

Sketch Emergence and Acquisition Order of Bangla Nominal Case Markers and Postpositions in Pre-School Children

By

Tahsina Quamarun
22103033

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Declaration

It is hereby declared that

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3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
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Student's Full Name & Signature:

Tahsina Quamarun

22103033

Approval

The thesis titled “Sketch Emergence and Acquisition Order of Bangla Nominal Case Markers and Postpositions in Pre-school Children” submitted by Tahsina Quamarun (22103033) of Fall, 2025 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Arts in English on 20th January, 2026.

Examining Committee:

Supervisor:
(Member)

Dr. Asifa Sultana
Professor
Department of English and Humanities
Brac University

Departmental Head:
(Chair)

Firdous Azim, PhD
Professor and Chairperson
Department of English and Humanities
Brac University

Abstract

Language acquisition in children exhibits considerable and drastic changes between the ages of 2 and 4 years old, as they progress from producing one or two-word utterances to forming fully fledged sentences. While this phenomenon is more or less commonly observed across languages, children learn to acquire different grammatical properties based on the language to which they are exposed. English and Bangla are typologically different. English focuses more on word order and prepositions to express case relations, whereas Bangla uses inflectional markers. With the typological difference in mind, along with the fact that Bangla is an understudied language, this study aims to provide an approximate list of both the emergence and acquisition order of case marking and postposition. This is the first study on nominal morphology in Bangla with regard to child language acquisition. Spontaneous speech samples from six children ages 2;0 to 4;0 were observed in a mixed-method approach utilizing a cross-sectional research design. Results showed that both case markers and postpositions emerged in children quite early (by 24 months) with low error rates. Children are likely to acquire locatives and nominatives first, followed by genitives and objectives. Both commission and omission errors suggest that children are aware of inflections but they make errors due to some other underlying problem with syntax. The developmental trajectory in children's use of Bangla case marking highly resembles that of Malayalam and Turkish-speaking children.

Keywords: Case Marking; Inflection; Bangla; Typology; Agglutinative; Postposition; Error

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List of Abbreviations

1/2/3=1st/2nd/3rd person marker

asp=Aspect

det=Determiner

gen=Genitive

int=Intimate Pronoun

loc=Locative

nom=Nominative

obj=Objective

pp=Perfective Participle

post= Postposition

par =Particle

ten=Tense

voc=Vocative case

Chapter 1: Introduction

In child language acquisition (CLA) research, linguists show keen interest in exploring different structural aspects of a language, such as phonology, morphology, syntax and so on. A wide range of research has been conducted on different aspects of morphology to see how different kinds of morphemes are acquired. Most of the focus was on Indo-European languages such as English, German, French, Italian and Spanish, to name a few. Consequently, they have a rich literature where the subject matter is approached from different perspectives, including the exploration of case marking. Case is an integral part of grammar as it shows the relationship between a noun or noun phrase and other parts of the sentence. Some languages (for example, English) rely on word order to express this relationship, whereas some utilize inflectional markers. There are almost 7000 languages worldwide, and not all languages are the same (Kidd & Garcia, 2022). Some may share similar characteristics, some could not be any more different. There is also a difference in the amount of study that has been conducted, based on which, languages can either be well-researched or understudied. Bangla is one such understudied language where nouns take inflectional markers and/or use postpositions to express how noun phrases are related to different parts of a sentence. Within the relatively smaller literature of studies on CLA in Bangla, nominal morphology is yet to be explored. Therefore, this study focuses on looking at nominal morphology, specifically how case marking develops in Bangla-speaking pre-school children along with postpositions.

1.1. Purpose of The Study

The goal of this research is to observe the spontaneous speech of typically developing pre-school children who are Bangla native speakers to understand the developmental trends in

their use of case markers and postpositions, thereby outlining the emergence and acquisition order. In addition to looking at errors made by children while using the aforementioned grammatical elements, the author also attempts to draw cross-linguistic comparisons between Bangla and other languages.

1.2. Research Questions

This study focuses on answering the following questions:

1. In which order do case markers and postpositions emerge in children? What does it mean for their acquisition order?
2. In terms of usage, do these grammatical elements follow any pattern? If so, then what does it reveal about their development journey?
3. Is there any similarity or dissimilarity across languages?
4. What are the types of errors children tend to make, and how prevalent are they in speech?

1.3. Significance

This study adds to the literature of child language acquisition in Bangla. Additionally, its attempt to sketch the emergence and acquisition order of cases adds not only to the field of cross-linguistics but also to language impairment. A better understanding of how typically developing children acquire language will help develop criterion that can, in return, be used to identify language impairment in children more accurately.

The following chapters are organized in a way that lays the foundation based on existing literature (Chapter 2), provides a detailed account of methodology (Chapter 3), reports the

findings (Chapter 4), discusses the findings in light of usage frequency, accuracy and errors (Chapter 5), and lastly, comes to a conclusion (Chapter 6).

Chapter 2: Literature Review

This chapter provides background information on child language acquisition research, language typology and a grammatical sketch of Bangla case markers and postpositions in separate, dedicated sections.

2.1. An Introduction to Child Language Acquisition

Over the years, linguists have proposed various hypotheses behind language acquisition, one of which is Chomsky's innatist perspective. According to him, "all human languages are fundamentally innate and that the same universal principles underlie all of them" (Lightbown & Spada, 2013, p. 15). His hypothesis suggests that children are equipped with a language acquisition device (LAD) that consists of "the universal principles of human language, together with procedures for discovering how those principles apply to the particular language to which he is exposed" (Wells, 1981, p. 76). This perspective has sparked debates among linguists regarding the existence of LAD, however, it has also motivated them to investigate how children acquire language. While there is no concrete evidence for or against this LAD, linguists have attempted to explain CLA through several different theories, including cognitivist theory, behaviourist theory, and socio-cultural theory, among others. All of these theories emphasise different aspects, such as cognitive capability, environment, interaction and so on.

Research indicates that there is some truth to these theories, nevertheless, it is still quite remarkable how children make language acquisition seem almost effortless. They start to express themselves by associating different sounds with meanings, just as they turn one year old. By the time children are four years old, they have already mastered approximately 14,000 words and are capable of navigating through conversations using language (Clark, 2009). Fascinating as it is,

the question remains: how is it that children, despite all the variables (environment, culture, interaction, to name a few), become largely proficient speakers of their native tongue by the age of five? The study of CLA is key to understanding the mechanisms that underlie the human brain, whether cognitive development and/or social context is responsible for language acquisition. It can also shed some light on whether there is any shared universal trait common across languages.

2.2. Research on CLA

When it comes to child language acquisition, different avenues have been explored. Some notable studies look at child-directed speech (e.g., Broen, 1972; Ferguson, 1964; Matychuk, 2005), the role of socioeconomic status (e.g., Hoff, 2006; Rowe, 2008; Schwab & Williams, 2016), bilingualism in developing children (e.g., Hoff, 2013), language impairment (e.g., Leonard, 1989) and so on. In the wake of Chomsky's revised LAD hypothesis, the concept of Universal Grammar (UG¹) has inspired a body of research that focuses on an in-depth study and understanding of languages, together with their internal structures. Roger Brown's (1973) seminal work on CLA presents the acquisition order of grammatical morphemes² by pre-school English-speaking children. The longitudinal research was conducted on spontaneous language samples and, based on the children's MLU (mean length of utterances), showed that all three participants followed a similar order of acquisition. Although there was a developmental sequence, not every child acquired the morphemes at the same age or at the same rate. Similarly,

¹ The definition of UG states that "although languages may be superficially different, underneath they follow similar underlying principles" (Rowland, 2014, p. 235).

² Morpheme is considered as "the smallest unit of language that carries information about meaning or function" (O'Grady, 2001, pp. 118-119). It is of two types: free morphemes (meaningful units that carry meaning and stand by itself) and bound morphemes (units that rely on or create meaning when attached to a free morpheme).

other studies have also looked into the morphology of English-speaking children (Berko, 1958; Cazden, 1968) as well as German (Sommer-Lolei et al., 2021), French (Veneziano, 2022), Turkish (Aksu-Koç & Slobin, 1986; Ketrez & Aksu-Koç, 2009), Russian (Kazakovskaya, 2019; Kazakovskaya & Voeikova, 2021) and so on. However, Kidd and Garcia (2022) point out that the studies that have been published within the last 45 years in major journals focusing on CLA are “highly skewed towards English and other well-studied Indo-European languages”, which is alarming because there are estimated to be around 7000 languages currently spoken all over the world (p. 703). They observed that in the first 40 years, more than half of the articles dealt with the acquisition of English, which, as of now, has gradually started to change as research on other languages is slowly increasing.

2.3. Typological diversity

Languages all over the world have gone through changes over time. While some languages may share similar characteristics, others may not. In an attempt to classify them, linguists have proposed three different approaches, one of which is linguistic typology (O’Grady et al., 2001). Linguistic typology looks at the structural and functional characteristics of a language, specifically, “the phonological system, morphological structure and word order patterns” (Poslončec, 2016, p. 2). Languages are typologically quite diverse. Despite belonging to the same ancestor and sharing similar traits, languages have distinct features that separate them from one another. For instance, although Bangla and English share the same ancestor, the Indo-European language, they have vastly different characteristics since they belong to different subgroups which have branched out of it. Bangla belongs to the Indic branch under the Indo-Iranian subgroup, along with languages such as Sanskrit, Hindi, and Urdu, whereas English

belongs to the Western branch, which is of the Germanic subgroup (Katzner, 2002). The two languages also follow different sentence structures. English follows a strict subject-verb-object (SVO) pattern, whereas Bangla mostly follows a subject-object-verb (SOV) pattern and exhibits more word order flexibility. For example, the sentence “I eat rice” in English can be said differently in Bangla while carrying the same meaning:

1. *Ami bhat khai.*

I rice eat.

2. *Ami khai bhat.*

I eat rice.

3. *Bhat khai.*

Rice eat.

In example (3), there is no overt subject, only a verb and an object are present. This is because Bangla allows its speakers to drop the subject as long as the sentence carries the intended meaning within a particular context. Additionally, the verbs carry person markers, which makes it easier to understand who the speaker is. However, English is a non-null subject language. When it comes to morphological structure, English is categorized as an analytic language, where a strict word order is maintained, along with “extensive use of prepositions and auxiliary verbs” (Shahnawaz, 2013, p. 12). On the other hand, Bangla is considered an agglutinative³ language due to the high affixation of inflections. In the following sentence, each inflection marker has a distinct grammatical function.

³ In an agglutinating language, morpheme roots have identifiable suffixes and prefixes (that serves a particular function) attached to them.

4. *Eitake bage rakhe.* [2;11]

this.det.obj bag.loc keep.3

(One) keeps it in the bag.

In (4), the location (*bage*) and direct object (*eitake*) are marked with *-e* and *-ke* to show their relation with the verb. The verb stem *rakh* (to keep) takes *-e*, which is a person marker.

While typological features help distinguish languages and categorize them, it is worth mentioning that this categorization does not necessarily mean that the language is purely of a particular type. Languages undergo change with time, which is why “all languages are to varying degrees mixtures” (Katamba, 1994, p. 33). Typological features are determined by looking at the predominant characteristics that languages show. Nevertheless, language typology plays a significant role and can help linguists identify similarities and dissimilarities across languages. It also answers the question of why it is necessary to study different languages within their own context. For instance, a Bangla-speaking child’s developmental trend is most likely going to vary from that of an English-speaking child due to the languages’ typological diversity. A deeper understanding of both languages’ structure⁴ is essential to draw comparisons between the two.

2.4. Introduction to Bangla

Bangla, also known as Bengali, is the national language of Bangladesh, home to a population of 175.7 million people. It is also spoken in some parts of India, namely, West Bengal, Assam and Tripura. There are over 200 million Bangla speakers worldwide (Katzner,

⁴ Structure here refers to the internal mechanisms of a language and its different domains such as phonology, morphology, syntax, semantics and so on.

2002). Bangla belongs to the Indo-Aryan language family alongside Hindi, Oriya, Bihari, Magdhi, Maithili and Assamese. Similar to most other languages, Bangla has also changed over the years. Modern Bangla consisted of *chalitobhasha* (Standard Bangla), which people used for everyday communication and *shadhubhasha* (High Bangla), predominantly used in literature by educated people. However, at present, *chalitobhasha* has become the norm for official use in formal writing and speaking as it is understood and used by most of the population. Dialectical variations also exist depending on the geographical location. Aside from Standard Bangla and dialects, there also exists a colloquial form of Bangla that is mostly used in informal settings, sometimes among family members and friends (Sultana, 2016).

Bangla is a highly inflected language where inflections markers carrying different grammatical functions attach themselves to the stem word, a noun, a pronoun or a verb. The word order, as previously mentioned, is mostly SOV, however, there is room for ample flexibility as long as the same meaning can be conveyed. Therefore, words are often dropped in sentences, especially subjects. Grammatically, Bangla nouns can be categorized by number, animacy, definiteness, formality, count and case, which are realized by using “classifiers (*ta*, *gulo*), modifiers and case endings” (Thompson, 2012, p. 47). These markers attach themselves to the noun root to modify the word to varying degrees. They do not occur alone, nor do they carry any meaning by themselves. There is no article in Bangla, instead, there is a set of classifiers that help determine the noun’s definiteness (definite or indefinite) and number (singular or plural). Classifiers vary depending on the noun’s animacy (animate or inanimate), count (count or non-count) and formality (ordinary or honorific). They appear with numbers, quantifiers and case endings. There are a total of 6 classifiers: *ta*, *ti*, *khana*, *khani*, which denote singular nouns and *gulo*, *guli* are for plurals. Two additional classifiers, *tuku* (non-count items) and *jon* (animate

objects), are also used. Noun phrases or proper nouns are often replaced with pronouns, a subcategory of nouns, however, this is only applicable for 3rd person pronouns. Pronouns can often overlap with some adjectives, adverbs and conjunctions. In Bangla, verbs consist of a root morpheme that has an aspect, tense and person marker as attachments.

2.5. Existing Literature on Bangla Morphology: Addressing the Research Gap

When it comes to Bangla-speaking children, several studies have been conducted on the MLU of words and morphemes (Gouda et al., 2020), grammar analysis (Nasrin, 2008), the acquisition and developmental pattern of null subjects (Mitul, 2021) and error analysis (Jahan, 2023). Additionally, some studies focus on the morphology of typically developing pre-school children, specifically the acquisition (Chakraborty & Leonard, 2012), developmental trend (Sultana et al., 2016) and productivity (Sanjana, 2016) of verbal inflections. Rahman and Sanjana (2020) examined the relationship between age and productivity in Bangla tense inflections among typically developing pre-school children. Another study by Sanjana (2018) reports on the production and accuracy of person markers in a set of verbs that are in the present tense and progressive aspect. There is also a case study (Sultana, 2021) that discusses the developmental trajectory of early verb forms in a monolingual Bangla-speaking child from the time they first start speaking in two-word combinations. Moreover, Sultana et al. (2019) investigate how children with language disorders perform regarding the production of verb inflections compared to typically developing children.

While the literature for CLA study in Bangla contains some work on verb morphology, there is hardly any on nominal morphology. Researchers have studied nominal morphology to varying degrees in languages such as English (Cazden, 1968), French (Veneziano, 2022),

German (Wittek & Tomasello, 2005), Nepali (Pokharel et al., 2017), Russian (Gagarina & Voeikova, 2009), and Estonian (Argus, 2009). Therefore, a lack of representation of Bangla exists not just within the bounds of its own literature, but also within the crosslinguistic paradigm. To address this research gap, this study aims to investigate the developmental trend of nominal morphology, specifically case markers and postpositions in typically developing pre-school Bangla-speaking children. Before that, the acquisition of nominal case marking across languages and a grammatical sketch of Bangla are presented in the following sections.

2.6. Acquisition of Nominal Case Marking and Postposition Across Languages

As previously mentioned, Bangla and English differ in their typology. While English relies on word order, agglutinative languages like Bangla take affixations to distinguish between the grammatical roles in a sentence. English nouns only retain the overt genitive suffix -'s to mark possessions, whereas pronouns differentiate between nominative, accusative and genitive (O'Grady et al., 2001). Therefore, the acquisition list of grammatical morphemes suggested by Roger Brown (1973) would not apply to Bangla. However, Bangla could potentially share similar characteristics with Turkish and Malayalam since they also have agglutinative features. In terms of postpositions, English uses prepositions, whereas Bangla uses postpositions.

By the time Turkish children become two years old or sometimes even earlier, they have already learned all the nominal inflections. Postpositions that refer to locations (in, on, under) seem to develop early. Productivity of nouns can occur during the two-word period. Morphological over-generalisations can sometimes be observed, however, there are hardly any errors when it comes to the order of agglutinated morphemes, due to Turkish having a high frequency of morpheme agglutination (Aksu-Koç & Slobin, 1986). Case markers seem to emerge

around 1;3, however, children do not show productivity before 1;6. The accusative, dative and locative cases are the ones that emerge earlier, followed by the ablative and genitive. It is around 1;8 when the marginal cases appear, whereas the instrumental and the comitative emerge even later (Ketrez & Aksu-Koç, 2009).

Similar to Bangla and Turkish, nouns in Malayalam also have an agglutinative feature, where the stem takes affixes that usually carry one function. The following cases are marked for nouns: nominative, dative, accusative, genitive, sociative, locative and instrumental. According to Krishnan (2019), accusatives emerge within 23 months to 29 months, and by the time children become 2;0 years old, they start to use all the cases productively with varying accuracy rates, except for nominatives, which are null. Dative, genitive and locatives have the highest frequency of correct usage rates (as in more likely to be acquired early) compared to accusatives. The sociative markers tend to be the least frequent in Malayalam. Lastly, in children's vocabulary, postpositions have a low usage rate (only 2% to 3%).

2.7. Bangla Grammar Sketch: Case Markers and Postpositions

There is a general discrepancy among linguists regarding case⁵ in Bangla because the Sanskrit patterns follow a semantic criterion to explain *kaarak*, wherein lies the difference between the two (Thompson, 2007). Instead of a semantic criterion, Thompson (2012) suggested a syntactic one where case is considered as a “category of nouns and pronouns which is usually, but not always, identified by case-endings and mark grammatical relationships within a sentence” (p. 62). She identified four cases: nominative, genitive, locative, and objective. They

⁵ Case is a type of inflectional affix that gives information about the grammatical function or roles of a noun, pronoun or adjective (Katamba, 1994).

come with their own set of case endings. Bangla noun stems take classifiers followed by a case ending.

2.7.1. *Nominal Case Markers*

Nominative. The nominative in Bangla is typically unmarked and is often found at the beginning of sentences, serving as subjects. However, due to regional variations, sometimes they have overt markers such as *-e* or *-y* as word attachments.

5. *Ball koi?*

ball.nom where

Where is the ball?

6. *Ekhane ami.* [2;0]

here I.nom

I (sit) here.

Maay.

mother.nom

Mother (here).

7. *Cocomelone koi niye jachche?* [2;11]

cocomelon.nom where take.pp to go.asp.3

Where is Cocomelon taking them?

Genitive. Nouns take *-r*, *-yer* or *-er*, *-der* genitive ending to modify other nouns, verbal nouns, some adjectives and abstract nouns. Genitives are also found before postpositions that are noun-derived.

8. *Shamner roome jao.*

front.gen room.loc go.1

Go to the front room.

9. *Ki ki ronger ball chilo?*

what colour.gen ball.nom exist.ten.3

What colour were the balls?

10. *Eta tomader basha.* [4;0]

this.det you.gen house.nom

This is your house.

In the (10) example, the *-der* inflection not only refers to the genitive but also denotes plurality.

In some instances, such as this one, inflection makers in Bangla can exhibit multiple functions simultaneously.

Locative. The locative case endings include *-e*, *-y* and *-te*, which give information about “the where and when and often also the why and how of events in sentences” (Thompson, 2012,

p. 265). While there are no plural forms, singular endings can attach to plural classifiers. It is also permissible in Bangla to drop locative endings sometimes with place names and common phrases. Nouns that end with a consonant or in a diphthong take the *-e* marker. Additionally, *-o* in the inherent vowel is replaced with locative *-e*. Nouns that have vowel endings usually take the *-te* marker or *-y* marker.

11. *Tumi ghoray chorbe?*

You.nom horse.loc ride.ten.2

Do you want to ride the horse?

Objective. The objective case distinguishes both dative and accusative cases. Indirect animate objects are always marked with *-ke* in the objective case, which is often dropped for direct inanimate objects, although they can still be used to make clear distinctions. Animals can either be marked or unmarked when used as a direct object. For plural animate nouns, *-ra* changes to *-der* in the objective case, which can become confusing with the genitive, therefore, an additional *-ke* is sometimes added to differentiate the two.

12. *Amake boka diba?* [2;11]

me.obj scold give.ten.2

Will you scold me?

2.7.2. Pronominal Case Markers

Bangla pronouns also distinguish between nominative, genitive, objective, and locative case markers, depending on the type of pronoun. There are personal and possessive pronouns (Table 1), inanimate pronouns (Table 2), relative pronouns (Table 3), deictic pronouns (Table 4), interrogative pronouns (Table 5) and indefinite pronouns (Table 6).

Table 1

List of Personal and possessive pronouns

	Nominative	Genitive	Locative	Objective
Singular	<i>Ami</i> (I)	<i>Amar</i>		<i>Amake</i>
	<i>Tumi</i> (You)	<i>Tomar</i>		<i>Tomake</i>
	<i>Tui</i> (You)	<i>Tor</i>		<i>Toke</i>
	<i>Apni</i> (You)	<i>Apnar</i>		<i>Apnake</i>
	<i>She</i> (He, She)	<i>Tar</i>		<i>Take</i>
	<i>E</i> (He, She)	<i>Er</i>		<i>Eke</i>
	<i>O</i> (He, She)	<i>Or</i>		<i>Oke</i>
	<i>Tini</i> (He, She)	<i>Tar</i>		<i>Take</i>
	<i>Ini</i> (He, She)	<i>Er/Enar</i>		<i>Eke/Enake</i>
	<i>Uni</i> (He, She)	<i>Or/Unar</i>		<i>Oke/Unake</i>
Plural	<i>Amra</i> (We)	<i>Amader</i>		<i>Amader/Amaderke</i>
	<i>Tomra</i> (You)	<i>Tomader</i>		<i>Tomader/Tomaderke</i>
	<i>Tora</i> (You)	<i>Toder</i>		<i>Toder/Toderke</i>
	<i>Apnara</i> (You)	<i>Apnader</i>		<i>Apnader/Apnaderke</i>
	<i>Tara</i> (They)	<i>Tader</i>		<i>Tader/Taderke</i>
	<i>Era</i> (They)	<i>Eder</i>		<i>Eder/Ederke</i>
	<i>Ora</i> (They)	<i>Oder</i>		<i>Oder/Oderke</i>

Table 2

List of Inanimate pronouns

Nominative	Genitive	Locative	Objective
<i>Ta</i> (It, This, That)	<i>Tar</i>	<i>Tate</i>	<i>Take</i>
<i>She</i> (It, This, That)	<i>Tar</i>		<i>Take</i>

Table 3*List of Relative pronouns*

	Nominative	Genitive	Locative	Objective
Singular	<i>Je</i> (Whoever)	<i>Jar</i>		<i>Jake</i>
	<i>Jini</i>	<i>Jar</i>		<i>Jake</i>
Plural	<i>Jara</i>	<i>Jader</i>		<i>Jader</i>
Inanimate	<i>Ja</i>	<i>Jar</i>	<i>Jate</i>	<i>Ja</i>

Table 4*List of Deictic pronouns*

	Nominative	Genitive	Locative	Objective
Unmarked	<i>She, Sheta</i> (That)	<i>Tar, Shetar</i>	<i>Tate, Shetate</i>	<i>Ta, Shetake</i>
Near	<i>E, Eta</i> (This)	<i>Er, Etar</i>	<i>Ete, Etate</i>	<i>E, Etake</i>
Far	<i>O, Ota</i> (That)	<i>Or, Otar</i>	<i>Ote, Otate</i>	<i>O, Otake</i>

Table 5*List of Interrogative pronouns*

	Nominative	Genitive	Locative	Objective
Singular	<i>Ke</i> (Who)	<i>Kar</i>		<i>Kake</i>
Plural	<i>Kara</i> (Who)	<i>Kader</i>		<i>Kader</i>

Inanimate	<i>Ki</i> (What)	<i>Kisher</i>	<i>Kishe</i>	<i>Ki</i>
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Table 6*Indefinite pronouns*

	Nominative	Genitive	Locative	Objective
Animate	<i>Keu</i> (Someone)	<i>Karo</i>		<i>Kaoke</i>
Inanimate	<i>Kichu</i> (Something)	<i>Kichur</i>	<i>Kichute</i>	<i>Kichu</i>

2.7.3. Postpositions

Postpositions in Bangla typically follow nouns and pronouns, providing information about location, time, and manner, similar to how prepositions function in English (Thompson, 2012). In Bangla, there are three kinds of postpositions: noun-derived, verb-derived and underived (Table 7). Postpositions have similar functions as case markers denoting “a sense of location, situation, position, and direction of nouns and pronouns preceding them” (Dash, 2015, p. 181).

Table 7*List of Postpositions in Bangla*

Noun-derived	Verb-derived	Underived
---------------------	---------------------	------------------

<i>Upore</i> (On, Above)	<i>Chey</i> (Than)	<i>Obodhi</i> (Since, Until)
<i>Kache/Kase</i> (Near, At, To)	<i>Chara</i> (Without, Except)	<i>Jonno, Jonne</i> (For)
<i>Dike</i> (Towards)	<i>Theke</i> (From)	<i>Dara</i> (Through)
<i>Niche</i> (Under, Below)	<i>Diye</i> (By)	<i>Nagad</i> (Until, Up to)
<i>Pashe</i> (Beside)	<i>Dhore</i> (During)	<i>Porjonto</i> (Until)
<i>Pichone</i> (Behind)	<i>Niye</i> (With, About)	<i>Proti</i> (Towards)
<i>Baire</i> (Out, Outside of)	<i>Hote, Hoite</i> (From, Since)	<i>Bina</i> (Without)
<i>Bhitore</i> (In, Inside of, Within)	<i>Hoye</i> (Through, Via)	<i>Moto, Moton</i> (Like)
<i>Modhdhe</i> (Between, Among)	<i>Hoye</i> (On behalf of)	
<i>Majhe</i> (Between, Among)		
<i>Shamne</i> (In front of)		
<i>Ontor</i> (Within, At an interval of)		
<i>Age</i> (Before)		
<i>Pore</i> (After)		
<i>Bade</i> (After)		
<i>Pokkhe</i> (For, On behalf of)		
<i>Poriborte</i> (Instead)		
<i>Bodole</i> (Instead)		
<i>Birudhdhe</i> (Against)		
<i>Madhome</i> (Through)		
<i>Shonge</i> (With)		
<i>Shomporke</i> (About)		
<i>Shombondhe</i> (About)		

In light of the cross-linguistics discussion, along with the sketch of Bangla grammar mentioned above, the next chapter details how the present study on nominal case marking in Bangla is conducted.

Chapter 3: Methodology

This study aims to look into the developmental trajectory of Bangla-speaking children in their use of case marking and postpositions to answer whether there is any pattern to their acquisition, and what the pattern looks like across languages. With that in mind, this study involved observing typically developing children between the ages of two and four years old. They were divided into five different age groups (2;0, 2;6, 2;11, 3;6 and 4;0) with a six-month gap in between, which helped showcase the differences among the children, allowing the researcher to trace the developmental trajectory systematically. A mixed-method approach was employed for this study. Quantifying the data provided insight into various percentage values regarding case markers and postpositions in Bangla-speaking children. It also allowed the researcher to observe how the trend differs among participants (Creswell, 2020). Additionally, a descriptive look at usage and errors helped to draw a comparison between Bangla and other languages.

3.1. Research design

Research design is one of the most crucial steps in any research, as it helps researchers obtain data that is best suited for individual studies. Since the purpose of this research is to understand how children of specific age groups differ in their use of grammatical items, a cross-sectional study design was deemed appropriate and employed so that the researcher can observe multiple participants within a short period of time. The research design followed the framework provided in The Acquisition Sketch Project⁶ (Hellwig et al., 2023) with minor adjustments.

⁶ Language acquisition studies have mostly covered English and other European languages over the years which is concerning given how there are roughly 7000 languages worldwide. The Acquisition Sketch Project initiative was taken as a measure to close the gap by looking into acquisition of understudied languages and creating a sketch corpus and an acquisition sketch.

3.2. Participant and sampling

There is a total of six participants involved in this study, who are typically developing pre-school children. They are native Bangla speakers and currently living in various areas of Dhaka, Bangladesh. Initially, the goal was to collect data from two children belonging to the same age group (for instance, observing two children who are 2;0 years old and so on). However, due to a lack of participants and time constraints, this proved to be quite unfeasible. While it was possible to collect data from two children for the 2;6 age group, the rest of them consist of data from one child each. A purposeful sampling was conducted by the researcher to find children who belonged to specific age groups.

Table 8

Participant list

Name	Age	Sex	Interlocutor number	Family Members
A	2;0	Male	6	4
B	2;6	Male	5	3
C	2;6	Female	3	3
D	2;11	Male	4	5
E	3;6	Male	5	5
F	4;0	Female	2	3

The project provides a framework for acquisition study that is feasible and offers researchers advice on how to collect, analyze and present data. This study on Bangla nominal morphology acquisition adapts the project's research design due to its well-structured framework which enables acquisition study on a relatively smaller scale by reducing the amount of data and prioritizing documentation and research.

The data consists of recordings of children's spontaneous speech as they interact with their caregivers, relatives and the researcher. While interaction with family members and relatives was prioritized, in some cases, the researcher also participated in the conversation when the child was interacting with her. The collected data is a representative sample (a "snapshot") of each child's everyday life. Since the emergence of grammatical items is the primary focus of this study, naturalistic spontaneous data were collected. Elicitation of speech was kept to a minimum and employed only when necessary (for instance, if the child was not talking for a while or if the child wanted someone to interact with them).

3.3. Research Tool

Spontaneous speech samples were used as the research tool for this study. Studies that focus on language development often prefer to use spontaneous samples for analysis, as they are a representation of a child's language skills. Interaction with family members in a naturalistic setting can reveal important information regarding the child's language use (Miller et al., 2012).

3.4. Data collection procedure

The data collection procedure involved the author and two other researchers who assisted in collecting data from various participants. The researchers collected data by means of video and audio-recording using high-resolution smartphones for better quality. Three separate smartphones were used to capture data: Samsung Galaxy F23 (SM-E236B), iPhone 16 Pro Max and OPPO A38 (CPH2579). For ease of recording and to keep the phone steady, it was attached to a selfie stick. Afterwards, the recorded data was transferred to a personal computer for

transcription and analysis. The goal was to collect naturalistic, spontaneous data, therefore, ensuring an environment where participants feel comfortable and can produce speech was of utmost importance. Children in particular are quite sensitive to changes in their environment, which is why the data collection took place where the participants reside, among people they are most familiar with. A spacious room with good acoustics was the ideal setting, which was achieved to some degree, however, children tend to move around quite a lot, which ultimately led the researchers to follow them around with the recording device. Before data collection began, the researcher visited the target participant's house to establish rapport with the child, considering that children may sometimes feel shy or uncomfortable talking in front of strangers. The interlocutors (who interacted with the child) were briefed on the purpose of this study and were advised to keep the elicitation of speech to a minimum and to engage in conversation as they would in everyday life. While the duration of the recording sessions varied for each child, the goal was to capture at least an hour of footage.

Table 9

Recording session duration

Child	A	B	C	D	E	F
Age	2;0	2;6	2;6	2;11	3;6	4;0
Minute	98 (1)	76 (1)	107 (1)	68 (1) 41.15 (1)	60 (1)	62.06 (1)

Note. Each session duration includes session numbers in brackets.

3.5. Data Analysis

The CHAT (Codes for the Human Analysis of Transcripts) transcript format was used for transcription in the child language analysis program called CLAN (MacWhinney, 2000), short for Computerized Language Analysis both of which were developed by Brian MacWhinney in 1984. CLAN was primarily designed to help analyse child language. Since this research also focuses on analysing child language, CLAN proved to be a viable option. The program allows its users to analyse data on various levels, such as phonological, morphological, syntactical, and so on. Transcribing and coding were both done using CLAN, for which the author selected 30 minutes to annotate from the recorded data of each child (see Appendix B). The selected 30 minutes were carefully chosen and curated to exclude memorized chunks,⁷ adult-oriented conversations,⁸ excessive elicited speech,⁹ and awkward pauses and silences.

The data was transcribed using the Roman alphabet, following the CHAT manual conventions (MacWhinney, 2000) and a guideline tailored to Bangla data (see Appendix A). Each speaker in the data files was identified and numbered. One utterance¹⁰ per speaker was transcribed, followed by a morphological breakdown. Bangla nouns, pronouns and verbs are highly agglutinative as they take different markers, all of which were separated during coding.

⁷ The term “memorized chunk” here refers to reciting poems, singing songs and counting objects. These aforementioned activities do not entail any signs of linguistic productivity in a child for them to be considered relevant for this research, as they align more so with the definition of rote learning.

⁸ Since the focus of this study is to observe and analyse child data, portions of the conversation were avoided for processing where the adult interlocutors are talking amongst themselves and when the conversation becomes too one-sided, as in the child is not talking much compared to others.

⁹ Elicitation of speech, to varying degrees, is often unavoidable in conversations. Despite everyone’s best efforts, some portions of the recorded data include adults actively trying to elicit speech from the child, which were avoided for annotation and processing as much as possible.

¹⁰ Utterances consist of incomplete sentence, phrases and partial sentences as long as they are meaningful within the context.

All four case markers and postpositions were also marked. Additionally, separate tiers were used to note down errors and missing markers.¹¹ It is worth mentioning that this study focuses solely on morphology, as such, the transcript and code are suitable only for morphological analysis. Allomorphic variations were transcribed while maintaining the same stem in code. If words were mispronounced, yet identifiable and meaningful, they were noted with an additional comment tier.

For data analysis, CLAN was used to generate various numerical values, which were then converted to percentages for each child. Since there were two children under the 2;6 age group, their numbers were averaged. The usage rate of each case marker was examined not only across all age groups but also within each child to see how the correlation between the two varied. As for postpositions, types and usage rates (per utterance) were observed across the groups to see if there was any noticeable pattern. Error analysis is arguably the most important part of data analysis for this study. As such, the researcher studied errors from three different perspectives: error percentage per total case markers,¹² based on the types of errors and for each case marker type. An in-depth understanding of error types, tokens, and percentages across all age groups is key to determining a sketch order of acquisition of the case markers, along with an explanation behind the hierarchy. The accuracy rate of case use was also calculated and observed. Besides case markers, postpositions and errors, data analysis also reported on the mean length of utterance (MLU), standard deviations (SD), total number of utterances, and total number of case markers of each age group.

¹¹ Case markers being dropped can result in erroneous utterance, however, in some cases, it is permissible in Bangla to drop locative case markers, especially when it comes to common place names.

¹² Total case marker here refers to the sum total of all four case markers for each individual child.

3.6. Limitations

Time constraint was one of the major limitations of this research, along with the limited number of participants. This study does not take into account factors such as gender differences among children in terms of development, socioeconomic status (SES) of caregivers, as well as the quality and quantity of input a child receives from their linguistic environment, all of which, to varying degrees, impact a child's language capabilities. A larger sample size of participants could potentially provide more insight and help draw up a more accurate order of acquisition, however, it was quite challenging to find children of specific age groups, in addition, guardians who were willing to be part of the study. In that regard, although a longitudinal research design would showcase the developmental trend better, it was not viable due to the limited amount of time. Another limitation of this study is that the target participants did not undergo any official screening process, rather, their parents' observations and the researchers' judgment were the key indicators used to determine whether the child was typically developing or not.

3.7. Ethical considerations

The primary concern regarding this research was the issue of consent. Pre-school children are too young to understand the concept of consent, which is why their parents were approached and presented with the goal and purpose of this study. They were briefed on what this research entails and what the data collection procedure would look like. A consent form was also provided for official documentation purposes, along with reassurance that at any given moment, they can withdraw participation since it is entirely voluntary and that the collected data will be used solely for research purposes (Appendix C). Pseudonyms were given to participants to protect their identities.

Chapter 4: Findings

This chapter reports the results found from the language samples of all five age groups (2;0, 2;6, 2;11, 3;6 and 4;0). The results provide a general overview of various numerical values, including MLU, SD, utterances, morphemes, and the total number of case markers. It also contains multiple percentage values for all cases, postpositions, and errors. Numerical values are shown in Table 10. For percentage values, there are three different sections, each focusing on a specific subject matter.

4.1. General Overview

Under each age group, there is only one child, except for the 2;6 one where there are two children, and so the numbers are averaged for better comparison. The values were generated using CLAN for each child. In the case of B and E, unlike the rest of the children, their code files were separate, therefore, a pooled SD had to be generated. Another pooled SD was generated for the 2;6 age group. Null markers for the nominative and objective cases were also counted and included in the total number of case markers.

Table 10

A general overview of each age group

	2;0	2;6	2;11	3;6	4;0
TNU	247	176.5	368	190	255
Morphemes	530	642	1320	720	1084
MLU (morpheme)	2.14	3.69	3.58	3.81	4.24
SD	1.24	2.09 (pooled)	2.37	3.16 (pooled)	2.95
TNC	62	118	220	188	201

Note. TNU: Total number of utterances; MLU: Mean length of utterances; SD: Standard deviations; TNC: Total number of case markers

Although the best thirty minutes of data were selected for analysis from each child, the language samples consist of spontaneous speech, which means that the number of utterances a child speaks is bound to be diverse. As a result, the number of utterances across age groups was quite inconsistent, with the 2;6 group being the lowest number (176.5) and the 2;11 group being the highest (368). The reason behind the lowest utterance count can be attributed to the fact that it is an average of two sets of numbers (since there are two children), where child B has 222 utterances, whereas child C has 131. However, there is a general trend of the numbers decreasing and eventually increasing by age. There is a gradual increase in the MLU count overall, with a slight drop (3.58) in the 2;11-year-old, however, he produced the most utterances (368) among everyone, resulting in the largest number of morphemes (1320). Compared to the rest of the children, only the 3;6-year-old's SD (3.16) came closest to his MLU count (3.81). Regarding the use of the total number of case markers (nominative, genitive, locative, and objective combined), a general rise can be observed, except for child E, where the number slightly decreased (188), however, it increases again when it comes to child F (201).

4.2. Case, Postposition and Error

CLAN was used to generate the types and tokens for cases and postpositions. For both grammatical items, types¹³ were noted for each individual child, and the rate of use (per

¹³ Type refers to variations, for example, how many different locative case markers were used by a child.

utterance) were calculated based on their token¹⁴ numbers. Besides the usage rates, errors were also closely examined since error analysis is a crucial part of this study.

4.2.1. Case markers

Types and tokens of all the cases are discussed in this section. Inflection markers found under each group are reported in Table 11, and the percentage rates of tokens are reported in Table 12.

Table 11

List of case marker types across age groups

	2;0	2;6	2;11	3;6	4;0
Nominative	∅, -y (d)	∅	∅, -e (d)	∅	∅
Genitive	-r	-r, -er	-r, -er	-r, -der	-r, -der, -er
Locative	-e, -y	-e, -te, -y	-e, -y, -te	-e, - te	-e, -te, -y
Objective	∅, -ke	∅, -ke, -re	∅, -ke	∅, -ke	∅, -ke

Note. d: dialectical marker

Table 12

Case marker usage rate (per utterance)

	2;0	2;6	2;11	3;6	4;0
Nominative (%)	16.59	32.95	32.33	34.92	48.23

¹⁴ Token refers to the total number, meaning, how many times a child used locative in total.

Genitive (%)	4.45	14.30	10.86	7.93	13.33
Locative (%)	1.61	5.95	3.53	6.34	6.66
Objective (%)	2.42	16.18	15.21	8.46	15.29

Note. d: dialect

Nominative. In Bangla, nominatives are unmarked, meaning they do not have any overt markers, which is also true for most of the participants. However, due to some dialectical differences, exceptional use of markers can be observed in children A and D. Although not observed as frequently, A used the *-y* inflection in the phrase “*maay*” (mother) during a conversation to refer to his mother. D, on the other hand, used *-e* in two different instances:

13. *Cocomelone koi niye jachche?* [2;11]

Cocomelon.nom where take.pp go.asp.3

Where is Cocomelon taking them?

14. *Hulke emne martase.* [2;11]

Hulk.nom like fight.asp.3

Hulk is fighting like this.

From Table 12, the percentages for nominatives show that between 2;0 and 2;6 age groups, the usage rate doubles and continues to grow steadily over the ages. Compared to the rest of the groups, the 2;0 old child’s nominative count is quite low (16.59%) since his utterances

consisted mostly of phrases rather than sentences. Even in sentences, there is a tendency to drop the subject, which is also commonly observed in other groups. However, compared to the other cases, nominatives have the highest usage rate across the board.

Genitive. Genitives were frequently used to convey possession. They were also used before postpositions and to modify nouns and adjectives.

15. *Baba amar shathe cholo.* (Before postposition) [2;6]

father me.gen with.post come.2

Father, come with me.

16. *Officeer dorja kholo.* (To modify a noun) [2;6]

office.gen door open.2

Open the office door.

17. *Eta onek mojar sauce.* (To modify an adjective) [3;6]

this.det very tasty.gen sauce

This is a tasty sauce.

The most common inflection for the genitive case is *-r*, which emerged quite early. It was found that the marker is used by all the participants to varying degrees. The second most prevalent marker is *-er*, which first appeared in the 2;6 old children and continued to show up in 2;11 old and 4;0 old. The *-der* marker made its debut first in the 3;6 old. Lastly, all three genitive markers are used by the 4;0 old. As for the rate of use, the 2;6 age group had the highest rate (14.30%)

and the lowest rate (4.45%) was recorded by the 2;0 old. Overall, the rate fluctuated throughout, with the number rising for the 2;6 group (14.30%) and then continuing to drop until the 4;0 bracket (13.33%).

Locative. Locatives appeared fairly early in child A. However, it has the lowest usage rate compared to the other cases. The same phenomenon was observed for the rest of the children as well. Markers *e* and *-y* both emerged early in the youngest and were found to be used predominantly alongside *-te* instead of *-y*. starting from the 2;6 age, by every child except for child E, who used the *-te* inflection instead. By the age of 4;0, the child had started using all three inflections. Besides places, locatives were also used to refer to abstract places and causes.

18. *Eta bherosshukar bu.* (abstract place) [2;6]

this.det bh.loc.rosshukar bu.nom

This is bu.

19. *Morogta bhoie palay jabene haita.* (Locative of cause) [2;11]

rooster.det.nom fear.loc flee.pp go.ten.par walk.pp

The rooster will flee in fear.

Note. It is not possible to make a direct translation of (18) since it has to do with how the Bangla alphabet is read. In English, it would be something akin to “B for ball”.

Objective. The objective case is marked with *-ke* or occasionally with its colloquial variation *-re*. In some instances, they are also unmarked (null). Objective case count for children considered both null¹⁵ and the inflections which, although at a low rate (2.42%), were used by child A. The colloquial equivalent *-re* was used by one of the 2;6 old children in one instance. Other than that, both null and *-ke* were present in all age groups at somewhat inconsistent rates. While the usage rate significantly rose for the 2;6 age group (16.18%), it dropped slightly for the 2;11 group (15.21%) and the 3;6 one (8.46%). For the 4;0 old, the number started to increase once again (15.29%). Apart from the youngest child, the objectives were higher in number right after the nominatives for other children.

4.2.2. Postpositions

Children mostly used postpositions to address locations, time, the relationship between multiple objects and refer to themselves. Types of postpositions used by children showed a steady increase as they grew older (Table 13). The types under the 2;6 age group seem higher because there are two children under this category, however, each of them produced 5 (child B) and 4 (child C) types of postpositions, respectively. The oldest child used the most types (6) of postpositions. Some postpositions have allomorphic variations (*diya/diye* and *kase/kache*) due to the differences between standard and colloquial Bangla. *Diye/Diya* (instrumentality) was found to be the first postposition that child A used, and it was also common across all age groups. By the time children reached 2;6 years old, they had picked up postpositions related to the concepts

¹⁵ The null marker suggests that the slot for adding inflection markers is unused either because there is no need to add one or perhaps the speaker intentionally dropped it or they made an error. Regardless, for objectives in Bangla it is worth looking into the null marker since unlike nominatives that are generally unmarked, objective case markers are sometimes optional or used to mark specific parts of the sentence clearly. If there is any error present (discussed in 4.2.3 section) it would also reveal some information about acquisition.

of spatial position (*niche, upore, bhitore*), direction (*dike*), accompaniment (*shathe*) and proximity (*kache/kase*). Postpositions that refer to more complex concepts, such as time (*pore*) and comparison (*moto*), appeared much later in children, starting from 2;11 years of age. Each child's postposition usage rate was counted based on their use of total utterances. The numbers show that child A hardly used any postpositions (0.80%), however, the number increased for the 2;6 age group (7.81%), only to decrease again for the 2;11 (1.90%) age group. Afterwards, the rates showed a gradual increase for both 3;6 old child (4.23%) and 4;0 child (5.88%).

Table 13

Postposition type across age groups

	2;0	2;6	2;11	3;6	4;0
Postposition type(s)	<i>Diya/Diye</i>	<i>Diye</i> <i>Kase/Kache</i> <i>Niche</i> <i>Shathe</i> <i>Upore</i> <i>Bhitore</i> <i>Dike</i>	<i>Theke</i> <i>Kache/Kase</i> <i>Shathe</i> <i>Pore</i>	<i>Shathe</i> <i>Jonno</i> <i>Diye</i> <i>Baire</i>	<i>Modhdhe</i> <i>Moto</i> <i>Kase/Kache</i> <i>Pore</i> <i>Diye</i> <i>Piche</i>

Note. A list of all postpositions with meaning is given in Table 7.

4.2.3. Error

Results indicate that some errors regarding the case were present in the language sample. Table 14 shows that, based on the use of overall case markers, error percentages were moderately low and substantially declined by the end of 30 months. A close reading of the numbers for errors under each case separately (Table 15) demonstrates that the highest percentage of errors was present in the youngest child for both the genitive (9.0%) and objective

(100%) cases. The reason behind a 100% error rate for objectives was that, for the six objectives A used during the conversation, he also failed to use the marker in six different instances. However, the percentage significantly decreased for the 2;6 old age group (3.94%) and became zero by the time a child reached 42 months. Compared to the other cases, objectives have high error rates. Since nominatives are generally unmarked, an expected zero percent rate was therefore found across all participants. There was only one instance of errors for locatives, which was made by child B. As for genitives, the numbers fluctuated quite a bit. Overall, each age group displayed an accuracy rate of 90% or more in terms of case use. Lastly, two types of errors were observed: omission and commission (Table 16). A great deal of omission errors was observed, whereas commissions were only observed for objectives under the 2:6 group.

Table 14

Error percentage per total case markers

	2;0	2;6	2;11	3;6	4;0
Error (%)	11.29%	1.51 %	1.31%	0	0.46%

Table 15

Error percentage per individual case

	2;0	2;6	2;11	3;6	4;0
Nominative (%)	0	0	0	0	0
Genitive (%)	9.09	0	2.5	0	2.94
Locative (%)	0	2.77	0	0	0
Objective (%)	100	3.94	3.57	0	0

Table 16

Percentage of error types

		2;0	2;6	2;11	3;6	4;0
	Nominative (%)	0	0	0	0	0
Commission	Genitive (%)	0	0	0	0	0
	Locative (%)	0	0	0	0	0
	Objective (%)	0	2.6	0	0	0
	Nominative (%)	0	0	0	0	0
Omission	Genitive (%)	9.09	0	2.5	0	2.94
	Locative (%)	0	2.75	0	0	0
	Objective (%)	100	1.3	3.5	0	0

Only the following instances of postpositional errors were found for each of the 2;0, 2;6 and 4;0 years old, respectively. Additionally, a rather peculiar nontarget-like use of locative inflection (23) was found in child C's speech.

20. **Eita* (diye) mum kha(y). [2;0]

this.det (with) water drink.2

You drink water with this.

21. **Eta eta* (diye) bakfi tule. [2;6]

this.det (with) bakfi take.3

You take bakfi with this.

22. **Eita* (*diye*) *or chul achrabo*. [4;0]

this.det with.post it.gen hair comb.ten.1

I will comb its hair with this.

23. *Amar chairte bosh*. [2;6]

i.gen chair.loc sit.int

Sit on my chair.

Note. The missing parts are included within brackets. In (21), child B used the word *bakfi* to refer to “selfie”, presumably because of his habit of replacing words that are difficult for him to pronounce with similar-sounding nonsense words.

Throughout this chapter, different kinds of numbers were generated and calculated based on the variables present in the data. The ultimate goal is to trace the developmental trend of the participants and discern whether any pattern exists, or not, which is discussed in the next chapter.

Chapter 5: Discussion

Based on the results section, this chapter interprets the data to explain the observed trends and answer the research questions along with their implications. There are a total of four research questions regarding case markers and positions that focus on emergence and acquisition, developmental trend, crosslinguistic comparison and error analysis.

The chapter is divided into multiple sections. It starts with an explanation of overall language development across age groups on the basis of MLU, inflection use and utterance count. The author then moves on to discuss the research questions in light of the findings. The first question deals with emergence and acquisition of case markings and postpositions. While the emergence order is quite straightforward, sketching an acquisition order requires one to consider different factors. Acquisition of both case markers and postpositions are discussed under separate sections along with patterns that were observed (research question 2) and a crosslinguistic comparison (research question 3) with two other agglutinative languages: Turkish and Malayalam. Lastly, the error analysis section addresses the final research question by examining errors in great detail to see what type of errors are prevalent, what they reveal about language development and how they differ in comparison to Turkish and Malayalam.

5.1. General overview of language development

According to the sparse morphology hypothesis (Leonard et al., 1987; Rom & Leonard, 1990; Leonard et al., 1992), if a language is morphologically rich in salient inflection markers, children are likely to pay more attention to them and, as a result, acquire them more easily or earlier. On the contrary, in languages where inflections are not as frequent (such as English), children acquire them differently or even slowly. Since Bangla nouns and verbs frequently occur

in their inflected forms, it is possible that children tend to see the markers as an integral part of the language from an early age, hence, the emergence of inflections is observed in the 24-month-old child.

Findings show that although the utterance number varies across participants, their MLU count steadily increases by the time they are 30 months old, which is consistent with the observations noted by Gouda et al. (2020).¹⁶ A significant change in language development is observed in children as they shift from speaking in phrases to using longer sentences that carry more morphemes, which explains why, despite speaking fewer utterances compared to the 2;0 old, the 2;6 age group's MLU count is higher. The 24-month-old child in this study is quite talkative, however, he not only speaks in phrases most of the time but also repeats the same or similar utterances over and over again due to the limitations of their lexicon. On the other hand, children who reach 30 months or become older may not speak as much, however, their sentences are longer and relatively complex. The following sentences were respectively said by the 24-month-old child (24) and the 30-month-old child (25).

24. *Ei Shayla asho.* [2;0]

hey.voc Shayla come.2

Hey, Shayla, come.

25. *Eta maar kache diye dichi.* [2;6]

this.det mother.gen to.post give.pp give.asp.1

¹⁶ The study reports Bangla-speaking children's MLU from ages 3;0 to 5;0. It shows that children's MLU increases as they grow older both in morphemes and words. However, in comparison to this research, their method includes elicitation using picture cards instead, therefore, both of the MLU counts are different.

I am giving this to mother.

Although English and Bangla are typologically different, it is worth mentioning that Bangla-speaking children between the ages of 2;0 to 2;6 seem to have a higher MLU compared to English (Brown, 1973), most likely due to the language's high frequency agglutinative feature.

5.2. Production of Case Markers

Before proceeding with answering the research question about the emergence and acquisition of case markers, it is important to understand the difference between the two. Emergence refers to the time when children begin to use a grammatical structure. Acquisition, on the other hand, according to Brown's (1973) definition, means that a child can successfully use a particular structure with 90 percent accuracy in contexts where it is required. Just as emergence does not mean that a child has acquired a certain structure, acquisition order also does not mean that children will chronologically acquire one structure and then move on to the next one. There could be instances where the child may have already acquired the morpheme, however, they still use the erroneous form at times. As Peccei (2006) points out, "the acquisition of the adult rule systems for various structures is not an all-or-nothing affair" (p. 21). A straightforward linear growth is hardly ideal, considering how acquisition is a multi-step process that requires a child to understand word structure first, recognize the root words and their affixes, be able to map their meanings and lastly, use them productively (Clarke, 2017). Nevertheless, an estimated account can still provide useful information regarding how typically developing children acquire a certain structure, which in turn can become a foundation for language impairment and cross-linguistic studies.

5.2.1. Emergence and Acquisition Order

Table 11 shows the order of emergence for each case marker under each age group. All the objective markers appear fairly early (in the 2;0 old child). While all three types of locatives can be seen to emerge for the 2;6 age group, all three genitive markers do not show up until the child reaches 48 months. Overall, inflections that are commonly used across all four cases (-*r*, -*e*, -*y*, -*ke*) emerge quite early in the youngest child. Even his use of the dialectic -*y* marker is proof that the child is, at the very least, aware of the slot¹⁷ that is reserved for nominative markers in subjects, albeit they are generally null in a dominant variety. The same argument can also be made for the other cases regardless of whether or not acquisition has occurred.

In contrast, determining the acquisition order requires consideration of a few factors: (a) how much the markers are being used; (b) what the error rates are; (c) if the child can productively use them; and (d) their ability to accurately produce the morphemes with 90 percent accuracy in obligatory contexts. In terms of usage, the total number of case markers showcased a general increase across all age groups (Table 10). However, not all the cases are marked, for instance, nominatives are mostly unmarked¹⁸ and objectives include both null and overt marking (See 2.7.1.). A natural assumption may arise that perhaps cases that include null markers, especially nominatives, would be present in language samples at a much higher percentage compared to the rest (locatives and genitives). While it is true that nominatives have comparatively higher usage rates (Table 12), it is still less than 50% for the oldest child and even

¹⁷ The researcher used the term “slot” to refer to the position of a morpheme or string of morphemes in a word. For example, child A said the word *maay* which utilizes two slots: first one for the stem and the second for the inflection, *maa* and *y*.

¹⁸ Children A and D used -*y* and -*e* in a few contexts to mark nominatives which is assumed to be a result of dialectical influence present in their linguistic environment.

lower (16.59%) for the youngest one. Because Bangla focuses more on conveying meaning and establishing communication, speakers often drop the subject in a sentence or resort to using phrases in some context. Especially the 2;0-year-old child's utterances consisted mostly of phrases, explaining the really low frequency rate. Objectives have the second-highest usage rate after nominatives, partially because there is a null marker besides *-ke* and its colloquial variant *-re*. Even then, it is not so that each utterance will contain an objective case (be it null or *-ke/-re*) or any of the other three cases for that matter, meaning that no markers' (including nulls) usage rate can be 100 percent. Out of the two cases that are marked, genitive comes in third and locative sees the least amount of usage rate.

When it comes to errors, children exhibit a great deal of difficulty with objectives (Table 16). Although the 100% error noted for the 24-month-old child dramatically decreases to 3.94% for the 30-month age group, it is still persistently higher than genitives and locatives. Between genitive and locative, locative errors only appear for the 2;6 age group. Nominatives, as expected, do not present any errors.

Measuring productivity is quite tricky since there is no fixed standard to compare the study data with. Researchers have used different standards for measurement throughout the years (Stoll, 2015). Additionally, it would be difficult to ascertain whether the child is using the inflection after fully comprehending its grammatical function without extensive experimentation, such as the Wug test (Berko, 1958). Therefore, productivity remained unexplored in this research.

Lastly, according to the data in Table 15, the rates suggest that within the selected language samples, the youngest child possibly started acquiring three other cases before

objectives. The rest of the age groups show accuracy rates above 90 percent, meaning that children have acquired the morphemes.

In light of all the factors discussed above, it seems that locatives (out of the two marked cases) are, in all likelihood, to be at the top of the acquisition order list because: (a) most types (-e, -y) of locatives appear in the 2;0 old child; (b) there is only one instance of locative error found in one of the 2;6 children, meaning that (c) across four out of five age groups, the accuracy rate for locatives is 100%. Nominatives can also be argued to be acquired early, however, as mentioned earlier, it is a null marker. Next in line would be genitives since it has more accurate usage rate and smaller error rates compared to objectives. All things considered, an approximate acquisition order based on the findings then appears to be: locative/nominative > genitive > objective.

5.2.2. Cross-linguistic findings

Case markings are inflected differently based on the language typology. While Bangla has high-frequency affixation, English only marks the nominative and accusative in pronouns and the genitive (- 's) in nouns, which is why drawing a direct comparison between the two is difficult. However, if a comparison were to be made, one might point out that English possessives are acquired or at the very least, show signs of acquisition starting from 31 months (Brown, 1973), whereas, based on the data found in Bangla, genitives emerge in 24-month-old children and once children reach 30 months, they have possibly acquired the case (considering usage rate and low error rates).

On the contrary, because agglutinative languages share the same characteristic of affixation, a similar order of acquisition can likely be found in other languages. For example,

Krishnan (2019) notes that in Malayalam, similar to Bangla, children struggle mostly with accusatives. In contrast, they have an easier time with locatives (although they are used less frequently in speech) and genitives, which emerge early, meaning they are also more likely to be easily acquired. In a somewhat similar longitudinal study, Ketrez and Aksu-Koç (2009) explored the emergence of case and number of a native Turkish-speaking child for nine months (1;3 to 2;0 age). While the emergence of cases in Bangla was quite early (24 months), Turkish case markings appeared even earlier (15 months), and out of the six cases that are common in Turkish, three cases emerged first: accusative, dative and locative, with productive use starting from 1;6. Also similar to Bangla, Turkish children in their early years (1;3) produce a high percentage of errors in accusatives and datives (more than 60%), both of which, however, do lessen significantly by the time they reach 2;0. Locatives and ablatives show a relatively lower error rate. Genitives start with a high error percentage, which eventually drops to less than 10%. Instrumentals and comitatives, on the other hand, are rarely (less than 1%) found in child speech, and whenever they do make an appearance, they are used correctly. Evidently, both Bangla and Turkish children start with comparatively low errors in case marking, which gradually decrease as they grow older. It appears that a common trend of locatives emerging early and being easier to acquire exists in all three languages, which can be a pattern that is unique to their language typology.

5.3. Use of postposition

Unlike case markings, postpositions are considered a different word class in Bangla. In some context they can replace locatives, however, postpositions are used to express the relationship (such as proximity, spatial distance, time, instrumentality, to name a few) between a

noun and different parts of the sentence. Although postpositions emerge in the 24-month-old child (at less than 1% rate), it is hard to tell whether the child is aware of their grammatical functions or use. The first postposition that is observed in children is *diye*. The two instances that the youngest child (2;0) use *diye*¹⁹ were after an adult said it first. Additionally, he made an error in one instance (26).

26. **Eta* (diye) *mum* *kha*(y). [2;0]

this.det (with.post) mum.obj drink.(2)

(You) drink water with this.

Note. The missing portion is added within the bracket. The word *mum* is often used by native speakers in Bangla to refer to water.

It could be that the concept of instrumentality is cognitively less taxing in addition to being structurally simpler for a child as young as 24 months old to understand, therefore, *diye* is the first postposition to make an appearance. *Diye* is also one of the most common postpositions found in almost all age groups and interestingly enough, it is also the only postposition that was omitted in sentences where it was a contextual requirement (see 4.2.3.). Only in the case of child B can it be argued that the omission of it was perhaps a mistake rather than an error, based on the fact that he made use of the postposition in six different instances correctly. Postpositions that precede a genitive marker are also very common in children.

¹⁹ *Diye* is the equivalent of “with”, referring to the concept of instrumentality as in ‘completion of an action using/with something’.

27. *Maar kase jao.* [2;6]

mother.gen near.post go.2

Go to your mother.

Before children reach 36 months, the types of postpositions they use have to do with their immediate environment, which is consistent with the idea of “here and now” in literature.

Location-based postpositions also appear early in Turkish children (Aksu-Koç & Slobin, 1986).

Children develop the idea of the past or future relatively late compared to the present tense.

Which is probably why temporal postposition *pore* does not emerge in children before 2;11. The following sentences were used to refer to past (28) and future (29) events by the 4;0 old and the 2;11 old, respectively.

28. *Ami pore ektu thik achilam.* [4;0]

i.nom later.post little okay be.ten.1

I felt okay later.

29. *Ektu pore happy birthday hobe.* [2;11]

little later.post happy birthday be.ten.3

My birthday will be celebrated a bit later.

Research findings reveal that types and tokens potentially increase due to advanced cognitive competence and exposure to postpositions with varied grammatical functions as the child grows

older. However, further research is needed to make conclusive remarks about emergence and acquisition.

5.4. Error Type

A closer look at errors in the data can help explain the underlying mechanisms as to why children are prone to a specific type of errors than others. For example, there are only two occurrences of commission errors found under the objective case for child B, where he adds inflection *-ke* to an inanimate object (30) and a subject (31):

30. **Ballke oke o thik kortesi.*

ball.obj he.obj he fix do.asp.1

*I am fixing the ball.

31. **Dari dari wolfke niye gese.*

beard.null wolf.obj take.pp go.asp.3

*Wolf took the beard away.

In the (30) example, the child added an objective case marker to an inanimate object, which resulted in an ungrammatical sentence, aside from his using a person pronoun to refer to a ball. Objective marking is dropped in Bangla for inanimate objects that function as a direct object in sentences. However, often for clarification purposes, the marker can be added, followed by a classifier, as in *ball.ta.ke* or *balltake*. In his speech samples, child A sporadically uses the classifier *-ta* in different instances. This phenomenon of referring to an object with *o*, which is a

personal pronoun used to refer to 3rd person, happens twice throughout the transcript, once with the word *ball* as mentioned above and another time with the word *plane* (in the sentence *o betha paise paae*). It is possible that, since child B can use the objective marker in most other contexts appropriately, the issue here might not be the use of the marker (with an animate object) itself, but rather the fact that he uses personal pronouns instead of inanimate ones to refer to objects (*o* instead of *eta/ota*). Then, it makes sense to add *-ke* with personal pronouns since humans are always marked (both direct and indirect objects) in sentences. As for the (31) example, although the subject is supposed to be *wolf* as in “the wolf took the beard away”, it is possible that the reversed positioning of the object (*dari*) followed by the subject (*wolf*) led to the child making an error, since Bangla predominantly follows SOV sentence order. Which explains why the marker was attached to *wolf* (marking an animal that functions as a direct object in a sentence is optional). These two errors give an insight into child B’s grammatical knowledge, suggesting that he is still understanding the parameters of pronouns and sentence structure.

Omissions were more common than commissions in the language samples, which circles back to the notion discussed in 5.2.1., that children are perhaps aware of the slots that carry inflection or inflections in a word (judging by their appropriate use in obligatory contexts), but dropping them because they have not yet fully learned the scope of its/their use. It could be a syntax or morphosyntax issue. For example, child A most likely struggles with negations when they are preceded by a genitive marker, based on the fact that he can use the word *nai*²⁰ by itself in proper contexts and he also uses genitives quite frequently to point to different objects (*amar juta* “my shoe”, *amar genji* “my T-shirt”). However, when they are used together, the genitive remains missing (32).

²⁰ The word translates to “nonexistent” or “not here” depending on the context.

32. **Am(ar) nai.*

i.(gen) not

*I do not have it.

Note. The missing portion is added within the bracket.

Mistaking the object in a sentence as the subject and omitting the case marker can also be observed in the 2;11 old child (33). The subject was dropped, but it can be inferred based on the verb's person inflection, suggesting that perhaps the child is yet to fully master how sentences with null subject work.

33. **Ami pore injection dise.* [4;0]

me.(obj) later.post injection give.ten.3

*(Someone) gave me an injection afterwards.

Note. The missing portion is added within the bracket.

An anomalous use of locative case marking was observed in child C (34), where she was successful in using the inflection in the right context, but she used an inflection but it is not conventionally used. Generally speaking, locative inflections tend to attach to noun stems based on the ending sound (vowel or consonant). Exceptions do exist in adult speech as a result of

dialectical variation, hence the use of “anomalous” instead of “erroneous”. This is likely an indication of the child still learning about how attachments work with different stems.

34. *Amar chairte bosh.* [2;6]

i.gen chair.loc sit.int

Sit on my chair.

According to Ketrez and Aksu-Koç (2009), Turkish-speaking children also make more omission errors. Omissions in accusatives are also permissible in some contexts (based on adult speech), however, omission of dative markers results in errors. Errors of commission are less frequent, but they do occur at least once or twice across all cases where one case is substituted with another, although children do not substitute locatives and comitatives. Another type of error found in Turkish is overgeneralization (Aksu-Koç & Slobin, 1986). Overall, Turkish and Bangla share similar patterns in terms of not just errors but also emergence when it comes to case markings. This similarity has been linked to “language-specific properties such as regularity and transparency of paradigms and saliency of individual morphemes” (Ketrez & Aksu-Koç, 2009, p. 42). When Turkish or Bangla is compared to English, their typological diversity become the key determinant for differences in emergence, acquisition and even errors in case marking. English relies on word order more than on inflections, even then, subject and object pronouns are quite similar phonologically. Not to mention, morphemes are not as salient in the language and often carry multiple feature values (case, gender, person, number). Additionally, English has only nominative, genitive, accusative and dative cases, where the last two have no differences when they function as direct and indirect objects in sentences. (Fitzgerald et al., 2017). Accusative

errors in Malayalam consist of omissions and commissions. There is also a tendency for children to make only omission errors while using genitive and locative markings (Krishnan et al., 2022).

5.5. Implication for CLA research

The narrative in existing literature on CLA states that typology impacts a child's acquisition of inflectional morphology, which is consistent with the results found in this study on Bangla nominal case. Result shows that there is a positive progression of both emergence and possible acquisition as children grow older, which brings the question: after acquisition is done, does the usage percentage keep growing with age? It seems that with age, children start using more complex sentences rich in morphemes, however, that does not necessarily mean that every sentence will have a case marker. Case serves a specific grammatical function and if said function is not required in utterances, children simply will not use it. Ultimately, context demand will dictate whether case or postpositions are required in a sentence or not.

In this study, the emergence of inflections paints a clearer picture in contrast to the acquisition order. The acquisition order is a rough estimation based on results found from the data, which comes with a few limitations of its own. Firstly, no standard criteria were created to test children's productivity in the use of the markers. Secondly, the language sample consists of spontaneous speech, which has its own drawbacks, namely: no controlled environment, context-dependent utterances that may or may not include what the researcher is looking for in language use and individual variations in participants. Lastly, Brown's standard for checking acquisition by measuring 90% accurate morpheme use in correct contexts was developed for examining English data. Throughout the paper, it has already been established that there is a considerable difference between English and Bangla due to their typology. Is the same category that was

developed specifically for English appropriate to measure acquisition in Bangla? Or should a new category be developed specifically to deal with agglutinative language? Further research needs to be done to answer and overcome the aforementioned limitations.

Despite the limitations listed above, this research is also the first study in Bangla CLA that focuses on nominal morphology. Research on quite a few theoretical aspects in Bangla (such as definiteness of determiners, head-movement in noun phrases and word formation) has already been explored in the literature, however, there is a scarcity of studies centered around the applied linguistics domain. So, first and foremost, this study is an addition to the literature of Bangla CLA and since it is the first of its kind, this can lay out the foundation for future studies in crosslinguistic and the language impairment domain. If there is a standard for how typically developing children's acquisition of the case system looks, then it will help identify children with language impairment with more precision. Last but not least, the researcher created a guideline that is tailored specifically for Bangla data transcription and morphological breakdown in CLAN.

Chapter 6: Conclusion

Spontaneous speech of six Bangla-speaking children between the ages of 2;0 and 4;0 was observed in an effort to create a sketch emergence and acquisition order list for case markings. This cross-sectional study employed purposive sampling, which was divided into five different age groups (with six months difference in between) to discern the developmental trajectory of typically developing children. For each child, 30 minutes of data was taken from hour-long recordings for analysis.

6.1. Summary of the Findings

Based on low error rates and frequency of use, locatives and nominatives are more likely to be acquired early, followed by genitives and objectives. This finding is congruent with other agglutinative languages, such as Turkish and Malayalam, as a result of their salient use of inflectional morphemes. Both languages see relatively low error rates in children. For postpositions, it is assumed that concepts (e.g., instrumentality, location) that are structurally easier and less demanding on the cognitive abilities emerge early in children. They often include information regarding locations, proximity, instrumentality or spatial positions (related to “here and now”). More types and tokens are observed in older children, however, further research is needed to comment on their acquisition order conclusively.

Findings on error types suggest that omission of case marking was more common than commission in Bangla, Turkish and Malayalam. While Turkish commission errors include replacing one case with another (except locatives and comitatives), Bangla and Malayalam-speaking children are more likely to add the objective marker with subjects. Error types in

Bangla suggest that some children have not yet fully grasped the boundaries of certain grammatical properties, but they are at least aware of the attachment slots available in nominals.

6.2. Practical Implication

In addition to enriching the growing CLA research in Bangla, this study can also be used as a guideline for further research that requires morphological breakdown in Bangla using CLAN. Aside from painting a clearer picture of how a language property (case marking) is learned by its native speakers, this study can also be utilized to detect possible language impairment.

6.3. Recommendation

Future research on Bangla case marking can consider:

- How classifiers alongside case develop in pre-school children.
- Case marking in atypically developing children or children with language impairment.
- Comparative study between case markings and other nominal inflections.
- Exploration of case marking in Bangla using different theoretical frameworks.

6.4. Further Studies

Further studies can include broadening the scale of the research and a longitudinal design to draw a more precise acquisition order list. Postpositions can be observed more closely and compared with other languages in a cross-linguistics study. Comparison between nominal and verbal morphology can be observed to see which one is easier for children to acquire.

6.5. Conclusion

The main objective of making a sketch of the emergence and acquisition order list for cases in Bangla was achieved to some extent. Children show a positive progression in their use of case marking as they grow older. They also make fewer errors. Only two types of errors were found in the use of Bangla case marking: commission and omission. Omissions seemed to be more prevalent than commission errors. Postposition use was comparatively low in number, which is why it was difficult to paint an accurate picture. However, postpositions that refer to different aspects of position, location, proximity, instrument in the immediate environment and are cognitively easier are most common across children. Current understanding of cases and postpositions in terms of CLA research in Bangla is far from adequate and requires further research.

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Appendix A

Adaptation of CHAT Manual for Bangla Data

As part of the CHILDES (Child Language Data Exchange System) project, Brian MacWhinney developed CHAT (Codes for the Human Analysis of Transcripts), a transcript format for child language documentation and analysis. CHAT allows its users to transcribe and annotate data, which can then be used by analysis programs like CLAN (Computerized Language Analysis), also developed by Brian MacWhinney in 1984. The CHAT manual²¹ provides a detailed guideline on how to use CHAT for transcribing data, which has been adapted for a study on Bangla case markers and postpositions. While transcribing, some additional considerations were taken into account, which are compiled below.

1. Utterances consist of incomplete sentence and phrases as long as they are meaningful within the context. They are transcribed with the Roman alphabet.

```
*SP01: amar gorom lagtese. •
%mor: |ami case|+gen case|+nom |lag |tes |e
*SP01: jama khule feli. •
%mor: case|+acc |khul |e |fel |i
*SP01: baba gorom lagche. •
%mor: |baba case|+nom |lag |ch |e
```

2. Due to the study's focus, coding is limited to the morphological level.
3. Bangla shows a high frequency of agglutinative features, where the stem nouns and verbs take multiple attachments. Nouns take classifiers and case markers, whereas verbs take aspect, tense and person markers. Both noun and verb stems are transcribed along with

²¹ The CHAT manual can be found via this link: <https://talkbank.org/>

their markers. The morphological breakdown consists of separating the stem and the markers with a pipeline (|) in the %mor tier, according to the CHAT manual.

```
*SP02: pore jaba. •
%mor: |por |e |ja |b |a
*SP01: sizer kache porbo. •
%mor: |sir case|+gen prep|kache |por |b |o
```

4. Code switch, pause, filler sound and overlap are not coded due to a lack of relevance for the research. However, if fillers are used as a response, then it is marked as a morpheme and added to the code.

```
*SP01: kathal. •
%mor: |kathal
*SP04: hmm. •
%mor: |hmm
%cds: acknowledgement
```

5. Allomorphic variations are transcribed, however, for coding, the same stem is kept for each word, while other markers may show minor adjustments.

```
1333 *SP01: dao. •
1334 %mor: |de |o
1335 *SP04: ditesi. •
1336 %mor: |de |tes |i
-----
```

```
381 *SP03: ami fele dichchi. •
382 %mor: case|+nom |fela |e |de |chch |i
```

6. Mispronunciations are not transcribed, rather, they are marked with a comment, in a different tier (%com).

```

239 *SP02:  baro. •
240 %mor:    |baro
241 %com:    mispronunciation
242 *SP01:  baro? •
243 %mor:    |baro
244 %com:    mispronunciation
245 %cds:    clarification_ask

```

7. All kinds of errors are coded in a separate tier (%err).

```

24 *SP01:  eta eta <bakfi tule> [?]. •
25 %mor:    |eta case|+nom |tul |e
26 %err:    prep

```

8. Incomplete sentences are transcribed but not coded.
9. English sentences are transcribed. The coding does not include morphological separation, rather, each word is considered a single morpheme.

```

1136 *SP01:  aw where is the xxx. •
1137 %mor:    |aw |where |is |the
1138 *SP02:  ki? •
1139 %mor:    |ki
1140 *SP01:  where is the xxx? •
1141 %mor:    |where |is |the

```

10. Recitation of poems or songs and object counting are considered as memorized chunks, therefore, are not transcribed.
11. Reduplicated words (*Dvirukto Shobdo*) are transcribed, however, for coding, only one word is tagged.

49 *SP01: ami nije nije haat dhubo. •
 50 %mor: case|+nom |nije case|+acc |dho |b |o

12. Nominative case markers in Bangla are usually null, however, sometimes there are certain markers present due to dialectical variation, which are transcribed and coded along with the null markers. Similarly, null inanimate object markers are also coded.

438 *SP01: Cocomelone koi niye jachche? •
 439 %mor: |Cocomelon case|+nom |koi |ni |e |ja |chch |e

127 *SP01: ei bagta poray dao ar gorom lagbena. •
 128 %mor: |ei case|+acc |ta |por |a |y |de |o |ar case|+nom |laga |b |e |na

13. Interjections, emphasisers, particles, echo words and onomatopoeia are considered one morpheme.

246 *SP04: fupire dekhay daoto rannabana. •
 247 %mor: |fupi case|+acc |dekh |a |y |de |o |to |rannabanna
 248 %cds: imperative_requests

334 *SP03: oh etato kola. •
 335 %mor: |oh case|+nom |to case|+acc
 336 *SP03: oh babare ekta kola abar silseo. •
 337 %mor: |oh |baba |re |ek |ta case|+nom |abar |sil |s |e |o

107 *SP04: egulāo shorāy rakho? •
 108 %mor: |e |gula |o |shor |a |y |rakh |o
 109 %cds: imperative_requests

```

323 *SP02: bim bim biketa noshto hoye gese. •
324 %mor: |bim case|+nom |ta |noshto |ho |e |ge |s |e

```

14. Formulaic chunks such as happy birthday, thank you, tata, *eije* (here/here you go), *oije* (there/ there you go), *eta* (this/this one), *ota* (that/that one), *ekhane* (here/over here), *okhane* (there/over there), *ektu* (a little bit), *ebhabe* (like this/this way/ this is how) are considered one unit.

```

223 *SP02: tumi ki korba happy birthdaye? •
224 %mor: case|+nom |ki |kor |b |a |happybirthday case|+loc

```

15. If there are multiple instances of the same word in the same utterance, only one word is coded.

```

230 *SP01: amake komola cake kine diba na komola cake? •
231 %mor: |ami case|+acc |komola case|+acc |kin |e |de |b |a |na

```

16. Utterances that have intimate pronouns are transcribed and coded with an additional comment tier (%com) under the “intimate” category. Similarly, if inflection markers are dropped in an utterance, it is also marked in the comment tier. While dropping case markers can make an utterance wrong, in some specific contexts inflection markers (mostly locatives) are dropped and it is not considered erroneous in Bangla.

```

726 *SP03: tumi ghora chorbe? •
727 %mor: case|+nom |ghora |chor |b |e
728 %cde: yes_no_question
729 %com: loc drop

```

```
164 *SP03:  betha pabi. •
165 %mor:    |betha |pa |b |i
166 %cds:    repetition imperative_commands
167 %com:    intimate
-----
```

Appendix B

Sample Transcription

Clan - [CHILD-1]

File Edit View Tiers Mode Window Help

1 @Begin
 2 @Languages: ban
 3 @Participants: SP07 Mother, SP06 Father, SP05 Grandfather, SP04
 4 Grandmother, SP03 Relative, SP02 Relative, SP01 Target_Child
 5 @Options: CA
 6 @ID: ban|change_corpus_later|SP07||female||Asian|Mother|||
 7 @ID: ban|change_corpus_later|SP06||male||Asian|Father|||
 8 @ID: ban|change_corpus_later|SP05||male||Asian|Grandfather|||
 9 @ID: ban|change_corpus_later|SP04||female||Asian|Grandmother|||
 10 @ID: ban|change_corpus_later|SP03||female||Asian|Relative|||
 11 @ID: ban|change_corpus_later|SP02|24;05.|female||Asian|Relative|||
 12 @ID: ban|change_corpus_later|SP01|2;00.|male||Asian|Target_Child|||
 13 @Media: CHILD-1, video
 14 *SP02: bujhi na. •
 15 %mor: |bujh |i |na
 16 *SP01: ball koi? •
 17 %mor: case|+nom |koi
 18 *SP02: boi koi? •
 19 %mor: case|+nom |koi
 20 %cds: clarification_ask
 21 *SP01: ball koi ball? •
 22 %mor: case|+nom |koi
 23 *SP03: ball ball? •
 24 %cds: topicalization
 25 %mor: |ball
 26 *SP02: ball? •
 27 %cds: acknowledgement
 28 %mor: |ball
 29 *SP02: eije ball. •
 30 %mor: |eije case|+nom
 31 *SP01: eije ball. •
 32 %mor: |eije case|+nom
 33 *SP03: eije arekta ball. •
 34 %mor: |eije |arek |ta case|+nom
 35 *SP01: eije ball paisi. •
 36 %mor: |eije case|+acc |pa |is |i
 37 *SP01: arekta ball. •
 38 %mor: |arek |ta |ball
 39 *SP01: chora [?]. •
 40 %mor: |chor |a
 41 *SP01: arekta. •
 42 %mor: |arek |ta

Appendix C

Parental Consent Form

Study Title: Acquisition of Case Marking and Postpositions in Bangla-Speaking Children

Researcher(s): Dr. Asifa Sultana, Shakika Rubaiat, Tahsina Quamarun, Muntakimul Haq

Affiliation: BRAC University

Contact Email: tahsina.quamarun@g.bracu.ac.bd

Purpose of the Study

This study aims to investigate how Bangla-speaking children between the ages of 2–4 years acquire case markers in their speech. The findings will contribute to a better understanding of Bangla language development in early childhood.

What Participation Involves

- Your child will be video-recorded during natural, spontaneous conversation with you or another familiar caregiver.
- Each recording session will last approximately 60 minutes.
- Recordings will be transcribed for linguistic analysis.
- All personal information will be kept confidential, and your child's name or any identifying details will not appear in any publications or reports.

Confidentiality and Anonymity

- Your child will be assigned a pseudonym or participant code in the research data.
- The video recordings will be stored securely in password-protected, encrypted storage accessible only to the researcher and authorised supervisors.
- The transcriptions will remove or replace any identifying information.

Voluntary Participation and Right to Withdraw

- Participation is entirely voluntary.
- You may withdraw your child from the study at any time without giving a reason.
- You may request withdrawal of your child's data up to August 30, 2025, after which the anonymised data may already be integrated into the research analysis.

Potential Risks and Benefits

- Risks: There are no anticipated risks beyond everyday conversation.
- Benefits: While there is no direct personal benefit, the study will contribute to scientific

knowledge about child language development, which may help parents, educators, and researchers.

Consent Statement

I have read and understood the information above. I have had the opportunity to ask questions and have received satisfactory answers. I understand that my child's participation is voluntary and that I may withdraw my child at any time up to August 30, 2025. I consent for my child to take part in this study.

Child's Name: _____

Parent/Guardian Name: _____

Signature of Parent/Guardian: _____

Date: _____