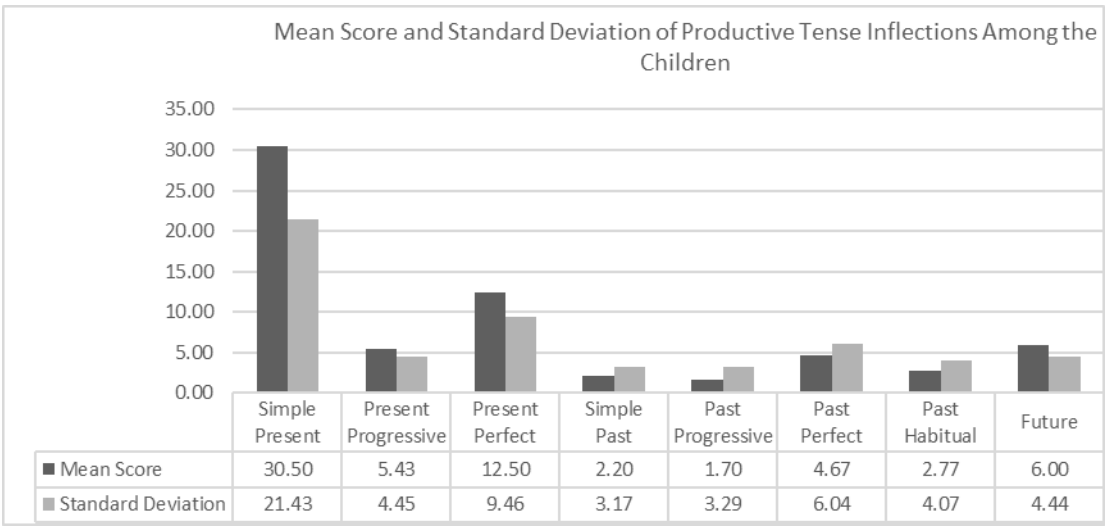
4.3. Order of use for productive tense inflections and tenses

Based on the number of child use from Table 7, the researchers can propose the following order of use for all the morphological verb inflections of different Bangla tenses: -i, -e> -echi, -bo> -eche> -che> -chi, -echilam> -o, -be> -tam, -to> -lo, -echilo> -echo, -lam, -chilam> -le> -ba> -chilo> -echile, -te> -echen, -len> -en, -chile> -cho, chen, ben

From the data of Table 3, the production scores (mean score and standard deviation) for the tense inflections have been graphically presented in Figure 1.

Figure 1

Production scores of tense inflections.



From the comparative analysis amongst the tense inflections it is found that present simple tense gets the highest production score (Mean Score= 30.50, Standard Deviation= 21.43). Past progressive tense gets the least production score in the study (Mean Score= 1.70, Standard Deviation= 3.29). Based on the production scores of the tense inflections, the following order of use of tense inflections can be proposed:
Simple Present Tense> Present Perfect Tense> Future Tense> Present Progressive Tense> Past Perfect Tense> Past Habitual Tense> Simple Past Tense> Past Progressive Tense
The researchers believe that younger children lack the cognitive skills and produce less productive verb inflections and tenses. Also, there is a chance that the children they may have not productively used some morphological form. In children's early years, their "stored linguistic experience" (Tomasello, 2000a, p.76) includes only those inflections and tenses which do not require complex linguistic understanding. However, as they age, and their cognitive skill starts to mature, they learn to create "utterance schemas" (Tomasello, 2000a, p.66). They create slots for the inflections they have learned from their linguistic experience to use with variety of range of verb stems. At first these use of new inflections are not appropriate as they seem cognitively challenging and difficult to produce for the children. However, as they gain experience, they begin to get more proficient in using the verb inflections and tenses more productively.

5. Conclusion

To conclude, the researchers employ the data collection methods- elicited production; to investigate the productive tense inflections in Bangla speaking pre-school children from 3-day care centres. In this study, the researchers have found that age of the children plays role in acquisition of tense inflections. Although, other variables, such as exposure to forms in environment, or processing capacity of children etc. have not been studied in this research, the finding of this study is helpful to create a developmental profile for typically developing children. This study can be used as an inventory by researcher as it includes real-life data from 30 typically developing Bangla speaking pre-school children. Moreover, this research will help other researchers who are interested to work on Bangla tense and inflection development in children. Therefore, conclusions derived from this study is noteworthy in the area of Bangla tense inflection acquisition, productivity and development.
Recommendations for future studies are given below:
a. Future studies can explore the other factors except age for tense inflection production
b. They can include complex and conjunct verb forms.
c. They can include aspectual and personal markers as well.
d. They can include larger sample to draw more generalisations.
e. They can use other data collection methods.

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Appendices

Appendix A: *Bangla tense-aspect paradigm*

TENSE	1st Person	2nd Person		3rd Person		
		Neg	Gen	Res	Gen	Res
Simple Present	-i Pori	-ish Porish	-o Poro	-en Poren	-e Pore	-en Poren
Present Progressive	-chi/-tesi Porchi/ Portesi	-chis/-tesis Porchish/ Portesis	-cho/-teso Porcho/ Porteso	-chen/-tesen Porchen/ Portesen	-che/-tese Porche/ portese	-chen/-tesen Porchen/ Portesen
Present Perfect	-echi/-si Porechi/ Porsi	-echis/ -sis Porechis/ Porsis	-echo/-so Porecho/ Porso	-echen/-sen Porechen/ Porsen	-eche/-se Poreche/ Porse	-echen/-sen Porechen/ Porsen
Simple Past	-lam Porlam	-li Porli	-le Porle	-len Porlen	-lo Porlo	-len Porlen
Past progressive	-chilam/-tesilam Porchilam/ Portesilam	-chilish/-tesilish Porchilish/ Portesilish	-chile/-tesila Porchile/ Portesila	-chilen/-tesilen Porchilen/ Portesilen	-chilo/-tesilo Porchilo/ Portesilo	-chilen/-tesilen Porchilen/ Portesilen
Past Perfect	-echilam/-silam Porechilam/ Porsilam	-echili/ -sili Porechili/ Poresli	-echile/-sila Porechile/ Porsila	-echilen/-silen Porechilen/ Porsilen	-echilo/-silo Porechilo/ Porsilo	-echilen/-silen Porechilen/ Porsilen
Past Habitual	-tam Portam	-ti Porti	-te Porte	-ten Porten	-to Porto	-ten Porten
Future	-bo/-mu Porbo/ Pormu	-bi Porbi	-ba Porba	-ben Porben	-be Porbe	-ben Porben

Here, Gen=General, Neg=Negligible and Res= Respect
Note: Adapted from Ali, Sarker, Ahmed & Das, 2010; Bhattacharya, Choudhury, Sarkar & Basu, 2005; Paramita, 2006; Sultana 2016.

Appendix B: *Elicited Production Questionnaire*

1. Basic introductory questions:
a. Tomar nam ki?
b. Kemon acho?
2. Questions focusing on tense:
a. Ki korcho?
b. Sokale ki korecho?
c. Dekho to eta ki? (showing the child a toy car).
d. Garita die ki koro?
e. Gari ta die ki ki kora jay amake ektu bolo toh?
f. Accha, tumi ei putul take bolo toh tumi kal ke ki ki korechile? (showing the child a doll)
g. Acting as if the doll is speaking: Hi amar nam bulu, amar kono bondhu nei. Ami ki korle tumi amar bondhu hoba?

h. Acting as if the doll is speaking: Ami Jodi kanna kortam tahole tumi ki korta?
i. Acting as if the doll is speaking: Tumi jokhon basay kanna koro tokhon tomar ammu ki korto?
j. Acting as if the doll is speaking: Ami Jodi tomake boka dei tahole ki korba tumi?
k. Acting as if the doll is speaking: Tomake abbu/ ammu boka dile ki koro?
l. Tickling the doll: Dekho putul tar onek katukutu ache. Tomake keu katukutu dite chaile ki korta?
m. (Giving the child the doll) Ektu age putuler sathe ki korla bolo toh amake?
n. Putula ta die ki koro?
o. (Dancing a teddy in front of the child) Bolo teddy ta ki korche?
p. Teddy ta jante chasse ajk basay jeye ki ki korba?
q. (Pinching the teddy) Teddyta ke etokkhon ki kortechilam?
r. (Giving the child the teddy) Teddyta r na onek mon kharap oke ektu bolo toh valo teddy hote hole ki ki korte hobe?
s. Tumi boro hoe ki ki korba?