THE EMERGENCE OF INTRANSITIVE VERB INFLECTION IN NORTHERN EAST CREE: A CASE STUDY

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The Emergence of Intransitive Verb Inflection in Northern East Cree: A Case Study

by

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Abstract

In this thesis, I offer a preliminary investigation into the emergence of intransitive verb inflectional morphology in Northern East (NE) Cree. This investigation is based on a longitudinal case study of one child learning NE Cree, from the age of 2;01.12 to 3;08.24. I also offer preliminary observations on NE Cree caretaker speech. The NE Cree caretaker uses a high proportion of questions and commands/requests, engages the child as a conversational partner, practices several language socialization routines and uses a special child form vocabulary. This case study reveals that the child most frequently attempts intransitive verbs, as opposed to transitive verbs. With regard to intransitive verbs, animate intranstive verbs are more frequently attempted than inanimate intransitive verbs. By order of frequency, the child attempts animate intransitive in the independent indicative neutral, imperative (neutral) and conjunct indicative neutral paradigms. Inanimate intransitive verbs are attempted in the independent indicative neutral and conjunct indicative neutral. Two developmental stages are identified in the child's productions. Initially, the child produces verbs without performing any word-internal morphological analysis. The storage and production of these amalgams is guided by perceptual salience and production constraints. The phonological template of the child's amalgams at a given age determines what morphological markers are produced (i.e. prefixes vs. suffixes). The child then proceeds to a stage where there is evidence of preliminary morphological analysis, where affixes are segmented from verb stems. This stage is characterized by the addition of inflection to previously uninflected (child vocabulary) forms and the expansion of the child's phonological abilities to a point where person prefixes are more regularly produced. These observations carry an important theoretical implication, as they suggest that children perform abstract analyses on linguistic representations rather than relying solely on more concrete analyses driven by considerations of frequency or salience.

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Chapter 1 - Introduction

1. Objectives

One of the major aims of researchers in the field of linguistics is to account for the ability of every normally developing child to acquire any language. Partially due to the relative infancy of the field, much of the research in child language acquisition has focused on studies of major Indo-European languages (particularly English). This is indubitably due to the relative facility with which researchers, the majority of whom are based in Europe and North America, are able to access the relevant data (i.e. child speech in languages spoken near centres of research).

Given the diversity of linguistic structures found in the languages of the world (of which only a subset is represented in Indo-European languages), it is important to study developmental data from as wide a range of languages as possible in order to add to our knowledge of child language acquisition. A number of recent studies have examined the development of verbal inflection in languages that display more complex systems of inflection than those which are typically found in Indo-European languages. Among these are Aboriginal languages spoken in the Western Hemisphere, such as Mohawk and Inuktitut. In order to make a contribution to this growing body of literature, this thesis follows the longitudinal development of intransitive verb inflection in the speech of one child in a relatively under-documented dialect of the Cree-Montagnais-Naskapi (CMN) dialect continuum (Algonquian). This dialect, Northern East (NE) Cree, is spoken in the community of Chisasibi, Quebec. This thesis constitutes the first focused description and analysis of the acquisition of intransitive verb inflectional morphology in any Algonquian language.

2. Inflection and the Acquisition of Inflection

Inflection is traditionally defined as a morphological means of expressing a word's relationship to other words in the sentence through a change in the form of the word.

Inflection is sometimes expressed through the addition of affixes to a root or stem.[1] For example, in English verbs, suffixes are typically added to the root/stem (e.g. infinitival 'like') in order to indicate that the subject of the verb is 3rd Person Singular Present (e.g. 's/he likes'), that the event took place in the past (e.g. 'I liked) or that the event has progressive aspect (e.g. 'You are/were liking). However, inflection plays a relatively small role in English. The inflectional paradigm in English verbs consists of only five inflectional forms (infinitival base, third person singular non-past, past, past participle and gerund (present participle), and some of these forms are often identical (syncretic) in the paradigm of a given verb (e.g. 'You liked (past) me' and 'You have liked (past participle) me').

Other languages employ the morphological process of inflection much more robustly. The extreme cases of such morphologically-complex systems are known as polysynthetic languages. Inflection in polysynthetic languages provides information that is often expressed by other means in languages with simpler morphological systems (e.g. word order/additional lexemes in English). One word in a polysynthetic language, consequently, often corresponds to an entire sentence in English. NE Cree exhibits such a complex system of inflection and is, therefore, considered polysynthetic. The degree of inflectional morphology found in the NE Cree verb below is by no means extraordinary for the language.

[1] For the purposes of this thesis, a (verbal) root is defined as the component which carries the principal meaning for the word (the "initial" of Algonquian linguistic terminology), consisting of only one morpheme. A stem, the base for inflection, is necessarily multimorphemic, comprising the root plus other (derivational or inflectional) morphemes. There is general agreement that the Algonquian verb is minimally bimorphemic, consisting of an initial (root) and a final (derivation). At the very least, then, a verbal stem is of the form root+derivation.

(1) Inflection in an NE Cree verb[2]

chiwâpimitinâwâu[3]

chi-	wâpim	-iti	-n	-âwâu
2-	seeTA).final	-inv	-1/2	-pl

'I see you (all).'

Developmental theories and models that aim to reveal the mechanisms through which children acquire systems of inflection abound.[4] These proposals have often relied on data from languages which, like English, display relatively simple inflectional morphology.

Much can be learned, however, about the acquisition of inflection through the study of developmental data from languages which display complex inflectional morphology. Many researchers, recognizing the potential value of these data, have undertaken studies of children acquiring polysynthetic languages.[5] This thesis adds to this growing body of research through the examination of the emergence of intransitive verb inflection in a case study of an NE Cree-speaking child.

The case study presented in this thesis suggests that the child passes through two general stages. In the first stage, the child produces forms for which there is no evidence

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[2] The abbreviations used throughout the thesis are:

AI	Animate Intransitive	anim	Animate
II	Inanimate Intransitive	inan	Inanimate
TA	Transitive Animate	s	Singular
TI	Transitive Inanimate	pl	Plural
1	First Person	poss	Possessive
2	Second Person	obv	Obviative
3	Third Person	infl	Inflection
3'	Obviative Third Person	IIN	Independent Indicative Neutral
S	Subject	CIN	Conjunct Indicative Neutral
O	Object	DirTh	Direct Theme sign
IC	Initial Change	loc	Local
pfx	Prefix	nonloc	Non-local
sfx	Suffix	p	Particle
DIM	Diminutive	wh	*wh*- word

[3] Cree roman orthography is used throughout the thesis.

[4] See survey of these proposals in chapter 2.

[5] This body of work is surveyed in chapter 2.

of morphological analysis. Such forms are commonly referred to as (partially) unanalyzed amalgams. The phonological shape of these forms is determined by perceptual salience in the input and prosodic constraints on the child's productions. In the second stage, there is evidence that the child performs morphological analysis; affixes begin to be segmented from the verb stem.

3. Thesis Organization

This thesis is organized in the following manner. In chapter 2, I survey the relevant theoretical literature on the emergence and acquisition of inflectional systems. I also review the findings available on the development of inflection in several languages displaying complex verbal inflection. I situate NE Cree linguistically, demographically and geographically and introduce its grammatical system, with a focus on intransitive verb inflection in chapter 3. I detail the methodology used in the present case study in chapter 4. In chapter 5, I make several observations about NE Cree caretaker speech and compare its characteristics to caretaker speech in several other languages. I present the findings of the case study of the NE Cree child's speech in chapter 6. In chapter 7, I discuss these results in light of research questions stemming from the theoretical frameworks considered. Finally, in chapter 8, I summarize my observations, outline their implications and make suggestions for future research.

Chapter 2 - Literature Survey

1. Introduction

In this chapter, I survey literature relevant to this thesis. In section 2, I outline a number of proposals that aim at accounting for the acquisition of inflectional morphology. I discuss research questions stemming from this literature survey in section 3.

2. Proposals on the Acquisition of Inflection

In this section, I outline several proposals pertinent to the acquisition of inflectional morphology: proposals on the role of perceptual salience (e.g. Peters 1983, 1985; Slobin 1985), the Hypothesis Testing model (Pinker 1984) , the dual mechanism approach (e.g. Pinker and Prince 1988, 1994; Pinker 1999), the pre- and protomorphology approach (e.g. Dressler and Karpf 1995; Dressler 1997; Bittner et al. 2003) and single mechanism approaches (e.g. Bybee 1985, 1995; Rumelhart and McClelland 1986; Tomasello 2000, 2003).

2.1. The Role of Perceptual Salience

Most researchers recognize that, in order to begin acquiring a lexicon and, subsequently, a system of inflection, children must begin by identifying words and other linguistically relevant units in the ambient speech stream. This poses a substantial challenge for the child. The identification of word boundaries is not easily made through perceptual cues alone. Pauses between words, demarcating word boundaries, are frequently missing from normal speech. Furthermore, children are not aided by any set of universal acoustic cues indicating the placement of word boundaries (Cole and Jakamik 1980). How then are children able to initiate word learning?

One possibility is that the child's attention is drawn to certain parts of the input speech, limiting the scope of the initial task. Peters (1983, 1985) claims that perceptual salience plays an important role in the initial extraction of units from the speech stream.[6]

[6] See also Gleitman and Wanner (1982), Slobin (1985), Gleitman et al. (1992), Echols and Newport (1992). A survey of these proposals can be found in Echols and Marti (2004).

Peters claims that, initially, children consider every utterance a potential lexical entry and store it in its entirety (Peters 1983: 16).

According to Peters (1985), the child's attention is drawn to units which are perceptually salient. Peters claims that perceptually salient speech includes: (a) speech bounded by silence, (b) an intonationally delimited stretch of speech, (c) a speech tune or melody, and/or (d) a rhythmic pattern of speech. To these phonological factors, Peters adds a semantic factor; children will also be aided in the extraction process if the utterance has an easily identifiable meaning (semantic salience).

Peters (1983, 1985) claims that once the child has extracted a morphologically complex utterance from the ambient speech stream and stored it in the lexicon as one unit, he or she must continue the analysis in order to break it down into its meaningful parts. For example, if a NE Cree child has stored a phonological template of *ni-shiihkichi-n* 'I am cold' as one unit, he or she eventually needs to break the utterance down into its smaller, meaningful parts (morphemes) according to this view. How does a child segment stored utterances?

Peters (1983) claims that the child assumes that the utterances he or she has stored as amalgams (chunks which do not necessarily correspond to linguistic units in the adult language) can be segmented further into linguistic sub-units. The child most easily isolates sub-units which are perceptually salient. Peters claims that children initially segment larger units into syllables rather than individual phonemes, given that syllables are more perceptually salient. Perceptually salient syllables include those which appear at the beginnings and ends of words and those which carry stress (Peters 1983, 1985 and Slobin 1985). Peters (1983, 1985) also adds that syllables at intonationally or rhythmically salient places and syllables which are repeated within the same stored utterance are good candidates for segmentation. In sum, any feature that makes a particular unit stand out to the child perceptually and draws his or her attention to that unit renders it a good candidate for segmentation.

There is evidence that children are sensitive to the perceptual cues mentioned above, often at very early ages. Newborn babies have the ability to distinguish, likely on the basis of stress and duration cues, speech which contains a word boundary from that

which does not (Christophe et al. 1994). As early as the age of one month, children discriminate pitch contours (Kuhl and Miller 1982). Demany et al. (1977) demonstrate that infants have rudimentary sensitivity to rhythmic patterns by the age of two to three months. Children between the age of one and four months can discriminate changes in stress (Jusczyck and Thompson 1978). Saffran et al. (1996) show that children are also able to identify syllables which tend to co-occur in speech at eight months of age.

There is particularly strong evidence that stress and position within the word are especially helpful in the child's initial segmentation task (Echols and Marti 2004). Young children tend to preserve stressed and final syllables in their productions while unstressed, non-final syllables are often dropped (Ingram 1978, Klein 1981, Pye 1983, Echols and Newport 1992, Echols 1993). Using experimental methods, Childers and Echols (2002) found that stressed and final syllables are particularly salient to infants, in comparison to unstressed, non-final syllables. Additionally, children produce stressed and final syllables more accurately than their unstressed, non-final counterparts. Although most of these studies have focused on children learning English, results suggesting the prominence of word position and stress in the child's analysis have been found in languages from distinct families, such as Quiché Mayan (Pye 1983) and Mohawk (Mithun 1989).

Several other cues which may aid the child in the segmentation of words are language specific. For example, particular allophonic properties of a language may prove useful. Compare, for example, the allophonic distinction in English 'ni**t**rate' [nʌɪtɹ̥eɪtʰ] vs. 'nigh**t** **r**ight' [nʌɪtˀ ɹeɪtʰ, nʌɪtʰ ɹeɪtʰ]. Children have been found to attend to such language specific allophonic cues at a very young age (Hohne and Jusczyk 1994). However, in order to discover what cues are particularly useful to them in the process of segmentation, children need significant exposure to the target language (Echols and Marti 2004). Accordingly, language specific cues will become increasingly important as the child discovers more and more about the properties of the particular language to which he or she is exposed.

2.1.1. The Acquisition of Polysynthetic Inflection and the Role of Perceptual Salience

A number of researchers have found that children acquiring languages with complex systems of inflection pay special attention to units which are perceptually salient. On the other hand, researchers studying other languages, displaying relatively similar levels of inflectional complexity, suggest that semantic salience plays a more crucial role than perceptual salience during acquisition. In this section, I survey the findings and arguments supporting the claims that semantic and perceptual salience play important roles in the acquisition of morphology. I then suggest some ways in which we can account for the distinction between languages in which children tend to begin acquiring morphology using perceptual cues versus those in which semantic cues seem to play a more crucial role.

2.1.1.1. Research Suggesting the Primacy of Perceptual Salience in the Early Acquisition of Morphology in Polysynthetic Languages

Pye (1980, 1983) examined the acquisition of verbal inflection in the speech of four Quiché Mayan children (age 2;0 to 3;0, over a span of nine months).[7] Quiché Mayan, spoken in the highlands of Guatemala, is a member of the Mayan language family. Quiché Mayan displays a complex system of verbal inflection. In the active voice, prefixes to the verb root/stem mark five categories of tense-mood-aspect (TMA) and subject/object person/number agreement.[8] If a verb is derived from a noun or adjective, a transitivizing or intransitivizing suffix is affixed to the root to form the verb stem. Suffixed to the root/stem are a set of 'terminations' (Pye 1983).[9] The shape of the termination is governed by the TMA/movement category, transitivity, position in the clause, and derivational properties of the root/stem.

Pye (1983) found that, in the initial stage, the Quiché Mayan children's productions are constrained to one syllable per word even when the target word is

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[7] The age format used here is Year;Month.
[8] Quiché Mayan is an ergative/absolutive language (Pye 1980, 1983).
[9] Transitivizing suffixes and terminations do not co-occur (Pye 1983).

multisyllabic. Although verbs often undergo resyllabification in Quiché Mayan, resulting in a mismatch between morpheme and syllable boundaries, Pye claims that the children are always faithful to the syllable divisions, rather than the boundaries between morphemes, as in (2).

(2) Typical initial Quiché Mayan child's utterance (age 2;2) (Pye 1983: 587)[10]

Adult:	*la: utz kawiloh*	'Is it good to see? (Do you like it?)'
	k-Ø-aw-il-oh	
	ASP-3-2-like-TERM	
Child:	*jah, loh*	
(Adult Target)	*jah, kinwiloh*	'Ya, I like it.'
	k- Ø-inw-il-oh	
	ASP-3-1-like-TERM	

According to Pye (1980), the one syllable per word constraint on production forces the Quiché Mayan child to 'choose' either the most semantically or the most perceptually salient syllable of the complex verb. Given the nature of the language's verbal complex, therefore, the child might produce one of two possibilities: the semantically salient yet perceptually weak verb root (*-il* in (2)) or the perceptually salient yet semantically weak stressed syllable *(-loh* in (2)). The verb root is considered semantically salient because it is "unconditioned by the linguistic context and expresses a basic semantic role" (Pye 1980). It is perceptually weak because it generally appears word-medially and is unstressed. Given that stress generally falls on the final syllable of the word, the stressed syllable often consists of the transitivizing suffix or the termination. These suffixes are perceptually salient due to their phonological prominence and word

[10] The abbreviations in the Quiché Mayan examples are: ASP- aspect, TERM- termination, 2- second person, 3- third person.

final position. However, they are semantically weak because they are "conditioned by linguistic context" and only modulate the meaning of the verb.

Pye found that the children consistently produced the more perceptually salient syllable rather than the more semantically salient root. For example, in (2), if the child were to produce the most semantically salient portion of the verb *kinwiloh* 'I like it', we would expect the child to produce the root (*-il*). However, the child instead produces the syllable (*-loh*) which consists of a portion of the root and the termination suffix. Children acquiring Quiché Mayan, therefore, appear to be guided more by perceptual salience, rather than semantic salience, in the initial lexicon building process.

Children acquiring Mohawk also begin to segment their words along phonological, rather than morphological lines, revealing a preference for perceptual over semantic salience (Mithun 1989). Mohawk is an Iroquoian language spoken in the Canadian provinces of Quebec and Ontario, as well as in northern New York State (U.S.A.). Verbs in Mohawk are highly polysynthetic, often undergoing extensive prefixation and suffixation as well as noun incorporation. Verb roots never appear without affixes. Verbs minimally consist of a pronominal prefix, a root and an aspect suffix.[11] Roots may also carry a number of other inflectional affixes and often undergo several derivational processes, resulting in a morphologically complex stem. There is no canonical phonological shape for either roots or affixes and fusion regularly occurs (Mithun 1989).

Mithun (1989) carried out a cross-sectional study of five children (ages 1;9 to 4;9) in order to investigate the acquisition of the complex morphological system attested in Mohawk. Her findings indicate that the Mohawk children, much like Quiché Mayan children, begin the analysis of their language mainly through attention to perceptual salience. Subsequently, semantic salience begins to play a more primary role.

The first meaningful utterances of Mithun's (1989: 290) Mohawk Child I (age 1;9) consist of only one syllable.

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[11] Imperatives are the exception to this generalization as they lack aspect suffixes and, therefore, end with the root.

(3) Mohawk Child I: Initial productions (1 syllable stage)

'ti	Adult: *sa'tita*	'Get in!'
'ki:(r)	Adult: *shne'ki:ra*	'Drink!'

The syllable produced is always that which is stressed in the adult language. These truncations are similar to Pye's (1983) findings about the early productions of Quiché Mayan children. Unlike in Quiché Mayan, however, word stress generally does not fall on the ultimate syllable in Mohawk. Primary word stress in Mohawk tends to be penultimate. The fact that the Mohawk child reproduces the stressed syllable, rather than the final syllable, may indicate that the saliency of stressed syllables is greater than the saliency of word-final syllables (at least in Mohawk). Where stress does not occur on the penultimate syllable, (it sometimes falls on the antepenultimate or preantepenultimate syllables) the child still reproduces the stressed syllable. Stressed syllables are perceptually salient in Mohawk due to increased amplitude, pitch contours and often increased duration.

Although Mithun (1989) notes that the stressed syllable often falls on a portion of the root/stem in Mohawk, this is not always the case. The child produces the stressed syllable regardless as to whether it coincides with the root/stem or not. The Mohawk child's initial productions are, therefore, motivated by perceptual rather than semantic salience at this stage in her development.

The speech of Mithun's Mohawk Child II (age 2;4) indicates that the role of perceptual salience continues beyond the initial one syllable production stage. This child generally produces words consisting of the stressed syllable in addition to the following final syllable as in (4).

(4) Typical productions of Mohawk Child II (2 syllable stage) (Mithun 1989: 292)

ˈta:ti	Adult: *saˈta:ti*	'Talk!'
ˈho:tɛn?	Adult: *naˈho:ten?*	'What?'

If stress in the adult word is not penultimate (but rather antepenultimate, etc.), the child occasionally produces the unstressed non-final syllables following the stressed syllable in addition to the ultimate syllable. At this stage the child's limitation on word length continues to be phonological; according to Mithun, her productions respect syllabic rather than morphological boundaries. It seems, therefore, that children acquiring Mohawk generally begin by producing the most perceptually salient part of speech (stressed syllables) and subsequently begin producing final syllables which also carry a certain level of perceptual salience.

Mithun found that Mohawk Child III (age 2;9) had begun to produce pre-tonic syllables. According to Mithun, this leftward increase in production was crucial to this child's discovery of morphology. In Mohawk, pronominal prefixes precede the root/stem. The child at this stage, therefore, is producing nouns and verbs which contain these pronominal prefixes. These pronominal prefixes are obligatory on every noun and verb in the adult language and are, therefore, frequent in the input to the child. They also have transparent and important semantic functions. Mithun claims that these factors aid the child in her discovery of morphology; she has now begun to construct a pronominal prefix system.

Based on data from Mohawk Child IV (age 2;10), Mithun argues that once morphology is uncovered by the child, the development of morphological subsystems proceeds, not according to the position of those systems within a word (as it had in the younger Mohawk children, on the basis of perceptual salience), but rather by the semantic transparency and 'communicative value' (semantic salience) of the morphological system. This child has further refined the system of pronominal prefixes and has nearly mastered the basic tense and aspect system of suffixes. Finally, Mithun found that a much

older Mohawk Child V (age 4;9) had nearly mastered the Mohawk system of productive morphology.

In summary, the first meaningful productions of Mohawk children tend to consist of the stressed (usually penultimate) syllable of the corresponding adult form, independent of the morphological status of this syllable in the attempted word. Next, words develop rightward from the stressed syllable to include the ultimate syllable and, sometimes, other non-final syllables. Words then develop leftward from the stressed syllable. This leftward movement leads to the discovery of a system of pronominal prefixes. According to Mithun, after morphology is thus discovered, semantic salience begins to play a much more important role in the acquisition of the morphological system.

In both Mohawk and Quiché Mayan, perceptual salience plays a crucial role in the initial development of positions within the word. Pye (1980) has further argued that perceptual salience also determines the order of acquisition of individual morphemes in Quiché Mayan. Pye examined the order of acquisition of the set of prefixes which mark the person/number of the subject/object of the verb. He found that there was no significant correlation between predictions about the order of acquisition of the individual prefixes based on semantic complexity and the order of acquisition actually attested. On the other hand, Pye found that the level of perceptual salience of a given morpheme is a major determinant of its order of acquisition. For example, those person markers which are entirely part of a stressed syllable are acquired earlier than those person markers that occasionally/always straddle syllable boundaries.

Finally, perceptual salience also plays an important role in the initial acquisition of morphology in Huichol, another member of the Mayan language family (Gomez-Lopez 1998). Gomez-Lopez found that the order of acquisition of grammatical categories in Huichol corresponds to the relative perceptual salience of the morphology within the word.

2.1.1.2. Research Suggesting the Primacy of Semantic Salience in the Early Acquisition of Morphology

In the previous section, I surveyed evidence from several polysynthetic languages which suggests that perceptual salience plays a primary role in the early stages of development of complex inflectional systems. Research into the acquisition of morphology in other languages, however, suggests that semantic salience plays a more critical role.

The initial productions of children acquiring Quechua (Quechuan; Courtney and Saville-Troike 2002), Navajo (Athabaskan; *idem*) and Tzeltal (Mayan; Brown 1997) generally consist of the root of the adult form. The root represents the most semantically salient constituent of a morphologically complex word. However, in these languages it does not necessarily correspond to the most perceptually prominent unit within the word. Additionally, roots in these languages do not generally occur without inflection in adult speech. Bare roots are, therefore, often ungrammatical in the adult languages.

For example, Navajo and Quechua children produce the forms found in (5) and (6) respectively.

(5) Navajo child's (age 1;1) productions (Courtney and Saville-Troike 2002: 634)[12]

da	Adult: *ní-dâh*[13] theme/2SUBJ-sit	'Sit'
go	Adult: *há-go* here/2SUBJ-come	'Come here'

[12] Abbreviations used in the Navajo examples are: CL classifier, FUT future, IMPER imperative, OBJ object, PF perfective, REL relativizer, SUBJ subject, 1 first person, 2 second person.

[13] The diacritic (´) in the Navajo examples indicates high tone.

(6) Quechua child's (age 2;5-2;6) productions (Courtney and Saville-Troike 2002: 634)[14]

chay muna qan	Adult:	*chay-ta muna-nki qan*	'You want that'
		that-ACC want-2-SUBJ 2PRON	
chay kani waka chay	Adult:	*chay-ta kani-n waka*	'The cow bites this'
		this-ACC bite-3SUBJ cow	

In both cases, the children produce the root without the obligatory inflectional suffixes. One might argue, therefore, that in these languages semantic salience plays a more crucial role than perceptual salience in children's initial morphological analyses. However, in both these languages the root generally coincides with a perceptually prominent position. In Navajo, the verb root is word-final. In Quechua, the root is word-initial. Therefore, the early production of bare roots in these languages appears to be a result of the combination of both semantic salience *and* perceptual salience.

The initial productions of Tzeltal children are potentially more problematic for an account appealing to perceptual salience. Brown (1997) claims that children acquiring this language produce bare roots despite the roots' general lack of perceptual salience. In Tzeltal, roots generally occur with prefixes and suffixes. The canonical root has a CVC shape, although it often undergoes resyllabification with the addition of affixes. Stress occurs word-finally and clause-finally and, therefore, often does not coincide with the root. Brown argues that the root in Tzeltal is not particularly perceptually salient, and, therefore, children must instead be relying on semantic salience when isolating this part of the word.

Brown points out, however, that there are some perceptual factors that possibly draw children's attention to roots. In some cases, the root appears word-initially or word-finally when null affixes occur, although Brown demonstrates that this does not occur in

[14] Abbreviations used in the Quechua examples are: ACC accusative, AF affix, AUG augmentative, EXH exhortative, FUT future, INTERR interrogative, POSS possessor, PROG, progressive, PRON pronoun, REFL reflexive, RES resultative, SP subject pronoun, SUB subjunctive, SUBJ subject, 1 first person, 2 second person, 3 third person.

the majority of cases in caretaker speech. Additionally, the canonical CVC shape of roots might aid the child in their identification. There are a very limited number of allowable syllable types in the language, and, therefore, the child might have some access to phonotactic cues. There is also a Tzeltal conversational convention of repeating part of the preceding utterance. In (7) for example, this convention serves to highlight the constant root of the verb against a backdrop of changing affixes. This convention may therefore aid the child in identification of the root (underscored).

(7) Tzeltal conversational repetition convention (Brown 1997: 51)

Child:	*k-<u>ich</u>'ja' ini*	'I get this one'
Adult:	*ya 'w-<u>ich</u>' ini*	'You get this one'

It appears, therefore, that like learners of Navajo etc., the Tzeltal child is aided by perceptual factors in identifying the root.

2.1.1.3. Perceptual vs. Semantic Saliency? Other Factors?

Through this survey of existing literature of the acquisition of polysynthetic languages, perceptual salience is identified as playing a primary role in children's initial task of segmenting units, alongside semantic salience, especially in those languages whose general characteristics allow for relatively easy identification of morphological units such as the root. Data from Quiché Mayan, Mohawk and Huichol suggest that children in these languages initially produce the most perceptually prominent units of speech and continue to rely on perceptual salience until morphology is finally discovered. Although children in Navajo, Inuktitut, Quechua and Tzeltal initially produce bare roots, which are not necessarily the most perceptual units in these languages, perceptual salience appears to also play an important role in helping the child identify these units. Initial productions that consist entirely of bare roots appear to occur only in languages in which there is some regular perceptual property that enables the consistent identification of the roots in the input.

Another factor, which might potentially play a role in the initial segmentation of morphemes, is the relative frequency with which they appear in the input. Brown (1973) finds, however, that acquisition of English inflectional morphemes does not correlate to the frequency with which they appear in parental speech. Additionally, Pye (1980) investigates the possibility that the frequency with which Quiché Mayan adults use person marker morphemes determines the order of acquisition of this morphology. Pye does not, however, find any correlation between the frequency of morphemes in adult speech and the order of acquisition. According to these studies, frequency does not appear to play a crucial role in the early acquisition of morphology.

In this section, I have surveyed findings that suggest that the perceptual salience and, to a lesser degree (in some languages), the semantic salience of a given unit plays an important role in the initial processes of its extraction and segmentation. Clearly, however, reference to only these concepts does not provide a complete explanation of how children acquire systems of inflection. For example, once several inflectional morphemes have been segmented, how are they associated with the appropriate meaning/function? How does the child organize individual, yet related, morphemes into a functional system? I address these questions through a discussion of different theoretical approaches in the following sections.

2.2. Pinker's (1984) Hypothesis Testing Model

Pinker (1984) proposes the Hypothesis Testing model which, he claims, provides the mental representations and procedures necessary for the child to associate inflectional forms with grammatical functions and to organize these forms into a cohesive system. According to Pinker's (1984) model, children learn verbal inflection by: (a) extracting whole verbs from the speech stream, (b) constructing word-specific paradigms, and (c) isolating the root/stem and building general paradigms and templates. Below, I describe each of these steps in detail.

2.2.1. Step A: Extraction of Whole Verbs from the Speech Stream

Pinker proposes that children first extract whole words (roots/stems plus any inflection) from the speech stream and assign them to a class through the learning mechanisms of semantic bootstrapping and distributional learning.

According to the semantic bootstrapping hypothesis, a child associates certain words that he or she hears in the input with some meaning (actions, objects, and so forth) interpreted from the context at the time when the word is stored. In the case of actions, he or she then assigns these 'action words' to a class that we label as verbs. These words tend to appear in dedicated (syntactic) positions and (in an inflecting language) have certain phonetic components (the inflectional morphology) in common.

Since not all verbs denote actions ('He existed in exile.') and not all actions are encoded as verbs ('The flying of kites is fun.') children must eventually come to use distributional learning in order to add more semantically opaque words to their classification system. Therefore, when a non-action word (such as 'existed' above) appears in the same syntactic position and with the same inflection as action words, which the child has previously classified as verbs, the child hypothesizes that this word is part of that class. Since the model assumes that prototypical verbs are action words, it is expected that 'non-action' verbs will be classified as verbs later in development.

2.2.2. Step B: Construction of Word-specific Mini-paradigms

According to Pinker, children next build word-specific mini-paradigms. In order to build these paradigms, the child chooses a 'linguistically relevant feature' (for example, tense, aspect, etc.; Pinker assumes that this is a limited set) from the inferred meaning of the word in context. The child hypothesizes that this is a feature encoded in the word.

For example, upon hearing the NE Cree verbs in (8) and associating them with a particular context, Pinker claims that a child might hypothesize that one relevant feature encoded by the verbal inflection is the subject's person.

(8) Possible NE Cree input sentences (AI verb)

a. *nimishikân* 'I arrive by canoe'
b. *chimishikân* 'You (s) arrive by canoe'
c. *mishikâu* 'S/he arrives by canoe'

The child then constructs a one-dimensional paradigm corresponding to this hypothesis, as in Figure 1.

(Subject) Person		
1	**2**	**3**
nimishikân	chimishikân	mishikâu

Figure 1. NE Cree child's hypothetical first paradigm (AI verb)

If the child is further led to hypothesize that another relevant feature is encoded, he or she adds another dimension to the paradigm. For example, on hearing *nimishikânân* 'we (exclusive) are arriving by canoe' and seeing more than one person arriving, the child hypothesizes that the subject's number is also encoded in the verbal inflection. The child then adds this dimension to his or her paradigm, as in Figure 2.

		(Subject) Person		
		1	**2**	**3**
(Subject) Number	**Singular**	nimishikân	chimishikân	mishikâu
	Plural	nimishikânân	---	---

Figure 2. NE Cree child's hypothetical second paradigm (AI verb)

Pinker claims that, with further input from the target language, the child fills in the missing cells of the paradigm and adds further dimensions if evidence from the input leads him or her to do so.

The paradigm building process is constrained by what Pinker calls the 'Unique Entry Principle'. This principle dictates that the child hypothesizes that each 'combination of grammaticalized features' (each cell in the paradigm) is not encoded by more than one form. Therefore, Pinker claims that the child has only one entry in every slot of his or her paradigms. According to Pinker, this explains why irregular forms do not generally co-exist alongside regular forms in the adult grammar. For example, having the English irregular past tense form 'broke' built into a paradigm precludes the regularized form 'breaked' from co-existing alongside it (at least not for long: 'breaked' might occur alongside 'broke' at a stage when the child has not analyzed 'broke' as being a form of the verb 'to break'). If a child is presented with two forms that seemingly belong in the same cell of a paradigm, the child hypothesizes another option, such as adding another dimension to the paradigm.

Pinker proposes that if a child makes an incorrect hypothesis (for example, hypothesizes that a language makes a distinction between inanimate vs. animate where this distinction is not encoded), he or she eventually discovers that the original hypothesis was erroneous through further paradigm building. Pinker provides a hypothetical example that illustrates this point. A hypothetical adult language (nominal) paradigm is found in Figure 3.

		Case		
		Nominative	**Accusative**	**Dative**
Number	**Singular**	a	b	c
	Plural	d	e	f

Figure 3. Hypothetical adult paradigm

The child, however, might initially hypothesize, incorrectly, that instead of a number dimension there is actually an animacy dimension. This could occur for example, if the child often hears form *a* referring to animate entities and form *d* to non-animate entities. The child, therefore, hypothesizes the paradigm in Figure 4.

		Case		
		Nominative	**Accusative**	**Dative**
Animacy	+	a	b	c
	-	d	---	---

Figure 4. Child's initial (incorrect) paradigm

With further evidence from the input, however, the child hears *a* frequently used with inanimate entities and *b, c,* and, eventually *e,* used with both animate and inanimate entities. The child then has the resulting paradigm in Figure 5.

		Case		
		Nominative	**Accusative**	**Dative**
Animacy	+	a	b/e	c
	-	a/d	b/e	c

Figure 5. Child's temporary paradigm

Having violated the Unique Entry Principle, Pinker posits that the child realizes that he or she has made an incorrect hypothesis. Since the same forms appear in both the + and – cells in the animacy dimension, the child will eventually realize his or her error and delete the entire animacy dimension from the paradigm. Eventually, the child hypothesizes the correct feature (in this case, number) and adds this dimension to the paradigm.

2.2.3. Step C: Isolation of the Root/Stem and Construction of General Paradigms and Templates

Pinker claims that once the child has built these word-specific mini-paradigms, he or she must then construct general paradigms of inflection. According to Pinker, in order to do so, he or she must identify the root/stem.

In order to isolate the root/stem, children identify all the 'common phonetic material' in the word specific paradigm and enter it in the lexicon labelled with the feature 'root/stem'. Pinker claims that this is an innate, universally available feature.

For example, if the child has the following word-specific paradigm in NE Cree in Figure 6, he or she would identify all the common phonetic material, namely that which corresponds to *mishikâ*, and enter it into the lexicon as *mishikâ*: verb stem, 'arrive (by canoe)'.

		(Subject) Person		
		First	**Second**	**Third**
Number	**Singular**	nimishikân	chimishikân	mishikâu
	Plural	nimishikânân	chimishikânâwâu	mishikâwich

Figure 6. NE Cree child's word-specific paradigm (AI verb)

Courtney and Saville-Troike (2002) point out that perceptual salience aids the child in the process of stripping away the 'phonetic residue' from the root/stem. A child's attention is naturally drawn to salient portions of complex verbs. Therefore, the child isolates a root/stem more easily if it is perceptually prominent.

Once the child has isolated the stem, he or she is able to build general paradigms of inflection. In order to do so, the child chooses a dimension from a multidimensional word-specific paradigm (the person dimension, for example) and one level of that dimension (first person, for example). The child examines the cells of the paradigm

specified for that level and extracts the 'common phonetic material' excluding the stem. The child then inserts this information into a cell in a uni-dimensional general paradigm which corresponds to that particular level. For example, if the child chooses the Person dimension and the first person level of the paradigm in Figure 6 and follows this procedure, he or she builds the following general paradigm.

(Subject)Person		
First	**Second**	**Third**
ni -(*stem*)- n	---	---

Figure 7. NE Cree child's uni-dimensional general paradigm (AI verb)

The child continues this same process for other levels of that dimension and other dimensions of that paradigm. In this way, the child is able to construct general paradigms for all of the inflections associated with a single grammatical function (agglutinative morphology).

If the child does not find any common phonetic material in all of the cells of the initial level he or she has selected because the inflection is fused with that of another dimension, he or she recursively increases the number of dimensions examined, applies the above procedure to levels of pairs (and, if need be, triples, etc.) of dimensions instead of to cells of a single dimension and places the 'common phonetic material' found therein into a general paradigm with a corresponding number of dimensions. In this way, the child is able to construct general paradigms for fused inflectional affixes. Since the child must perform a more complex set of calculations and an increased number of these calculations, the model predicts that children will successfully analyze agglutinative morphology before fusional morphology.

In addition to building general paradigms of inflection, Pinker claims that the child must build a stored template in order to have correct morpheme order within the word. According to Pinker, the template is in the form found in (9).

(9) General word template

[affix	+	$_{X}$Stem	+	affix	(+ affix + ...)	]
DIM-1				DIM-2	DIM-3	

Here, X is the category of the paradigm (for example, Verb) and the dimensions (DIM-1, etc.) are those dimensions successfully analyzed by the above process. For example, given the paradigm found in Figure 6, the child finds that the suffixes indicating the subject's person precede the suffixes indicating the subject's number. The child, therefore, builds the following template.

(10) NE Cree child's hypothetical initial general verb template

[S:Person	$_{verb}$Stem +	S:Person	+	S:Number]
DIM-1		DIM-2		DIM-3

If additional dimensions (affixes) are found, the child builds these into his or her template.

When the child has successfully built a general paradigm and stored a template, he or she is able to use this information in order to fill in the empty cells of other word-specific paradigms which, according to Pinker, remain in the child's lexicon once general paradigms are constructed. If this were to occur in, for example, the word-specific paradigm of an irregular verb, we expect over-regularization errors to occur. This may explain why an English speaking child sometimes mistakes the past tense form of the verb 'to go' as 'goed' when 'went' is the appropriate (irregular) adult form. When over-regularization occurs, the incorrect form is eventually driven out of the paradigm and replaced with the correct irregular form as the child adheres to the Unique Entry Principle.

Thus, Pinker's Hypothesis Testing model has the child acting somewhat as if he or she were a 'mini-linguist'. When faced with the seemingly overwhelming task of acquiring the inflectional system of verbs in a polysynthetic language, for example, a

child constructs word-specific mini-paradigms, identifies the roots/stems, builds general paradigms of inflection along with word templates and then uses these general paradigms to fill in missing information in other word-specific paradigms.

2.2.4. The Development of Systems of Inflection: Predictions of the Hypothesis Testing Model

If children acquire inflection through the mechanisms detailed in Pinker's (1984) Hypothesis Testing model we expect to find certain linguistic behaviour in child speech as children pass through each subsequent stage of the proposed model. In the following sections, I elucidate a number of these expected behaviours along with relevant evidence from a number of polysynthetic languages.

2.2.4.1. The Production of (Partially) Unanalyzed Amalgams (Chunks)

Pinker's Hypothesis Testing model predicts that children will initially produce (partially) unanalyzed amalgams or chunks. These would be attested at the stage where the child stores whole units before having analyzed the unit into its smaller components. In this case, Pinker is in agreement with Peters (1983, 1985) and Slobin (1985); the child extracts entire utterances from the speech stream before beginning the process of segmentation. If children do this, we would expect to find them producing amalgams that are ungrammatical in adult speech for the particular context in which they occur.

Evidence that children produce such amalgams comes from Quechua (Courtney and Saville-Troike 2002). In (11), the Quechua child is responding to questions from an adult interlocutor (IL). In each instance, the child's speech ends in a combination of the augmentative morpheme *-ku-* and the progressive *-sha-*. The suffix *-ku-* marks the notions of 'intensity, care or courtesy'. The responses the child gives to each question, using the *-ku-sha-* combination, are semantically/pragmatically inappropriate in comparison to the expected adult response (in brackets). The child obviously overuses this combination which is the most frequent contiguous morpheme combination used by the Quechua children in Courtney and Saville-Troike's study. These scholars posit that the child may be using this amalgam as an 'all-purpose aspect marker' before having identified that it

actually consists of more than one morpheme. In the next age range, the child does not use this combination.

(11) Examples of amalgams involving *-ku-sha* in Quechua child speech (Courtney and Saville-Troike 2002: 638)

a. IL: *Mama-yki tusu-n-chu toka-ka-qti-n?*
mom-1POSS dance-3SUBJ-INTERR play-REFL-SUB-3
'When it is played, does your mom dance?'

Ana: *Toka-n.* **Tusu-ku-sha-#.* (*Tusu-n-mi*)
play-3SUBJ dance-AUG-PROG-?SUBJ dance-3SUBJ-AF
'(Yes), she dances.'

b. IL: *Ña-chu chaya-sqa?*
already-INTERR cook-RES
'Is it already cooked?'

Ana: **Chaya-s-ku-sha-n.* (*Chaya-sqa-n.*)
cook-RES-AUG-PROG-3SUBJ cook-RES-AF
'(Yes), it is already cooked.'

c. IL: *Puklla-n-chu?*
play-3SUBJ-INTERR
'Does she play?'

Ana: **Puklla-ku-sha-n.* (*Puklla-n-mi.*)
play-AUG-PROG-3SUBJ play-3SUBJ-AF
'(Yes), she plays.'

d. IL: *Ima-ta ruwa-sha-ni?*
what-ACC do-PROG-1SUBJ
'What am I doing?'

	Ana:	**Kuchu-ku-sha-n.* cut-AUG-PROG-3SUBJ 'You are cutting.'	(*Kuchu-sha-nki.*) cut-PROG-2SUBJ
e.	IL:	*Noqa-chu sipi-ru-saq?* 1PRON-INTERR kill-EXH-FUT}SUBJ 'Shall I kill it?'	
	Ana:	** Tu sipi-ku-sha-n.* you(SP) kill-AUG-PROG-3SUBJ '(Yes), you'll kill it.'	(*Qan-mi sipi-nki.*) you-AF kill-2SUBJ

These Quechua data indicate, as Pinker's model predicts, that children do produce (partially) unanalyzed amalgams.

2.2.4.2. The Production of Bare Roots/Stems

Pinker's model predicts that children will produce bare roots/stems even when this is ungrammatical in the adult language (i.e. in a language in which verbs obligatorily have some form of overt inflection). The production of bare roots/stems results from a stage after the child isolates the root/stem but before he or she begins to analyze the system of inflection further.

Evidence in support of the model's prediction comes from the production of bare roots/stems by children in languages in which these forms are ungrammatical in the adult language. This has been found to occur in Inuktitut (Crago and Allen 1998), Tzeltal (Brown 1998), Navajo and Quechua (Courtney and Saville-Troike 2002)).

In example (12), a Navajo child produces only the root *teeh* with the intended meaning (a) 'lie down' and (b) 'pick me up'. *Teeh* in isolation is ungrammatical in the adult language. As we can see in the adult form (between parentheses), *teeh* must be preceded by several affixes. The final example (12c), which does not contain a verb, indicates that the child's bare root productions are not due to production constraints (i.e. the child is able to produce words of more than one syllable).

(12) Examples of bare root *teeh* in Navajo child speech (Courtney and Saville-Troike 2002: 634)

a.	*Teeh.*	(*ní-teeh.*)
	'Lie down.'	PF/2SUBJ-move
b.	*Teeh.*	(*ná -shi-dii-l-teeh.*)
	'Pick me up.'	around-1OBJ-FUT(IMPER)-CL-move
c.	*Haagi gaagi?*	(*háá-jí gáa-gí?*)
	'Where is the crow?'	which-place crow-REL

In some languages (for example, Turkish (Aksu-Koç and Slobin, 1985) and Italian (Hyams, 1986, 1994)), on the other hand, child acquisition evidence indicates that children do *not* initially produce bare roots/stems. According to Courtney and Saville-Troike (2002), certain constraints or properties relating to perceptual salience in these languages inhibit the production of bare roots/stems in child speech. For example, Pizzuto and Caselli (1994) point out that an Italian phonotactic constraint inhibits the production of bare roots/stems in that language. Children do not produce bare roots/stems because well-formed Italian words cannot end in consonant clusters or certain single consonants. The production of many bare roots/stems in Italian would cause violation of this constraint. In Turkish, word-final inflectional morphemes are especially salient because they occur at a word boundary and carry main word stress. Courtney and Saville-Troike (2002) propose that children do not, therefore, produce bare roots/stems in Turkish because of the degree of perceptual salience that converges on word-final inflection.

2.2.4.3. Proper Ordering of Affixes

Pinker's model also predicts that children will produce affixes in the correct order (i.e. that found in the target language). According to Pinker, the construction of a general template of inflection imposes proper morpheme order in child speech.

Acquisition data from several polysynthetic languages, for example Navajo (Courtney and Saville-Troike 2002), Turkish (Aksu-Koç and Slobin 1985) and Mohawk (Mithun 1989), indicate that children never produce affixes in the wrong order (in terms of the adult language). In Quechua, where morpheme sequencing variation does occur in adult speech, young children's original productions conform to a more rigidly ordered template of morphemes. Only as children's linguistic capabilities progress do they begin to perform the permutations attested in adult speech. These findings support Pinker's claim that children build a stored template of affix order during the course of acquisition.

2.2.4.4. Agglutinative Morphology Acquired before Fusional Morphology

Pinker's model also predicts that children will acquire agglutinative morphology before fusional morphology. According to Pinker, this is due to the increased complexity and number of calculations that the child must necessarily work out at the stage of general paradigm building. The child must perform a greater number of 'scans' of levels of word specific paradigms in order to construct general paradigms when confronted with fusional morphology.

Pinker (1984) points out that children do indeed master the inflectional system of agglutinative languages much more quickly than they do in fusional languages. For example, compare the acquisition rates of Turkish and Serbo-Croatian (Slobin 1977, 1982, 1985). Children normally master the inflectional system of Turkish, which is highly agglutinating, by the age of 2 years. Mastery does not occur in Serbo-Croatian, which is highly fusional until the age of 5 years. If children acquire inflection through those mechanisms Pinker proposes, these apparently dramatic differences in age of mastery are explained.

2.3. Dual Mechanism Approach (Words and Rules Model) (Pinker and Prince 1988, 1994; Pinker 1999)

Working within the framework of Generative Grammar, Pinker's conception of the acquisition of morphology evolved into the Word and Rules approach. According to this model, language consists of two general components: words (stored in the lexicon), which

are arbitrary pairings between sounds and meanings, and a rule system (which children are predispositioned, by universal grammar (also called the 'language instinct' Pinker 1994), to formulate. The rule system specifies the manner in which linguistic units (e.g. words) are combined. Pinker argues that the system through which children learn the words and rules that make up a specific language are innately specified. Children are hard-wired to seek out minor differences in meaning and forms and attempt to organize these into a coherent grammatical system.

Pinker argues that irregular (as exemplified in English past tense form of 'go', 'went') and regular verb forms ('abstract/abstracted') demonstrate the dichotomy between words and rules. According to him, regular morphological combinations are formed by a mental (morphological) rule, applied to the base form, and are not, therefore, listed in the lexicon. Irregular morphological forms, on the other hand, are not predictable from a rule, and, therefore, they are stored as separate units in the mental lexicon. Irregular morphology is learned through exemplars (stored units from exposure to the ambient language) and basic learning principles sensitive to both frequency and similarity in semantic and phonological form in much the same way as formulated in Rumelhart and McClelland's (1986) Connectionist model, discussed below. Pinker, therefore, does not discount exemplar-based approaches altogether but rather argues that these models do not sufficiently address all the phenomena they are purported to explain (i.e. regular morphology).

Pinker argues that the distinct mechanisms for irregular vs. regular forms lead to distinct acquisition paths. Initially, children correctly use irregular forms, generally learned by rote, before beginning to make mistakes due to overgeneralization. Once the child has analyzed a pattern and come up with a regular rule, he or she sometimes erroneously applies the rule to irregular forms: creating non-adult-like forms. On hearing the irregular forms in the ambient language a critical number of times (irregular forms are generally more frequent than regular forms), the child discovers that the regular rule does not apply to these forms and it is blocked. There is, therefore, a U-shaped developmental pattern in the acquisition of irregular forms (e.g. Marcus et al. 1992).

Regular forms, on the other hand, are initially produced using an unmarked (bare form) or a morphologically complex form learned by rote. (see chapter 7, sections 2.3 and 2.4 for findings and discussion on bare forms and rote-learned (partially) unanalyzed forms in Child (A1)'s speech.) Once the child has hypothesized the appropriate rule, he or she begins to mark forms using the regular marker. Children acquire the regular rule through the utilization of a learning scheme such as the Hypothesis Testing model (Pinker 1984, Pinker and Prince 1988) (see section 2.2 above).

The dual mechanism approach posits that the child comes pre-equipped with a morphological module which enables them to acquire the morphological systems of natural human languages. The pre-existence of this module is far from uncontroversial; in the following section, I present a proposal which posits that the morphological module emerges from general cognition rather than being inborn in nature.

2.4. The Pre- and Protomorphology Approach to the Acquisition of Morphology (e.g. Bittner et al. 2003, Dressler 1997, Dressler and Karpf 1995)

According to this approach, which follows an integrated approach of the 'natural morphology' model and 'constructivism' (e.g. Dressler and Karpf 1995), the acquisition of morphology is divided into three distinct stages: premorphology, protomorphology and the final state (adult-like morphology).

In the premorphology stage, the child's verb productions generally consist of one rote-learned form per verb lemma (Tomasello 1992). This form may be an inflected form or an uninflected root/stem (Bittner et al. 2003). Furthermore, these forms may be child-specific (e.g. the result of prosodic reduction) and, therefore, might not occur in the adult language at all. Input frequency of a particular word is an important factor in rote learning (e.g. Bybee 1995). In all cases, the child relies heavily on imitation at this stage. Children, therefore, generally use morphological markers correctly at this stage, although not in a productive way; no morphological knowledge is encoded in these stored forms. At this stage, children perform operations that are called 'extragrammatical morphology'. These operations do not occur within the morphological module as they violate certain morphological principles. For example, children's truncations, blends and surface

analogies do not manipulate meaning in a regular, predictable way (like a grammatical rule). These operations (along with the precursors to later grammatical rules, rote learned forms) are handled by general cognitive principles.[15]

Children next proceed to the protomorphology stage, where they perform morphological analysis and pattern recognition, still through general cognitive principles. The advent of the protomorphology stage is preceded by quantitative enrichment of lexical, syntactic and morphological structures (a critical mass of evidence for the child's analysis). During this transitional phase, a marked increase in the number of inflectional types (e.g. first person, second person, third person forms) of a number of given lexemes in the child's lexicon triggers the genesis of morphological analysis. At this stage, children generally produce erroneous and overgeneralized forms as they begin to organize and analyze stored forms in mini-paradigms. These 'mistakes', however, indicate that the child's forms are now instances of productive language use, reflecting grammatical analysis of complex morphological forms into smaller parts.

In the final stage, after having completed the necessary pattern recognition and morphological analysis, an adult-like morphological module emerges through dissociation from general cognition. The emergence of this separate module is characterized by a marked increase in the productivity of morphological combinations, and, along with this, more frequent overgeneralization errors.

According to this approach, children do not implement innate grammatical modules (cf. Pinker and colleagues' generativist approaches discussed in preceding sections) but rather these modules emerge over time through 'self-organization'. The module responsible for morphology emerges at the end of the protomorphology stage after the child has undertaken the morphological analysis necessary for its existence.

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[15] Rose and Inkelas (2009) propose that apparent extragrammatical processes (although they focus on examples in the domain of phonology) may, in fact, result from a variety of non-grammatical factors (i.e. perceptual or production constraints) which influence the shape of the items that children store in the lexicon and/or their production of these forms. According to this view, extragrammatical phenomena result from an interaction between the child's grammar (which is not inherently different from the adult's) and external factors. This approach differs from that of pre- protomorphology model in that it posits that no grand shift in the nature of the cognitive structure which handles morphological operations needs to be posited in order to explain non-adult-like, extragrammatical phenomena in child speech.

Despite different assumptions about the basic mechanisms enabling the emergence of a grammatical, morphological system in the child's mind, this model shares much in common with Pinker and colleagues' proposals; the child begins learning forms by rote, and after attaining a critical mass of evidence the child forms generalizations from patterns. The crucial difference is that it treats the morphological module is emergent rather than innate.

2.5. Single Mechanism Approaches

A number of approaches propose a single mechanism which handles both irregular and regular morphology. In this section, I outline the Connectionist model (Rumelhart and McClelland 1986), the Network model (Bybee 1985, 1995), and the Usage-based approach (Tomasello 2000, 2003), all of which fall within the general functionalist, as opposed to generativist, view of grammar and grammatical development.

2.5.1. The Connectionist Model (Rumelhart and McClelland 1986)

Rumelhart and McClelland (1986) propose a model which does away with an innate rule component of the grammar and the need of rules altogether. They propose that 'parallel distributed processing' models, which have become known as Connectionist models, account for grammar and language learning using general cognitive machinery. For example, the same mechanism used to learn the motor control necessary for the articulation of speech is used to learn the motor control necessary for typing. Similarly, irregular morphology and regular morphology are claimed to be learned via the same mechanism.

Within Connectionism, neural connections link base forms to inflected forms (i.e. English past tense forms). The associative network memorizes individual patterns through variations of lexical items. The network is then able to generalize new forms on the basis of regularities in the system. Learning is sensitive to the frequency of both irregular and regular forms. In computer simulation, this model has been shown to mimic the U-shaped learning path of English past tense forms quite well (Rumelhart and McClelland 1986). However, this model has been heavily criticized for its ability to both under- and over-generate forms and generalizations (e.g. Pinker and Prince 1988).

2.5.2. The Network Model (Bybee 1985, 1995)

Building on the work by Rumelhart and McClelland, but further pushing the hypothesis that morphological (and, more generally, grammatical) systems are inherently concrete, Bybee (1985, 1995) proposes that morphological patterns emerge from associations between related words in lexical representation. Her Network model also does away with the necessity of an abstract morphological rule component; all simple and complex morphological forms are stored in the lexicon, within which type and token frequency effects play an important role in the establishment and maintenance of representations of both irregular and regular morphology.

According to Bybee, words enter the lexicon with varying degrees of lexical strength which is determined primarily by the form's token frequency in the input. Words with a high degree of lexical strength are easily accessed, resistant to change and prone to semantic independence. Accordingly, high frequency irregular forms are able to resist the regular pattern because of their relatively high token frequency.

Words stored in the lexicon are linked to other words based on analogical connections between identical or similar semantic and/or phonological features. Through these connections, internal morphological analysis is performed on individual words. Morphological decomposition is thus not required; its apparent existence is simply an artifact of interconnections within the lexical network. Connections between words are stronger or weaker based on the number of characteristics they share and also by token frequency; more frequent items are more weakly connected to other forms and are, therefore, claimed to be more autonomous.

Although this model shares much with the Connectionist model, it differs in that, through linguistic experience, children construct abstract 'schemas'. Similar patterns in the connections between words reinforce each other and lead to generalizations which are encoded in the form of associative schemas. New items for which connections are not known or weak are inserted into these schemas to generalize other morphological forms (depending on: (1) the properties of the schema, and (2) its relative strength).

2.5.3. The Usage-based Model (Tomasello 2000, 2003)

Tomasello (2000, 2003) argues for a Usage-based model of acquisition that, similar to Bybee's Network model, does not require innate grammatical mechanisms or abstract rule systems. According to Tomasello, children are able to acquire language through general learning mechanisms: intention-reading and pattern-finding, which are integrated with other cognitive and social-cognitive skills.

Intention-reading includes skills such as the ability to follow the gesture or attention of other persons to objects and events and to share mutual interest in objects or events with other people (joint attention). Intention-reading skills, Tomasello argues, are necessary for the appropriate acquisition of any and all linguistic units. They allow children to perform abstraction processes, such as analogy.

Pattern-finding includes such skills as the ability to form perceptual and conceptual categories of similar objects and events and the ability to perform statistically based distributional analysis on various kinds of perceptual and behavioral sequences. Pattern-finding skills, Tomasello argues, are necessary for children to discover regularities in adult speech so that they may construct the abstract grammatical dimensions of human language. Morphological patterns are argued to be discovered via a mechanism similar to Bybee's Network model.

Usage-based models also differ from generative models in that they are not formal in nature. Whereas generative grammar typically characterizes natural language as consisting of a set of abstract rules or constraints operating over a set of lexical units, a system in which words are merely variables in the rules, Usage-based linguistics focuses on the symbolic aspect of language. Grammatical dimensions emerge from patterns of use of strings of linguistic symbols through the process of grammaticalization. According to this view, the adult grammar consists of a structured inventory of constructions. Accordingly, children acquire the adult system in ways guided by general learning mechanisms such as those mentioned above.

2.6. Summary

The proposals outlined above share several characteristics. All have the child initially storing complex morphological forms by rote. When a certain critical mass of lexical knowledge is obtained, the child performs an analysis of some kind on the patterns between words. Once analysis is performed, the child makes abstract generalizations.

The models diverge in their conception of these generalizations: Pinker's rules are meaningless, computational devices which are part of an innate, abstract system. Rules are not sensitive to factors that affect the learning and use of items not participating in the rule.

Bybee and Tomasello's approaches have abstract 'schemas', which are closely linked to the exemplars, the commonalities of which are at the base of analogical generalizations. Unlike rules, schemas are not necessarily categorical, but rather, are of varying strengths depending on the strength of the connections which lead to their emergence. Similarly, Connectionist models have no explicit rules whatsoever but rather rule-like epiphenomena emerge as artifacts of strong connections between lexical items.

Another major difference between the models is whether one or two learning mechanisms are necessary. The proponents of single mechanism models contend that one set of principles can account for both irregular and regular morphology. Occam's razor tells us that, with all other things being equal, single mechanism models are to be preferred if they are shown to correctly account for linguistic phenomena. Pinker (1999) argues, however, that differences in the behavior of English irregular vs. regular past tense forms cannot be predicted by single mechanism approaches, and, therefore, two distinct learning mechanisms must be involved.

Yet another major difference between models is the nature of the morphological module. Those adhering to the dual mechanism model argue that the child comes pre-equipped with a 'linguistic instinct' which predisposes the child to constructing a morphological rule-system. The pre- protomorphology approach has the module emerging during the child's development. The single mechanism approaches do not propose a morphological module as distinct from general cognition.

The vast number of theoretical questions that the above discussions raise is of course much larger than that which can be addressed within the confines of the current study of the emergence of NE Cree morphology. However, based on this literature survey, several research questions emerge that the current case study speaks to. These are outlined in the subsequent section.

3. Research Questions

In this section, I present several research questions which follow from the preceding literature survey and are discussed in light of the findings of the current case study in chapter 7.

3.1. Does Perceptual Salience Play a More Important Role than Semantic Salience in the Emergence of Inflection?

The proposals on perceptual salience (e.g. Peters 1983, 1985) and findings from acquisition studies of polysynthetic languages suggest that, initially, children rely more heavily on perceptual salience, as opposed to semantic salience. Evidence for prominence of perceptual salience child language could come from a child's tendency to produce affixes in perceptually salient positions (e.g. word final and stressed) at a higher frequency than in non-salient positions, the child's frequent nonproduction of perceptually non-salient affixes, and the child's higher rate of production of suffixes, in comparison to prefixes. This role that perceptual salience is playing in the emergence of intransitive verbal morphology in Child (A1)'s speech is addressed in chapter 7, section 2.1.

3.2. What is the Effect of Frequency in the Input?

Peters (1983, 1985) notes that, in addition to perceptual and semantic salience, frequency in the input also plays an important role in the child's acquisition path. Input frequency is a key component in the learning models proposed in single mechanism approached (e.g Rumelhart and McClelland 1986, Bybee 1985, 1995, Tomasello 2000, 2003). However, as mentioned above, a number of acquisition studies (e.g. Brown 1973, Pye 1980) find that input frequency is not playing a determining role in the acquisition of morphology. If

input frequency is playing a key role in the child's development, we expect the child to produce the inflectional suffixes which he or she most frequently hears. I discuss the role that input frequency plays in the development of Child (A1)'s intransitive morphology in chapter 7, section 2.2.

3.3. Is there Evidence of (Partially) Unanalyzed Amalgams Stored by Rote?

Each of the models discussed here take as a starting point the child's storage of linguistic chunks in the mental lexicon before these undergo any further analysis. Evidence of (partially) unanalyzed amalgams is often found in children's errors. For example, if a child uses verbs inflected with third person singular morphology with intended first and second person meanings, there is evidence that the child has not (completely) segmented the form into its morphological components. In chapter 7, section 2.3, I argue that the majority of the intransitive verbs that Child (A1) produces during the period covered by the current case study are (partially) unanalyzed amalgams stored by rote.

3.4. Are Uninflected Bare Roots/Stems Produced?

The production of bare roots/stems is predicted in Pinker's (1984) Hypothesis Testing model at the stage when the child strips away inflection to identify the root/stem. Additionally, if semantic salience were playing a more important role than perceptual salience, we would expect children to produce the more semantically 'heavy' root/stem more frequently than the most phonologically 'heavy' unit (which may fall on a semantically 'light' inflectional affix). Evidence of these bare roots/stems comes from children producing uninflected forms which, in the adult language, must be inflected. However, when these forms are found, they must be examined in order to determine whether they are a result of the child's morphological analysis or stem from other factors (e.g. the result of truncations caused by phonological processes guided by perceptual or production constraints).[16] In chapter 7, section 2.4, I discuss the bare stems that Child (A1) produces and argue that only those produced in the last two sessions (at ages 3;06.23 and 3;08.24) indicate that morphological analysis is taking place.

[16] See, for example, Inkelas and Rose (2009) on the emergence of phonological processes in child language.

3.5. Is Agglutinative or Fusional Morphology Acquired Earlier?

Pinker's (1984) Hypothesis Testing model predicts that agglutinative morphology is acquired before fusional morphology due to the fewer number of calculations the child must perform to build paradigms of the agglutinative type. Evidence of this would come from children initially preferring affixes of a more agglutinative nature where both agglutinative and fusional morphology are found in the target language. This research question is addressed in light of the Child (A1) data in chapter 7, section 2.5.

3.6. Do Strings of Morphemes Occur in the Correct Order?

Pinker's (1984) Hypothesis Testing model also predicts that children will not produce affixes in the wrong order once they have constructed a template of affix ordering. Evidence which could be used to argue against this theory would come from children inverting the order of affixes in a manner that would be ungrammatical in the adult language. Lack of such evidence would support the idea that children construct a template which produces proper affix ordering. Child (A1)'s proper ordering of affixes is discussed in chapter 7, section 2.6.

3.7. Is there Evidence of 'Extragrammatical Morphology'?

Adherents to the pre- and proto-morphology model (e.g. Bittner et al. 2003, Dressler 1997, Dressler and Karpf 1995) argue that, initially, children's productions do not follow morphological rules at a stage before the morphological module has emerged. Evidence of 'extragrammatical morphology', therefore, comes from children's productions of elements which have undergone processes which violate 'normal' morphological rules, such as (partially) unanalyzed amalgams and truncations which are not the result of morphological rules. I present extragrammatical morphology from Child (A1)'s speech in chapter 7, section 2.7 but argue that these do not indicate that the child has no morphological module as they are driven by other non-morphological factors.

3.8. Is there a U-shaped Pattern in the Acquisition of Forms?

Both single and dual mechanism models account for U-shaped patterns in the acquisition of morphology. However, these models differ in their account of why these patterns exist. From the dual mechanism viewpoint, the pattern results from children initially storing forms by rote, identifying the root and producing it without inflection and/or discovering the general rule and then overgeneralizing this to irregular forms. From the single mechanism viewpoint, U-shaped patterns are are a result of the effects frequency of, and similarity between, morphological types. Evidence of U-shaped patterns (i.e. the child gets worse before he or she gets better) in children's acquisition of morphology and the nature of this pattern (i.e. does it result from overgeneralization, nonproduction of inflection, or other factors?) thus speak to this question. In chapter 7, section 2.8, I discuss the presence of several U-shaped patterns in Child (A1)'s productions.

3.9. Is there Evidence of a Distinct Pattern in the Acquisition of Regular vs. Irregular Morphology?

Much of the debate between proponents of the single vs. dual mechanism approaches centres on asymmetries between the acquisition of regular vs. irregular morphology. Adherents to the dual mechanism approach argue that differences in the way regular vs. irregular morphological types are stored in the lexicon cause asymmetries in the way in which they are learned. On the other hand, adherents to the single mechansim model argue that both regular and irregular aspects of morphology are acquired using the same learning mechanisms, and, therefore, no empirical asymmetry exists between them during acquisition. Evidence which would speak to this question obvisouly needs to come from asymmetries, or lack thereof, between regular and irregular morphology during acquisition. However, because there is no known irregular morphology (at least in the paradigms which Child (A1) attempts during the case study) in NE Cree, the current study does not speak to this question.

3.10. Is there Evidence of Overgeneralization?

Adherents to dual mechanism approaches use morphological overgeneralizations in support of their models. The type of overgeneralization errors which are generally marshalled are regular morphological rules being applied to irregular types which create non-adult-like forms. Again here, as irregular verbal morphology is not a characteristic of NE Cree, this type of overgeneralization will not be found in the current study. However, due to the nature of NE Cree morphology (having distinct inflectional orders, see chapter 3, section 4.2), which has different 'regular' morphological rules depending on syntactic position, we may see overgeneralizations creating errors of a different kind (not from regular to irregular but from regular (in one inflectional order) to regular (in another inflectional order). As we will see, no such overgeneralizations are found in the data under consideration in this thesis. This observation is discussed in chapter 7, section 2.9.

In the subsequent chapter, I situate NE Cree geographically and linguistically and provide details on the nature of the inflectional system associated with the NE Cree verb.

Chapter 3 - Situating NE Cree/ The NE Cree Verb

1. Introduction

In this chapter, I provide the context of this investigation into the emergence of intransitive verb morphology in a NE Cree child. In section 2, I situate NE Cree geographically, demographically and linguistically and introduce the Chisasibi Child Language Acquisition Study (CCLAS). In section 3, I survey the literature available on NE Cree. I next provide an overview of the pertinent aspects of NE Cree grammar, with a focus on the intansitive verb, in section 4.

2. NE Cree: Context and the Chisasibi Child Language Acquisition Study

NE Cree is spoken in the James Bay region of Quebec. It is a member of the Cree-Montagnais-Naskapi (CMN) dialect continuum, which is a Central Algonquian language (MacKenzie 1980). NE Cree is a subdialect of East Cree (along with neighbouring Southern East Cree). There are approximately 13,000 speakers of East Cree (Junker and MacKenzie 2004).

CMN dialects are divided into palatalized and non-palatalized varieties, as in the map in Figure 8 (MacKenzie 2003). The palatalized/non-palatalized dialects are distinguished on the basis of whether or not Proto-Algonquian velar stops are palatalized to [tʃ] before front vowels. NE Cree is a palatalized dialect, spoken in the communities of Whampagoostui, Wemindji, and Chisasibi. This study focuses on NE Cree as spoken in the latter community.

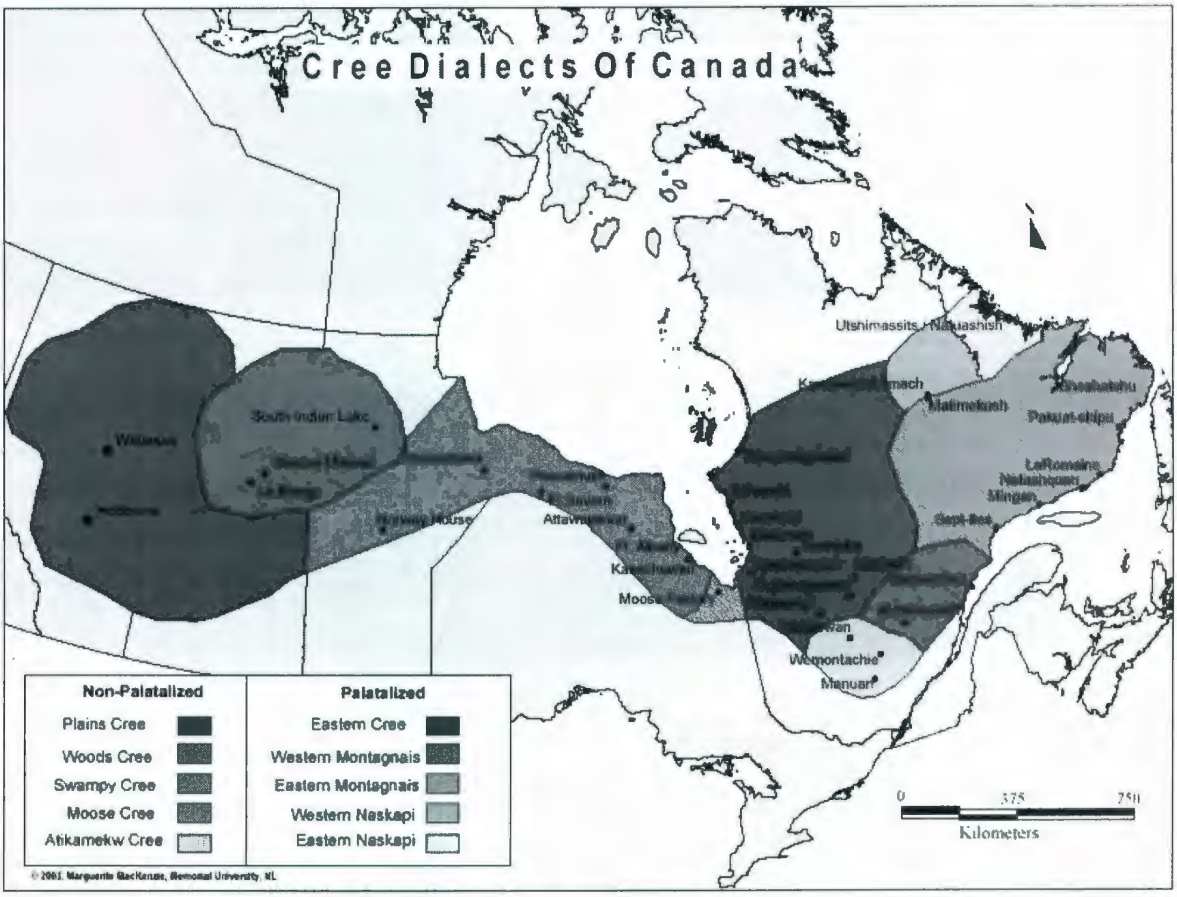

Figure 8. The CMN dialect continuum (MacKenzie 2003)

In 2004, a longitudinal acquisition study began in the NE Cree community of Chisasibi, Quebec. CCLAS is the first in-depth acquisition study of an Algonquian language (see Brittain et al. 2007). Only one other study, which examined the speech of an Oji-Cree child (Upper 1993; Upper and McKay 1987a,b, 1988), has been completed. Unfortunately, the original audio recordings of this study are no longer available for scholarly research.[17] The remaining transcriptions are in orthographic form, rendering it an unsuitable database for the type of detailed analysis that the CCLAS database permits. Analyses based on the Oji-Cree data (Mellow, 1988; Hack and Mellow, 2007) focus on

[17] JulieBrittain, personal communication (henceforth, p.c.).

the communicational intent of the child rather than on the emergence of inflection. Using data collected by CCLAS, the present research is, therefore, the first in-depth documentation and analysis of the emergence of intransitive verbal inflection in an Algonquian language.

3. NE Cree: Survey of Linguistic Literature[18]

While the available literature on NE Cree is not extensive, an increased amount of research activity pertaining to East Cree (both Northern and Southern dialects) has recently been carried out. An (in progress) online reference grammar of (Northern and Southern) East Cree (http://www.eastcree.org) currently exists. Before the creation of this website, few descriptions of NE Cree grammar were available (Martin 1975, Vaillancourt 1978, 1980). East Cree is, however, represented in the analytical literature (e.g., Rogers 1958, Meeussen 1962, MacKenzie 1980, MacKenzie and Clarke 1981, Junker and Blacksmith 2001, Junker 2003a,b, 2004, Junker and MacKenzie 2003, 2004). Other available literature includes: a preliminary phonetic description of East Cree (Dyck et al., 2007) and descriptions of the East Cree accentual system (Northern: Wood 2006; Dyck et al. 2006, 2008; Southern: Brittain 2000). The first acquisition research to come out of the CCLAS project, a case study of the acquisition of stress in NE Cree by Swain (2008), has recently been completed.

4. Highlights of NE Cree Grammar with a Focus on the Intransitive Verb

In this section, I outline the properties of the NE Cree phonological system. An overview of the NE Cree verbal complex with a focus on the intransitive verb follows.

4.1. NE Cree Phonology

The phonemic consonant inventory of NE Cree is found in (13). As is the case for Alongquian languages in general, there is no voicing contrast amongst obstruent segments. The voiceless forms are provided in (13), but these are often voiced phonetically.

[18] For a complete bibliography of publications pertaining to NE Cree see http://eastcree.org/bibliography/.

(13) NE Cree phonemic inventory (Dyck et al. 2006, Wood 2006)

p	t	ch(tʃ)	k, k^w	
	s	sh(ʃ)		h
m	n			
w	y			

The vowel inventory is provided in (14). The vowels are given in orthographic form. Phonetically, the vowels vary depending on the speaker and phonological environment. Historically, there was a distinction between long (tense) and short (lax) vowels. The distinction is realized synchronically as a difference in vowel quality more so than one of length (MacKenzie 1980).

(14) Orthographic vowel inventory

Long		Short	
î	û	i	u
â		a	

Dyck et al. (2006, 2008), Wood (2006) and Swain (2008) provide descriptions of NE Cree metrical structure. The main phonetic correlate of stress in NE Cree is pitch, with intensity correlated to a lesser degree (Dyck et al. 2006, Swain 2008). There is no evidence of secondary stress in the language (Wood 2006, Swain 2008). Short vowels that occur in metrically weak positions often undergo devoicing or syncope (deletion) (Swain 2008, Dyck et al. 2008).

Swain (2008) provides the parameter settings in (15) for the metrical structure of NE Cree.

(15) Metrical parameters for NE Cree (Swain 2008)[19]

a. Foot Domain: Bounded; Maximally Binary
b. Quantity Sensitive: Yes[20]
c. Degenerate Feet: No
d. Headedness: Right-headed
e. Direction of Footing: Right-to-left
f. Extrametricality: Yes, the final syllable is extrametrical[21]
g. End Rule: Right

As a result of these parameter settings, stress generally falls on the penultimate syllable if the vowel is heavy (long). Otherwise, the antepenultimate syllable is stressed.[22] The final syllable is stressed when the word consists of a single syllable or where extrametricality is blocked (in disyllabic words if final syllable extrametricality would cause a stressed light syllable). Additionally, some final syllables that appear to carry stress are actually penults underlyingly (Swain 2008). Stress may, therefore, fall on the final, penultimate and antepenultimate syllables in NE Cree.

4.2. The NE Cree Verb

Words in NE Cree (and in Algonquian languages in general) are traditionally classified into one of three classes: verb, noun, or particle (e.g., Bloomfield 1946). The present study focuses on (intransitive) verbs. I discuss, therefore, the other two parts of speech only when it is relevant to the description of verbs.

Verbs in CMN are inflected in three 'orders' or inflectional sets: the independent, conjunct and imperative orders (Bloomfield 1946). The independent order is restricted almost entirely to main clause contexts (and is used with polar questions) (Brittain 2001). In NE Cree, the conjunct order is found in the three environments in (16).

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[19] See Wood (2006) and Dyck et al. (2006) for slightly different sets of metrical parameter settings.
[20] Codas are not moraic. Syllables with a long vowel (or off-glide) are heavy. Syllables with a short vowel are light (Dyck et al. 2006, Swain 2008).
[21] Extrametricality is lexically determined. A subset of words has foot extrametricality. A subset has no extrametricality (Swain 2008).
[22] See Swain (2008) for a discussion of exceptions to these generalizations.

(16) Environments of the conjunct order in NE Cree[23]

a. Subordinate clauses
b. Clauses which contain a *wh*-word[24]
c. Certain other non-*wh*-word main clauses

The imperative order is used to give commands and make requests. Examples of verbs inflected in the independent, conjunct and imperative orders are found in (17).

(17) Examples of the independent, conjunct and imperative orders

a. Independent order
chinikimun
chi- nikimu -n
2- sing(AI) -1/2
'You sing.'

b. Conjunct order
âh-nikimuyin
âh- nikimu -yin
IC.pfx- sing(AI) -2s
'… when you are singing.'

c. Imperative order
nikimuh
nikimu -h
sing(AI) -2
'Sing!'

[23] Julie Brittain, p.c.
[24] For simplicity, I use this term throughout the thesis; *wh*-words/phrases are also called 'interrogative proforms' (Sadock and Zwicky 1985) and 'interrogative pronouns/adverbs' (Valentine 2001).

In the independent order, inflection is highly agglutinative. For example, in (18) each suffix encodes only one piece of grammatical information.

(18) The agglutinative nature of the independent order

wâpâyiuh
wâpâ -yi -u -h
be.white(II) -obv -3 -pl
'Her/his (inanimate noun(pl)) are white.'

Furthermore, the independent order shares a number of affixes in common with nominal paradigms, especially with those of the possessed noun paradigms. For example, in (19a) the prefix *ni-* marks the possessor of the (animate) noun as first person. The suffix *-(i)nân* marks the possessor as first person plural. In (19b), the same prefix marks the subject of the verb as first person. The suffix marks the subject as first person plural. In (19c), the prefix *chi-* marks the possessor of the noun as second person. The suffix *-(i)wâu,* marks the possessor as second person plural. In (19d), the same morphology marks the subject of the verb as second person plural. In (19e), the suffix *-ich* marks the possessed noun as plural and in (19f), the suffix marks the subject of the verb as plural.

(19) Examples of commonalities between nominal and verbal inflection

a. *nimis(i)nân*
ni- mis -(i)**nân**
1- sister(anim) -1pl
'our sister'

b. *nimuwipinân*
ni- muwipi **-nân**
1- visit(AI) -1pl
'we are visiting'

c. *chimisiwâu*

chi- mis -(i)**wâu**

2- sister(anim) -2pl

'your (pl) older sister'

d. *chishîhkichinâwâu*

chi- shîhkichi -n -(â)**wâu**

2- be.cold(AI) -1/2 -2pl

'you (pl) are cold'

e. *nipûshîm(i)nânich*

ni- pûshî -m -(i)nân **-ich**

1- cat -poss.sfx -1pl -3(an)pl

'our cats'

f. *shîhkichiwich*

shîhkichi -w **-ich**

cold(AI) -3 -3pl

'they are cold'

In the conjunct order, inflection is generally much more fusional, and, consequently, suffixes often encode more than one grammatical feature, a phenomenon referred to as 'cumulative exponence'. For example, in (20) the portmanteau inflectional suffix *-ik* encodes both subject and object agreement. As a consequence, fewer instances of shared morphology are found between nominal and verbal paradigms in the conjunct (as compared to the independent order).

(20) The fusional nature of the conjunct order

âh-wâpimik
âh- wâpim -ik
IC.pfx- see(TA) -O:3.s/S:1.s
'...that I see him/her'

Another characteristic of the conjunct order is the vowel alternation referred to as 'initial change' (Bloomfield 1962). The initial vowel in the verbal complex is subject to a systematic morphophonemic change in specific syntactic contexts (for example, when co-occurring in the same clause as a *wh*-phrase). Initial change may also be manifested through the addition of a prefix-*â* (*âh-* in NE Cree).

(21) Example of initial change in Western Naskapi[25]

a. Initial change prefix *â-* occurs
Nimiywâyihtân â-pâhtamân.
ni-miywâyihtân â-pâhtamân
1-glad(TI).IINinfl IC.pfx-hear(TI).CINinfl
'I am glad to hear it.'

b. Initial change affects first vowel
Nimiywâyihtân piyâhtamân
ni-miywâyihtân piyâhtamân
1-glad(TI).IINinfl IC.hear(TI).CINinfl
'I am glad to hear it.'

There are four basic verb classes in Algonquian, two of which are intransitive and two of which are transitive (Bloomfield 1946). Intransitive verbs agree with the grammatical gender (animate or inanimate) of their single argument. There are, therefore,

[25] Western Naskapi and NE Cree have the same sound system with regard to initial change (Brittain, 2001).

two classes of inanimate verbs: the animate intransitive (AI) and inanimate intransitive (II). Transitive verbs, on the other hand, are classified on the basis of their objects. Therefore, the two classes are the transitive animate (TA) and the transitive inanimate (TI). The four classes are frequently differentiated by stem shape.

(22) The four verb classes in NE Cree (IIN)

a.	*wâpâ-u* see(II)-S:3	'it is white'	(inanimate subject)
b.	*wâpi-u* see(AI)-S:3	's/he sees'	(animate subject)
c.	*wâpiht-im-Ø* see(TI)- O:inan[26]-S:3	's/he sees it'	(inanimate object)
d.	*wâpim-â-u* see(TA)-DirTh/nonloc(S:3/O:3')-3	's/he sees him/her/them'	(animate object)

Grammatical gender corresponds closely to natural animacy. First and second person arguments are, therefore, necessarily animate. Third person arguments are either animate or inanimate.

Within each order further sub-groupings occur depending on the tense and modality properties of the verb. The verb paradigms of NE Cree are displayed in Figure 9.

[26] I follow Goddard (1967) and Brittain (2001) in treating the TI theme sign (*-im*) as object agreement.

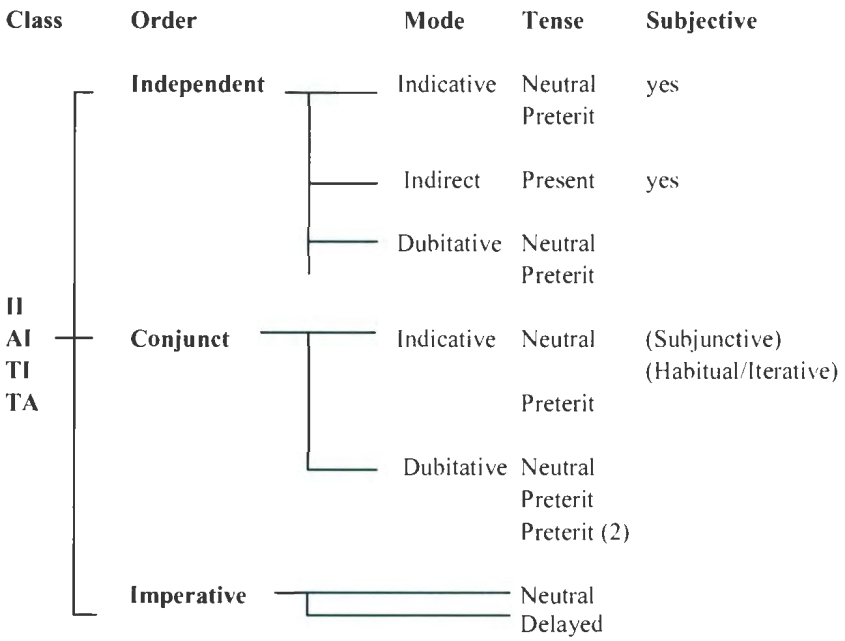

Figure 9. Verb paradigms in NE Cree (adapted from www.eastcree.org)

The general ordering of morphemes in the CMN verb is found in (23) (brackets indicate non-obligatory elements).

(23) General template of morphemes in the CMN Verb

(personal prefix) + (preverb(s)) + initial + (medial) + final + inflection

Stem

The verbal stem in CMN minimally consists of an initial and a final. These derivational elements provide the basic meaning of the verb and identify the verb class to which the stem belongs. A medial may also be present. Preverbs, which precede the stem, forming a compound verb, provide additional information ranging from more concrete adverbial/adjectival concepts to more functional concepts such as tense, aspect and mood.

The investigation of the acquisition of both the derivational elements of the verb stem and preverbs is beyond the scope of this thesis. I limit my investigation to the acquisition of the personal prefixes and inflectional suffixes in intransitive verbs.

4.2.1. NE Cree Intransitive Inflection

In the following sections, I outline the NE Cree system of inflection in intransitive verbs. Transitive inflection is not discussed further; Child (A1) rarely attempts transitive verbs during the period under study (see chapter 6, section 2), and, therefore, this case study focuses only on intransitive (AI and II) inflection. I begin with a description of AI inflection before outlining the inflectional system of II verbs.

4.2.1.1. AI Inflection

In this section, I outline AI inflection in the independent indicative neutral (IIN), conjunct indicative neutral (CIN) and imperative (neutral) paradigms. These are the only paradigms which Child (A1) attempts during period of the case study. Consequently, I do not outline inflectional affixes which are not members of these paradigms.

4.2.1.1.1. AI IIN Inflection

In the AI IIN first and second persons, both personal prefixes and suffixes identify the actor of the verb. In (24a), the actor is first person singular and, therefore, the verb is marked with the first person prefix (*ni-*) and the speech act participant (SAP) (first and second person) suffix (*-n*). The actor in (24b) is second person singular and, therefore, the verb is marked with the second person prefix (*chi-*) and the SAP suffix (*-n*).

(24) AI IIN first and second person singular forms

a. First person singular actor
   ni- *nipâ* *-n*
   1- sleep(AI) -1/2
   'I am sleeping'

b. Second person singular actor

chi- *nipâ* *-n*
1- sleep(AI) -1/2
'you are sleeping'

When the stem begins with a vowel, an epenthetic -t- intervenes between the personal prefixes and the stem, as in (25).

(25) First person prefix allomorph *nit-* [ənd]

nit- *âhkusi* *-n*
[ənˈd- akusə -n]
1- be.sick(AI) -1/2
'I am sick'

Furthermore, when the prefix *chi-* precedes *t* or *ch* it is realized as [ʃ] as in (26).

(26) Second person prefix allomorph [ʃ]

chi- *chihchipiyi* *-n*
[ʃ- ʃtəˈbi -n]
2- go.away(AI) -1/2
'you are going away'

In order to form plurals, further suffixes are added, as in (27). Several distinctions made in (27) do not occur in English: in (27a), the actor is 'we (but not you)' (1pl); in (27b), it is 'you all (but not me)' (2pl); and in (27c) it is 'you all (and me)' (21pl).

(27) First and second person plural forms

a. First person plural (exclusive of second person)
ni- *nipâ* *-n* *-ân*
1- sleep(AI) -1/2 -1pl
'we (but not you) are sleeping'

b. Second person plural (exclusive of first person)
chi- *nipâ* *-n* *-âwâu*
1- sleep(AI) -1/2 -2pl
'you all (but not me) (excl) are sleeping'

c. Second person plural (inclusive of first person)
chi- *nipâ* *-n* *-âniu*
1- sleep(AI) -1/2 -21pl
'you all (and me) (incl) are sleeping'

Unlike verbs with first or second person actors, AI IIN verbs with third person (non-speech act participants) actors are not marked by a person prefix. They are marked solely by suffixes. The two allomorphs of the third person (singular) suffix *-u* are shown in (28). In (28a), the stem ends in a low vowel (in this case *â*), and, consequently, the *-u* suffix is realized as a diphthong [(v)w]. In (28b), the stem ends in a high vowel (in this case *u*), and, consequently, the *-u* suffix is realized as [o]. Furthermore, with *n-* stem verbs, there is no overt third person suffix, as in (28c).

(28) Allomorphs of third person suffix *-u* (singular forms)

a. (*-u*) Realized as [(v)w]
ihtâ *-u*
['da -w]
be(AI) -3
's/he is (t)here'

b. (*-u*) Realized as [o]
mâtu *-u*
[mæˈd(v) -o]
cry(AI) -3
's/he cries'

c. *n-* Stem verb
pihchishin
['bɪʧɪn]
fall(AI).3
's/he falls down'

Furthermore, suffixes mark an inflectional distinction in animate third persons between 'proximate' (3) and 'obviative' (3'). The verbs in (28) are proximate. In any syntactic context, only one third person can be proximate; all others are obviative. The proximate third person is the topic of discourse: the third person closest to the speaker or previously mentioned (Bloomfield 1962).[27] Obviative forms indicate an increased 'distance' from the discourse. Certain syntactic environments also require obviative forms (see Hasler 2002). Verbs with obviative actors are marked by a suffix (*-yi*) which follows the stem and precedes the third person suffix *-u*, as in (29).

(29) AI IIN verb with third person obviative actor

ihtâ *-yi* *-u*
be(AI) -obv -3
'his/her (possession(s)) is/are (t)here'

To form the AI IIN third person plural, the suffix *-ich* follows the third person suffix (*-u*) as in (30).[28]

[27] There is no number contrast in AI obviative forms (Bloomfield 1962).
[28] The *-u* suffix is consequently diphthongized (even when preceded by a high vowel).

(30) AI IIN verb with third person plural actor

ihtâ *-w* *-ich*
be(AI) -3 -pl
'they are (t)here'

4.2.1.1.2. AI CIN Inflection

In the AI CIN, inflectional distinctions are marked solely via suffixes; prefixes are not employed. The first person singular form is marked by the suffix *-yân*, as in (31a). In (31b), the first person plural (exclusive of the second person) form is marked by the suffix *-yâhch*. The suffix *-yin* marks the second person singular form in (31c). In (31d and e), the suffixes *-yâkw* and *-yihkw* mark the second person plural (exclusive of the first person) and second person plural (inclusive of the first person) forms respectively.

(31) AI CIN first and second person forms

a. AI CIN first person singular
âhnipâ *-yân*
IC.pfx.sleep(AI) -1s
'(that) I am sleeping'

b. AI CIN first person plural
âhnipâ *-yâhch*
IC.pfx.sleep(AI) -1pl
'(that) we (but not you) sleeping'

c. AI CIN second person singular
âhnipâ *-yin*
IC.pfx.sleep(AI) -2s
'(that) you are sleeping'

d. AI CIN second person plural (exclusive of first person)
âhnipâ *-yâkw*
IC.pfx.sleep(AI) -2pl
'(that) you (but not me) are sleeping'

e. AI CIN second person plural (inclusive of first person)
âhnipâ *-yihkw*
IC.pfx.sleep(AI) -21pl
'(that) you (and me) are sleeping'

The AI CIN third person is also marked solely by suffixes. In (32a), the third person singular is marked by the suffix *-t*. The suffixes *-yi* and *-ch* mark the third person obviative and plural forms respectively in (32 b and c).

(32) AI CIN third person forms

a. AI CIN third person singular
âhnipâ *-t*
IC.pfx.sleep(AI) -3s
'(that) s/he is sleeping'

b. AI CIN third person obviative
âhnipâ *-yi* *-ch* [29]
IC.pfx.sleep(AI) -obv -3
'(that) his/her (child(ren)) is/are sleeping'

c. AI CIN third person plural
âhnipâ *-ch*
IC.pfx.sleep(AI) -3pl
'(that) s/he is sleeping'

[29] Note that the third person suffix is *-ch* after the obviative suffix *-yi*. However, as in the AI IIN, there is no number contrast in AI CIN obviative verbs.

4.2.1.1.3. AI Imperative (Neutral) Inflection

Only second person forms exist in the AI imperative (neutral) paradigm. A second person singular agent is marked by the suffix *-h*, which also causes stress to shift to the final syllable, as in (33a). In (33a and b), the second person plural exclusive and inclusive forms are marked by the suffixes *-kw* and *-tâu* respectively.

(33) Inflection in the AI imperative (neutral) paradigm

a. Second person singular
   nipâ *-h*
   sleep(AI) -2s
   '(you(s)) sleep!'

b. Second person plural (exclusive of first person)
   nipâ *-kw*
   sleep(AI) -2pl
   '(you all (but not me)) sleep!'

c. Second person plural (inclusive of first person)
   nipâ *-tâu*
   sleep(AI) -21pl
   '(you all (and me)) sleep!/ let's sleep'

4.2.1.2. II Inflection

In this section, I outline II inflection in the IIN and CIN paradigms. These are the only paradigms which Child (A1) attempts during the period covered by the case study. There are no imperative paradigms in the II for the simple reason that II verbs have a non-sentient (and hence grammatically inanimate) subject, (probably) rendering them

incompatible with the imperative, which by definition requires a sentient subject.[30] Furthermore, because inanimate actors are necessarily third person, there is no person distinction in II verbs.

4.2.1.2.1. II IIN Inflection

In the II IIN, third person singular verbs are marked with the suffix *-u*, as in (34a).[31] As in the AI, *n*-stem verbs are not overtly marked in the third person singular (34b).

(34) II IIN third person singular

a. *-u* Suffix
itwâwâpiyi *-u*
make.noise(II) -0[32]
'it is making noise'

b. *n-* Stems
michin
be.dirty(II).0
'it is dirty'

There is also a contrast between proximate and obviative in the II. The examples in (34) are proximate. The obviative is formed by adding the suffix *-yi* after the stem and before the third person suffix, as in (35).

[30] While one can in an ironic way in English, for example, say "Start, you damned thing!" to a broken down car, it remains to be determined whether or not in Cree this kind of contrivance will yield an II imperative form (Julie Brittain, p.c.).
[31] This suffix follows the same pattern of allomorphy as the AI IIN third person suffix *-u*.
[32] The third person is marked 0 on II verbs to differentiate them from the AI third person.

(35) II IIN obviative singular

wâpâ *-yi* *-u*
be.white(II) -obv -0
'his/her (possession) is white'

Plurals are formed by adding the suffix *-h* after the third person suffix *-u*, as in (36). Note that there is a number contrast between singular and plural in II obviative verbs.

(36) II IIN plurals

a. Proximate
itwâwâpiyi *-u* *-h*
make.noise(II) -0 -pl
'they are making noise'

b. Obviative
wâpâ *-yi* *-u* *-h*
be.white(II) -obv -0 -pl
'his/her (possessions) are white'

4.2.1.2.2. II CIN Inflection

In the II CIN, contrasts between number and the proximate vs. obviative distinction are marked by suffixes. In (37): (a) the proximate singular is marked with the suffix *-ch*; (b) the obviative is marked with *-yi* following the stem and preceding *-ch*; and (c and d) a final *-h* is suffixed to form the plural of both proximate and obviative forms.

(37) II CIN inflection

a. Proximate singular
âhwâpâ *-ch*
IC.pfx.be white(II) -0
'(that) it is white'

b. Obviative singular
âhwâpâ *-yi* *-ch*
IC.pfx.be white(II) -obv -0
'(that) his/her (possession) is white'

c. Proximate plural
âhwâpâ *-ch* *-h*
IC.pfx.be white(II) -0 -pl
'(that) they are white'

d. Obviative plural
âhwâpâ *-yi* *-ch* *-h*
IC.pfx.be white(II) -obv -0 -pl
'(that) his/her (possessions) are white'

4.2.2. The Challenge Facing the Child

Assuming a traditional view of the grammar, in order to successfully acquire the AI system of inflection, the NE Cree child must identify that the person (first, second, third) of the actor is morphologically marked on the verb. Additionally, in the AI IIN, the child must find the contrast between SAP (first and second person) and non-SAP (third person) actors in order to identify that the former is marked by both a prefix and a suffix (common to both), while the latter is marked solely by a suffix. The child must also work out another system for verbs of the AI CIN, where person is marked solely via (different) suffixes.

In addition to this task, the child must work out a system of contrasts based on the number of the actor. In the IIN, this task consists of acquiring plural suffixes which are 'stacked' onto the person suffixes. In the CIN and imperative (neutral), the child has to learn suffixes in which the function of indicating number is fused with that of person.

In third person forms, the child also has to distinguish between proximate and obviative actors, as well as the suffixes (or lack thereof) associated with each.

The task is made somewhat easier with II verbs as there is no contrast in person; however, the child must still work out number and obviation contrasts.

The child's task is further complicated by the allomorphic variation of several affixes; he or she has to work out that some slight differences in sound are meaningful, while others are not.

And this is only for the intransitive verbal morphology from three paradigms! In order to become a competent adult speaker, the child eventually needs to learn how to inflect transitive verbs (which have an even more complex system of inflection than intransitives) and 13 other paradigms for which further contrasts such as tense (e.g. neutral, preterit), aspect (e.g. habitual/iterative), mood (indicative, dubitative), amongst others need to be worked out.

In this thesis, I examine one NE Cree child's very first steps in this seemingly overwhelming task through a case study of the emergence of her system of intransitive inflection. The methodology of this case study is presented in the following chapter.

Chapter 4 - Methodology

1. Introduction

In this chapter, I outline the methodology used in the current case study. In section 2, I describe the CCLAS data and introduce the participant, Child (A1). In section 3, I describe the data processing procedure used by CCLAS. I then provide details about the particular data set used for the present case study in section 4.

2. Child (A1) and the Nature of the Data

Six children participated in the CCLAS study. The children were divided into two age cohorts; the children in Cohort A were recorded from approximately age 12 to 48 months, and the children in Cohort B were recorded from approximately age 36 to 72 months. In the present case study, I examine data from Child (A1) (Cohort A, Speaker Number 1), a female learner. Child (A1) was video recorded from the age of 1;9 to 4;3. Child (A1) was chosen for the case study due to her age at the time of the recordings (covering the period when children generally begin to produce coherent words) and the extent and regularity (in terms of intervals) of the video recorded documentation.

Child (A1) lived in her family home in Chisasibi, Quebec with her mother, father and older male siblings at the time of the recordings. Her family speaks NE Cree and this is, generally, the language used in the home. The father and mother do, however, speak English as well. The amount of English used by the mother in the video recordings is minimal. However, some English words (mostly nouns) have been borrowed into NE Cree and often undergo the regular morphological processes of the language (Marguerite MacKenzie, p.c.). Although (A1) is not bilingual, she does know some English words and songs.

The video recordings of Child (A1) were made in the child's home. In each of the video recordings, the child interacts with her mother. The child's mother performed all of the video recording. The equipment used was a SONY MiniDV camcorder, mounted on a small tripod, allowing the mother to set the camera running and then to move away, in order to interact with the child on camera. A Sony ECM-MS907 microphone was also

used. The duration of the recordings ranges from approximately 30 to 60 minutes. When recording was completed, the CCLAS collaborator in Chisasibi sent the recordings electronically to Memorial University of Newfoundland, where the majority of CCLAS researchers are based. The video recordings then underwent the CCLAS data processing.

3. Data Processing Procedure

Each CCLAS video-recorded session was segmented into individual records in a *Phon* database in order to isolate the children's utterances.[33] Child speech was independently transcribed into the International Phonetic Alphabet (IPA) by two transcribers, following the double-blind protocol for data transcription. These transcriptions were then independently verified by a team of two other transcribers.[34]

A native NE Cree speaker, in this case, the mother of Child (A1), then provided the adult target form for each child utterance. These were in turn transcribed into IPA, as well as Cree roman orthography. The IPA target and IPA actual forms were tagged for syntactic and morphological categories.[35] Stress in IPA target forms was initially transcribed impressionistically; these transcriptions were then verified using Praat acoustic analysis software, and any necessary changes were made. The final outcome of this process is a 'complete' CCLAS record, an example of which is found in Figure 10. (For more information on the data processing procedure employed by CCLAS, see Brittain et al. 2007.)

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[33] *Phon* is linguistic database and compilation software developed at Memorial University of Newfoundland (see Rose et al. 2006; 2007 for more detail about this application).

[34] The transcribers were not NE Cree speakers but had previously completed courses in phonetics and were trained in the transcription of NE Cree child speech.

[35] The interlocutor's (adult) speech has not been transcribed in all cases but is available in the case that contextual information about a particular child utterance is crucial to the analysis.

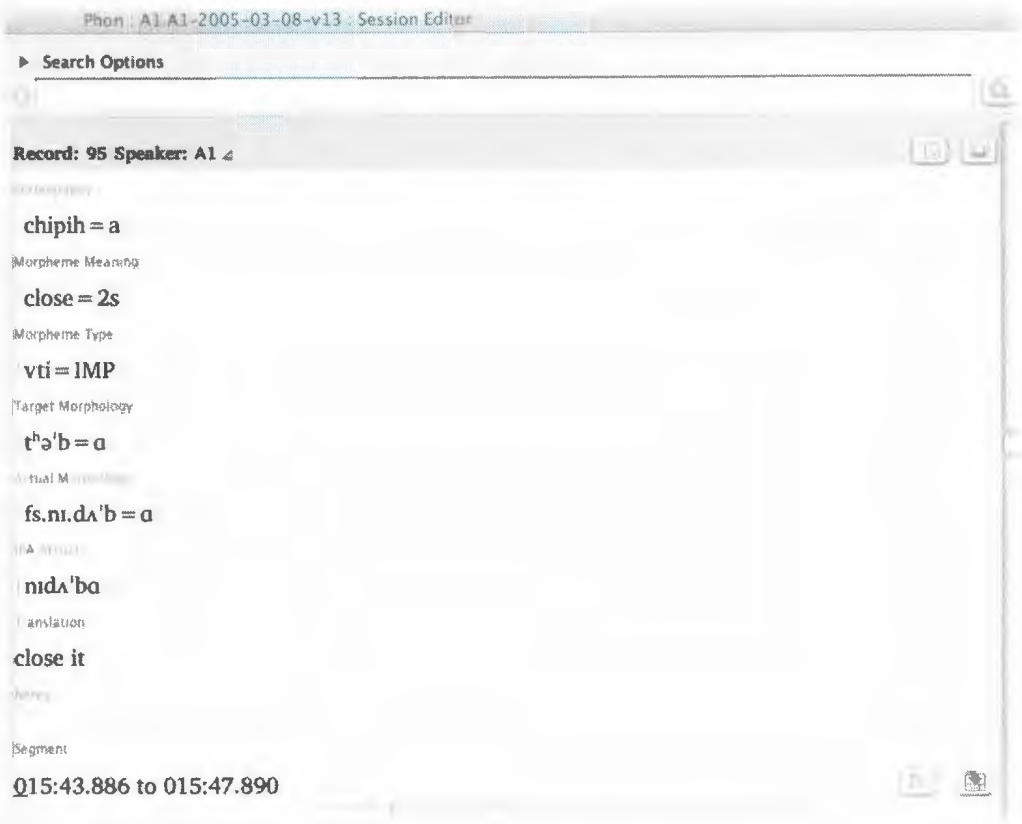


Figure 10. Snapshot of processed *Phon* record

4. The Present Case Study

For the current study, I examined ten video recorded sessions, a subset of the CCLAS corpus of Child (A1). These sessions were recorded at intervals of approximately two months. My case study begins with the recording made on March 8th, 2005 (when Child (A1) was 2;01.12) and ends with the recording made on October 18th, 2006 (when Child (A1) was 3;08.24). The study thus covers a span of approximately 19 months. In each of these sessions, the Child (A1) interacts with a native NE Cree speaker (her mother) in a naturalistic setting. In Figure 11, I provide a summary of the 10 sessions.

Child (A1)'s Age	Date of Recording	Length of Recording Session
2;01.12[36]	March 8, 2005	38:59
2;03.24	May 18, 2005	37:08
2;06.05	July 29, 2005	49:42
2;07.19	September 14, 2005	39:37
2;09.28	November 21, 2005	48:41
2;11.15	January 9, 2006	36:54
3;01.18	March 14, 2006	30:28
3;04.09	June 2, 2006	40:08
3;06.23	August 16, 2006	31:53
3;08.24	October 18, 2006	30:16

Figure 11. Recording sessions under study

For the sake of the analysis, all intransitive verbs were identified in the ten recording sessions so that they could undergo closer study. Transcripts of the pertinent information from the intransitive verb records are found in the tables in Appendices A through J.

In order to document the emergence of Child (A1)'s intransitive inflectional system, I made both qualitative and quantitative observations, through comparison of the child's speech and the adult target form, about intransitive verb forms in each of the ten recording sessions. The results of this investigation are found in chapter 6 and further discussed in chapter 7. Before we tackle these discussions, I first present observations about the nature of the caretaker's speech to the child in the next chapter.

[36] The age format used for Child (A1) is Year;Month.Day.

Chapter 5 - The NE Cree Caretaker's Speech

1. Introduction

Researchers have found that caretaker speech, often referred to as 'motherese' or 'child-directed speech', differs markedly from speech addressed to adults in a variety of languages (e.g. Sachs et al. 1976; Sachs 1977; Garnica 1977; Pye 1983, 1986; Crago and Allen 1998; Gomez-Lopez 1998). Crosslinguistically, however, caretakers do not universally modify their speech to children in a significant manner (e.g. Schieffelin and Ochs 1983).

Does a special form of caretaker speech exist in NE Cree? If so, what are its characteristics? Apart from investigations into code switching in Montagnais (Drapeau 1995), baby talk in Cree (Jones 1988), and pitch modifications in Mi'kmaq (Fee and Shaw 1998), we know very little about the nature of adult speech to children in any Algonquian language.

Although a detailed analysis of NE Cree caretaker speech is not the primary objective of this thesis, I offer some qualitative observations of the nature of the mother's speech to Child (A1) in this chapter, some of which are supplemented by quantitative assessments. This discussion is also informed by an interview with another native NE Cree speaker caretaker, Luci Bobbish-Salt. This investigation of NE Cree caretaker speech provides key information about the nature of the input to the child, informing the remainder of the present study.

It is important to first provide some cautionary comments. First, although the recording sessions took place in a naturalistic setting (i.e. the family's home), the mother did receive some instructions from CCLAS investigators about how to engage the child (to try to get Child (A1) to speak). These instructions might have affected conversational style during the recorded interactions. Secondly, the majority of the observations are based on the speech of only one NE Cree mother to one child. The conversational style presented here is, therefore, not necessarily representative of NE Cree mothers in general.

In section 2, I present data on the conversational style the mother uses with Child (A1). In section 3, I discuss the possibility of a special register in NE Cree caretaker

speech. Finally, I discuss a special NE Cree child form vocabulary in section 4. Throughout these sections, I include relevant evidence about caretaker speech from other languages and comment on how the characteristics of the NE Cree caretaker's speech may affect the child's linguistic development.

2. The Caretaker's Conversational Style

Some characteristics of the mother's conversational style include: (a) a high frequency of questions and commands/request; (b) the posing of questions to which the answer is known; (c) the direct modelling of linguistic forms (e.g. 'Say ___!'); (d) 'repeat after me' and 'say with me' language socialization routines; and (e) the singing of songs with the child. In this section, I describe and discuss each of these characteristics of the caretaker's speech.

2.1. High Frequency of Questions and Commands/Requests

The high frequency of questions and commands/requests in the mother's speech to Child (A1) is qualitatively striking. Questions and commands appear to occur at a higher frequency in the caretaker's speech than expected in what could be considered more natural adult exchanges.

In order to quantitatively measure the production of statements vs. questions and commands/requests in child directed speech, the comparative frequency of these constructions was measured in one video recording session (when Child (A1) is age 3;08.24). This session was chosen because the native Cree speaker (who provided the translations and target forms of the child's speech) provided translations for a high number of the caretaker's utterances.

Each of the caretaker's utterances in the session is broadly classified into one of the following four categories based on communicative intent: (a) statements (containing a verb); (b) questions; (c) commands and requests; and, (d) fragments (e.g. an isolated letter of the alphabet, a number, an interjection).[37]

[37] For a comparable classification system (applied to child speech), see Hack and Mellow 2007.

The results of the study are found in Figure 12. A total of 343 child directed caretaker utterances during this recording session are attested. Of these, 269 are categorized according to the classification system previously outlined.[38]

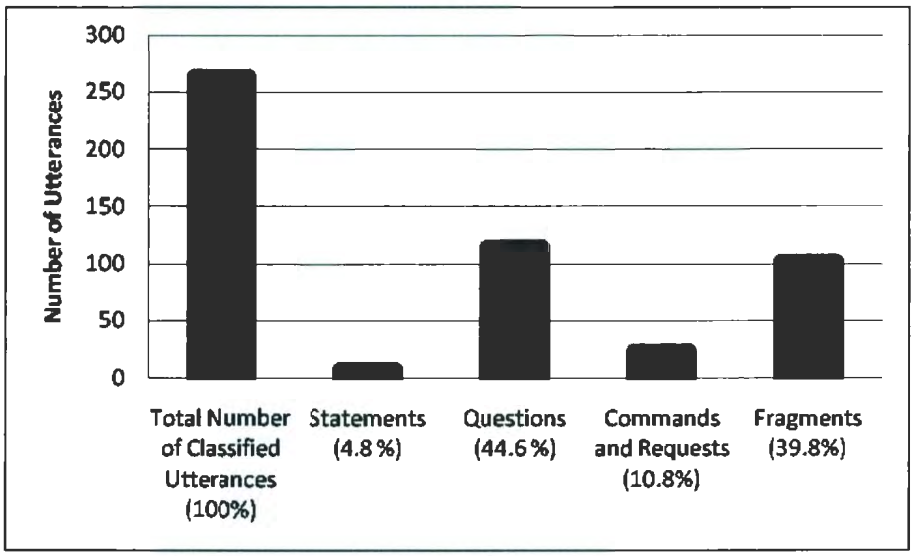


Figure 12. NE Cree caretaker's utterances: communicative intent (Child (A1) age 3;08.24)

Statements account for only 4.8% of the mother's total classified utterances. The high frequency of questions (44.6% of total classified utterances) in the caretaker's speech indicates that the NE Cree caretaker views the child as a conversational partner with whom linguistic interaction is sought. The high frequency of questions also indicates that the child is exposed to a high number of interrogative forms. By extension, because verbs in interrogative clauses containing a *wh-* word are inflected in the conjunct order, these results suggest that the child has often been exposed to conjunct forms, at least in the context of the recording sessions. It should also be noted, however, that polar questions, which are encoded in the independent order, were also included in the

[38] Others are not classified for several reasons: (a) no target/translation form was provided by the Cree consultant; (b) the caretaker's speech was unintelligible (due to sound quality issues in the recording); or, (c) the caretaker's utterance consisted of the lines of a song (in English).

'questions' category. Therefore, the claim that the high proportion of questions corresponds to a high proportion of conjunct order verbs is only suggestive; further research needs to be carried out to confirm this hypothesis.

Research into adult speech (not directed towards a child) does suggest that the conjunct order is more prevalent than the independent in Algonquian languages. In Woods Cree, Starks (1994) finds that 48 percent of verbs in a conversational text are in the conjunct order while 45 percent are in the independent. In a narrative text, 75 percent are in the conjunct and only 23 percent are in the independent.

The frequency of commands and requests (10.8%) is also relatively high in comparison to that of statements. Based on observations of the child directed speech to Child (A1) in other recording sessions, I suspect that commands/requests often occur at an even higher rate than in the present session. These results indicate that the child is frequently exposed to imperative inflectional morphology.

The high number of fragments in this session is likely a result of the types of activities the caretaker and child are performing in this session. In the recording, mother and daughter recite the alphabet and practice counting.

A number of researchers (e.g. Wells 1983; Cameron-Faulkner et al. 2003) have made observations about the rate of statements vs. questions, etc. in the speech of English speaking caretakers. For example, Cameron-Faulkner et al. (2003) found that 32% of English child directed utterances were questions, 9% were imperatives, and 20% were fragments (not full sentences). On the basis of such results, Tomasello concludes that "spontaneous speech, perhaps especially speech addressed to children, is not like written and other formal modes of discourse" (2003: 111). The speech that children learning English hear is often unlike that which we consider a prototypical English sentence: having SVO word order, having an overt subject, etc. Sachs et al. (1976) compared English caretaker's speech toward children vs. toward another adult. Interrogative constructions occurred at a drastically higher rate (49.6% of all utterances) in child directed speech than in adult directed speech (6.4%).

In order to further the claim that child directed speech differs from that of adult to adult speech in NE Cree, in terms of frequency of statements vs. questions, etc., a

comparison between the statistics found in Figure 12 and those in adult to adult speech is required (similar to the comparisons made for English). Unfortunately, no study on the frequency of statements vs. questions, etc. in adult directed speech currently exists for NE Cree. Until comparison can be made, suffice it say that the vast majority of the NE Cree mother's child directed utterances do not consist of indicative statements containing a verb.

2.2. The Caretaker's Engagement of the Child of the Child as a Conversational Partner and Language Socialization Practices

Throughout the recording sessions the NE Cree mother seeks to engage the child in conversation and also partakes in several activities of language socialization. In this section, I outline several observations that demonstrate these characteristics of the caretaker's speech.

The mother asks the child questions to which the answer is known. An illustrative example is found in (38) from the session when Child (A1) was 2;06.05.

(38) Caretaker asking child a question to which the answer is known

Adult:	*awân chîyi* [39]	'Who are you? (i.e. What is your name?)'
(A1):	*â*	'What?'
Adult:	*awân chîyi*	'Who are you?'

The mother often provides clear models, which the child, in turn, repeats. For example, in (39) the mother provides the NE Cree word as a model for Child (A1) (age 3;08.24). This exchange occurs after the child has said 'puppy' in English several times. Child (A1) then repeats the word that the mother has modelled. (This example also indicates that the mother actively encourages the child to use NE Cree, as opposed to those of English origin.)

[39] IPA transcriptions are not provided in this section (and elsewhere in this chapter) because, here, we are not necessarily interested in the phonetic form of the utterances but rather the content of the interaction between caretaker and child.

(39) Mother providing model to the child

Adult:	*achimush*	'Puppy'
(A1):	*achimush*	'Puppy'

The mother also often provides models to the child by repeating a word or phrase that the child has previously produced. In (40), the child has just said the NE Cree word *pâyikw* 'one' but mispronounces the final segment (she aspirates, rather than labializes, word final [k] (recall that /k/ and /k^{w}/ contrast phonemically). The mother then repeats the word and adds particular emphasis to the labialization of [k]. This indicates that the mother actively engages in correcting the child's speech.

(40) Mother repeating child's utterance and correcting pronunciation

(A1):	*pâyikw* ['bajk^{h}]	'one'
Adult:	*pâyikw* ['bajk^{w}]	'one'

The mother also actively encourages the child to speak and practice linguistic forms using routines with the meaning 'Say ____!'. In (41), the mother both provides a model and encourages the child (age 3;08.24) to practice using language.

(41) Mother using 'Say ___!' routine

Adult:	*"nikischihun!" chititikun*	'Say, 'I'm the best'!'
(A1):	*nikischihun*	'I'm the best.'

The example in (42) again demonstrates that the mother discourages the use of English (or, perhaps, more positively, encourages the use of Cree). In this case, the attempt is met with only a limited degree of success.

(42) Mother telling child to say NE Cree equivalent

(A1):	*snow an mânitâh snow*	'Snow (Eng). Over there is snow (Eng).'
Adult:	*snow... kûn chîyi*	'Snow (Eng)... Say 'snow'!' (Lit. Snow (Eng)...Snow you.
(A1):	*kûn snow*	'Snow snow (Eng)'
Adult:	*îhî*	'Yes'

During the earliest session in the case study (when she is 2;01.12), Child (A1) herself uses this routine as in example (43). This indicates that the child is exposed to these constructions from a very young age.

(43) Child (A1) using 'Say __!' routine

(A1):	*Boots*	'Boots'[40]
Adult:	*Boots*	'Boots'
(A1):	*"Boots" îsh*	'Say 'Boots'!'

The caretaker also engages the child in 'repeat after me' and 'say/sing with me' routines such as counting and singing songs.

In several recording sessions, the caretaker practices the Cree numbers 1 through 10 with Child (A1). In the earlier sessions, the mother provides the model with the child repeating each number in turn. In later sessions, Child (A1) often takes the lead during this activity. The child first says the number and the adult repeats (providing a form of positive reinforcement). The dialogue in (44) is typical of these interactions.

[40] According to Child (A1)'s mother, this is a name that (A1) has for a toy rather than referring to the footwear.

(44) Practicing Cree numbers (child leads; age 3;04.09)

(A1):	*Ây mâ mommy. Pâyikw*	'Like this Mommy. One.'
Adult:	*Pâyikw*	'One'
(A1):	*Nîshu*	'Two.'
Adult:	*Nîshu*	'Two'
(A1):	*Nishtu*	'Three'
Adult:	*Nishtu*	'Three'
(A1):	*Nâu*	'Four'
Adult:	*Nâu*	'Four'
(A1):	*Niyâyu*	'Five'
Adult:	*Niyâyu*	'Five'
(A1):	*Kutwâsch*	'Six'
Adult:	*Kutwâsch*	'Six'
(A1):	*Nîshwâsch*	'Seven'
Adult:	*Nîshwâsch*	'Seven'
(A1):	*Niyânânâu*	'Eight'
Adult:	*Niyannânâu*	'Eight'
(A1):	*Pâyikushtaw*	'Nine'
Adult:	*Pâyikushtaw*	'Nine'
(A1):	*Pâyikushtaw*	'Nine'
Adult:	*Pâyikushtaw*	'Nine'
(A1):	*Â? Pâyikushtaw*	'What? Nine'
Adult:	*Pâyikushtaw*	'Nine'
(A1):	*Mitâhtu*	'Ten'
Adult:	*Mitâhtu*	'Ten'

Mother and daughter also practice counting from 1 to 10 in English.

The mother and child also sing songs together in both English and Cree. In English, they recite the 'ABC Song', 'Happy Birthday' and 'Twinkle, Twinkle, Little Star'. These routines constitute the vast majority of the English the NE Cree mother uses with Child (A1) during the recording sessions. Otherwise, the mother generally only speaks in Cree.

In (45), mother and daughter sing a Cree song about the days of the week (to the same tune as 'Oh My Darling, Clementine').

(45) Mother and Child (A1) singing *Pâyikw tiwishtâu* (age 3;01.18)

Adult:	*Pâyikw tiwishtâu*	'One week'
Adult and (A1):	*Pâyikw tiwishtâu*	'One week'
Adult:	*Nîshwâshch anitâh*	'There are seven'
Adult and (A1):	*Chîshikâu*	'Days'

(Mother and child repeat this verse and then mother continues on to new verses without Child (A1) singing along.)

The mother and daughter also sing songs about NE Cree colour terms (sometimes to the same tune as 'Twinkle, Twinkle, Little Star', sometimes to the tune of 'The ABC Song'.

(46) Mother and Child (A1) singing 'NE Cree Colours Song' (age 3;04.09)

Adult:	*Mihkwâ,*	'Red,'
Adult and (A1):	*Ushâwâshiu, Pichiskinâu,*	'Yellow, Blue,'
Adult:	*Shikutâunâkun, Usâwâu, Wâpâu*	'Yellow, Green, White,'
Adult and (A1):	*Wiyipâu*	'Black,'
Adult:	(continues singing)	

The NE Cree mother also sings a Cree birthday song (to the tune of 'Happy Birthday') to Child (A1). NE Cree caretakers tend to creatively add Cree words to common tunes while singing to their children (Luci Bobbish-Salt, p.c.).

In sum, the observations presented in this section indicate that the NE Cree mother engages the child as a conversational partner and practices several language socialization

routines. These behaviours also occur in North American white, middle class (WMC) caretaker speech (e.g. Schieffelin and Eisenberg 1984)

This type of linguistic behaviour is not, however, universal to caretaker-child speech. For example, the NE Cree mother's behaviour differs markedly from that which Crago and Allen (1998) describe for 'traditional' (as opposed to younger) Inuktitut mothers (those over age 45 at the time of Crago and Allen's study).

Crago and Allen (1998) indicate that the language socialization practices of these mothers differ substantially from those of WMC caretakers. Traditional Inuktitut caretakers never ask children questions to which they know the answer and never make requests for 'displays of expressive language from the child'. Companionship and discipline are carried out in silence, as are activities of daily living such as eating, bathing, etc.

As such, Crago and Allen (1998) conclude that Inuktitut children rarely perform the role of a conversational partner with traditional mothers. Inuktitut children instead interact more often with their peers and siblings.

Crago and Allen (1998) argue that younger Inuktitut mothers are, however, adopting language socialization practices typical of North American WMC caretakers. Young Inuktitut mothers typically engage children as conversational partners. Crago and Allen attribute this change in behaviour to the younger mothers' emulation of WMC practices. The high level of interaction between the NE Cree mother and Child (A1) described above may result from a similar shift from more traditional language socialization practices. However, because the traditional language socialization practices of NE Cree mothers are, to my knowledge, not documented, this remains a question for future research.

3. Pitch Modifications

In several studies, WMC English speaking caretakers have been found to modify their pitch considerably (higher) when addressing children (e.g. Sachs et al. 1976; Sachs 1977; Garnica 1977). This phenomenon also occurs in several other languages (e.g. in French, German, Italian, and Japanese (Fernald et al. 1989)). Sachs (1977) argues that a higher

pitch is more perceptually salient to the child and, therefore, serves as an aid to acquisition.

Crosslinguistically, however, caretakers do not universally modify their pitch in child directed speech (e.g. in Quechua (Bernstein-Ratner and Pye 1984), and in Mi'kmaq (Fee and Shaw 1998)). Bernstein-Ratner and Pye (1984) argue, therefore, that pitch modifications are culturally determined and are not universal characteristics of child directed speech.

Subjectively, there is not a significant modification to pitch in the speech of the NE Cree mother to Child (A1). This observation is consistent with the findings of Fee and Shaw (1998) for Mi'kmaq (Eastern Algonquian, as spoken in Nova Scotia) child directed speech. Fee and Shaw (1998) compare fundamental frequencies in child vs. adult directed speech and find no significant difference. However, a NE Cree consultant does indicate that caretakers do modify their pitch when speaking to children (Luci Bobbish-Salt, p.c.). A quantitative analysis of NE Cree child vs. adult directed speech should be carried out in order to confirm or deny the qualitative observation provided here.

Other phonological characteristics of caretaker speech mentioned by a NE Cree consultant are the lengthening of nasal consonants (e.g. [n] to [nn]), lengthening of vowels (e.g. [ɑ] to [ɑ:], palatalization (e.g. [s] to [ʃ]), and affrication (e.g. [t] to [tʃ]) (Luci Bobbish-Salt, p.c.). Although these processes are not explored further here, they offer a promising area for future research.

4. NE Cree Child Form Vocabulary

NE Cree caretakers use a special child form vocabulary with their children. This vocabulary consists of forms that generally follow a regular phonological pattern (reduplication). These forms are used with children up to around the age of 3;0 (Luci Bobbish-Salt, p.c.).

The child forms in (47) have been identified in the case study.

(47) Child vocabulary found in Child (A1)'s speech

Verbs	
nânâ	'eat'
chûchû	'drink'
kîkî	'hurt'
mîmî	'sleep'
pûpûsh	'pee'

Nouns	
pîpî	'baby'
tûtû	'Cameron' (Child (A1)'s brother's nickname)

These child forms share several phonological characteristics. They have a CV: syllable structure, consist of reduplicated syllables, and are accented on the initial syllable.[41] Additionally, the vowels in these words are generally long (tense).

These factors make child forms particularly salient perceptually and facilitate articulation. Open syllables are unmarked syllable structures. Reduplicated syllables are perceptually salient, according to Peters (1983, 1985), because they consist of repeated subunits. These reduplicated forms also require fewer changes in articulatory gesture and, therefore, are tuned to the young child's production limitations. NE Cree words most often have extrametrical final syllables (Dyck et al., 2008). Therefore, the rhythmic structure (accent on the penultimate syllable) of these 'baby' words is prototypical of two syllable words in the language. The vowels are perceptually salient, when compared with their short counterparts, due to their increased length. A NE Cree consultant indicates that these words are used because they are 'easy to say' (Luci Bobbish-Salt, p.c.).

Initially, adults use child form verbs with very small children without any inflection. For example, at age 2;03.24, the NE Cree mother uses the uninflected form *mîmî* with Child (A1) who then repeats the word. Eventually, however, adults add AI

[41] Reduplication is regularly exploited in normal CMN adult language (i.e. non-child forms) as a derivational process. For example, with some verbs, reduplication of the initial syllable gives an iterative meaning.

verbal inflection (Marguerite MacKenzie, p.c.). Specutively, the adults' addition of inflection is triggered by the perception of childrens' growing linguistic capabilities. Child (A1)'s speech itself provides evidence of this progression. As we can see in (48), Child (A1) uses uninflected child vocabulary forms at age 2;06.05.

(48) Child (A1)'s uninflected child form productions (age 2;06.05)

a. *mîmî*
'mimi
sleep
(AI)child.form
'sleep'
mimi

b. *kîkî*
'gigi
hurt
(AI)child.form
'hurt'
digi

By age 3;08.24, however, the child produces inflection with child form roots. (See chapter 6, section 5 for further discussion of the Child (A1)'s child form verbs.)

(49) Child (A1)'s inflected child form productions (age 3;08.24)

a.	*mîmî*	*-u*
	mi'mij	-o
	sleep	-3
	(A1)child.form	-IIN
	's/he sleeps'	
	mimij	-o:

b. *ni- kîkîsh -n*
nə- ˈgigiʃ -ɪn
1- be.hurt.DIM -1/2
1- (AI)child.form.DIM -IIN
'I am hurt'
Ø- gigis -jɪd

Child form vocabularies exist in many languages (e.g. Ferguson 1964, 1977). Several of the characteristics of the NE Cree child form vocabulary also commonly occur in child form vocabularies in other languages. Reduplication and CVCV syllable sequences are common traits crosslinguistically (Ferguson 1964, 1977). Additionally, the NE Cree child forms words cover semantic concepts commonly encoded in child form vocabularies in other languages (e.g. bodily functions, food, drink, kin terms, etc.; Ferguson 1964, 1977).

Child form vocabularies and phonological/morphological simplifications exist in a number of languages which, like NE Cree, display complex morphological systems: Mayan Quiché (Pye 1983, 1986), Inuktitut (Crago and Allen 1998) and Huichol (Gomez-Lopez 1998).

In Inuktitut, Crago and Allen (1998) found that traditional mothers use a specific child form lexicon frequently with young children until about the age of 3;0.

(50) Inuktitut child forms (Crago and Allen 1998: 262)[42]

a. Child Form: *apâpa* (Age 1;0)
'food/eat'
Adult: *nirigumavunga*
niri -guma -vunga
eat -want -IND.1sgS
'I want to eat'

[42] The abbreviations used in the Inuktitut examples are: IND indicative; IMP imperative; POL politeness; 1 first person; sg singular; d dual; S subject.

b. Child Form: *atai* (Age 1;4)
'go outside'
Adult: *anilaurluk*
ani -lauq -luk
go.out -POL -IMP.1dS
'let's go outside'

These Inuktitut baby forms are phonologically simpler than, but unrelated to, the adult counterpart. Additionally, Inuktitut child forms may or may not carry the normal word-internal or inflectional affixes. So, although the child forms cater to the child's early phonological capabilities, they do not necessarily break down the morphologically complexity of the adult language. This differs from the NE Cree child forms in that NE Cree adults initially use these with children with reduced morphological complexity (i.e. lack of inflectional affixes).

Another lexical characteristic of the NE Cree mother's speech that occurs commonly in child directed speech crosslinguistically is the use of diminutive forms (Luci Bobbish-Salt, p.c.). Ferguson (1977) views this as a universal of 'baby talk', although it is unclear whether diminutive forms have been attested in child-directed speech in all languages (for which child-directed speech has undergone study). In example (51), the NE Cree mother uses the diminutive suffix when addressing Child (A1).

(51) Mother's diminutive form (Child (A1) age 3;08.24)

achimu *-sh*
dog -DIM
'puppy'

5. Conclusions

In this chapter, I have presented evidence that indicates that the NE Cree caretaker's speech contains a high number of questions and commands/requests. The mother engages Child (A1) as a conversational partner, performs several language socialization routines, and does not seem to modify pitch to a significant degree. Additionally, NE Cree caretakers use a special child form vocabulary with young children, as well as numerous diminutive forms.

With the present discussion of NE Cree caretaker speech complete, I return to the main focus of this thesis, the results of the case study on Child (A1)'s acquisition of verbal inflection, in the following chapter.

Chapter 6 - Observations from the Case Study

In this chapter, I detail the findings of the case study into Child (A1)'s emerging system of verb inflection. I present data from Child (A1)'s speech regarding the following: (1) the frequency of verbs relative to other parts of speech, (2) the frequency of the NE Cree verb transitivity classes, (3) the emergence of AI inflection, (4) the emergence of II inflection, (5) child vocabulary forms, and (6) other acquisition phenomena.

1. Frequency of Verbs Relative to Other Parts of Speech

In order to quantify the frequency of verbs relative to other parts of speech (nouns and particles), the total number of Child (A1)'s verb tokens and the total number of all tokens were calculated.[43] The results of this study are found in the table in Figure 13.

Child A1's Age	Total Verb Tokens	Total Tokens	Proportion of Verbs
2;01.12	29	265	10.9
2;03.24	55	167	32.9
2;06.05	51	367	13.9
2;07.19	68	264	25.8
2;09.28	56	305	18.4
2;11.15	53	488	10.9
3;01.18	73	323	22.6
3;04.09	75	673	11.1
3;06.23	82	735	11.2
3;08.24	107	1029	10.4

Figure 13. Frequency of verbs relative to other parts of speech

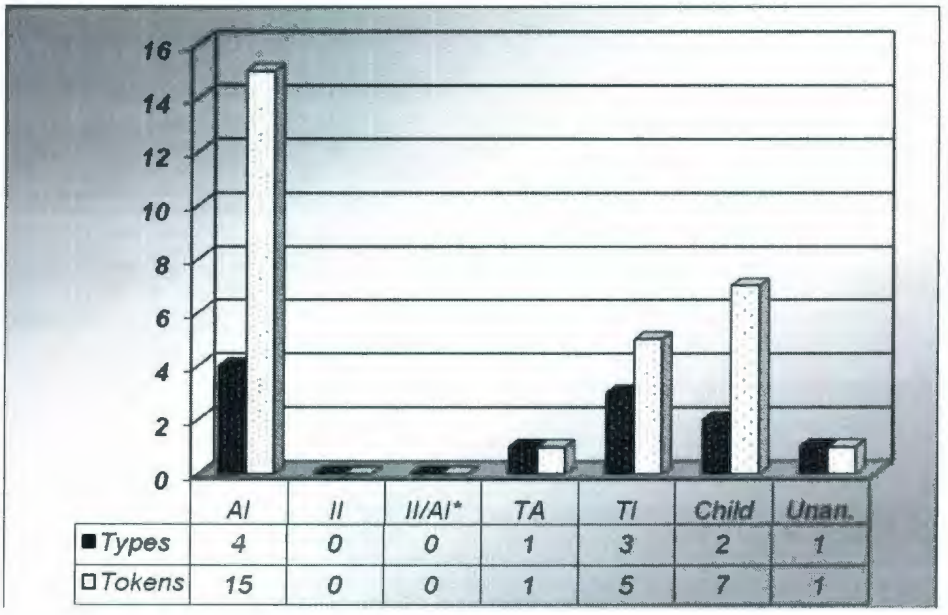
In six of the ten sessions, verbs represent 10.4 to 13.9 percent of all tokens. During the other four sessions, there are significant increases in this rate: the highest being 32.9 percent at age 2;03.24. However, there is no general chronological pattern to these increases. Context may be responsible for the increased verb use during these

[43] These figures include tokens for which the internal morphology could not be analyzed (see footnote 44 below) but were identified as words by the native speaker.

sessions (e.g. in a session where the child is often telling the caretaker to do something, we would expect a higher frequency of verbs).

2. Frequency of Transitivity Classes

In this section, I provide data on the relative frequency of the transitivity classes for each of the ten recording sessions under study. Verbs are categorized as AI, II, TA, II, child vocabulary forms, AI/II or unanalyzable.[44] The statistics include figures for both verb types and tokens. These figures were calculated using the adult target forms provided for Child (A1)'s productions by a native NE Cree speaker.

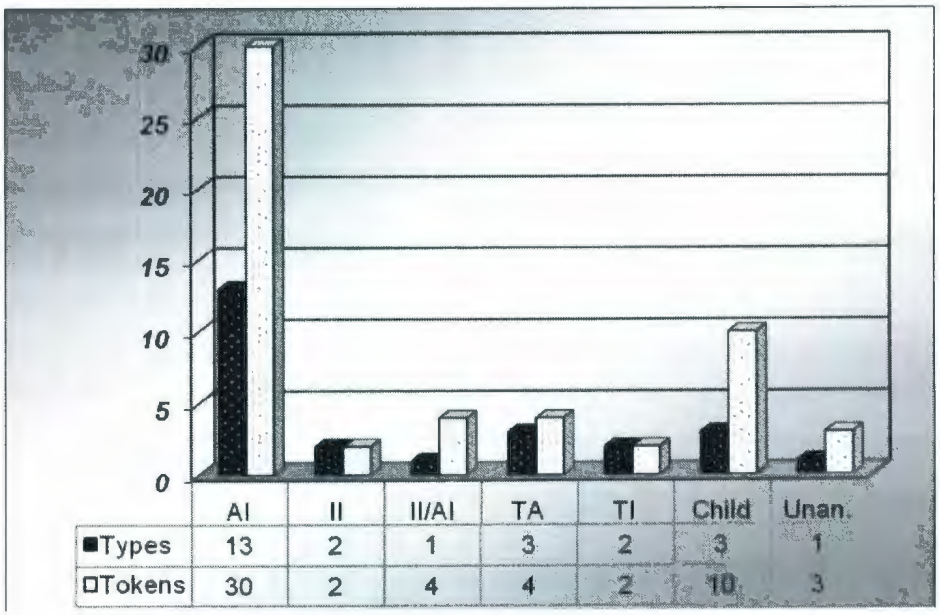


	AI	II	II/AI*	TA	TI	Child	Unan.
■Types	4	0	0	1	3	2	1
□Tokens	15	0	0	1	5	7	1

Figure 14. Transitivity classes: age 2;01.12

[44] Although child vocabulary forms does not constitute a transitivity class (these verbs are eventually inflected in the AI), they are classed differently for the purposes of this study due to their unique behavior. The AI/II category consists of two verb types in Child (A1)'s data, *nipîu* 's/he/it is wet' and *pihchihtin* 's/he/it is falling', which are identical in the II and AI. These are classed separately because context does not always allow for identification of the class, whether AI or II, to which a particular child token belongs. Unanalyzable forms are those for which: (a) the native speaker identified a target verb form for child speech was deemed to be intranscribable, or (b) both the adult target form and child transcription were provided but no discernible similarity existed between these forms.

In the initial session (Figure 14), the most frequent verb class in terms of both verb types and tokens is the AI. This class remains the most frequent in terms of verb type in all of the subsequent recording sessions.[45] The other verb classes are infrequent during the initial session.



	AI	II	II/AI	TA	TI	Child	Unan.
■Types	13	2	1	3	2	3	1
□Tokens	30	2	4	4	2	10	3

Figure 15. Transitivity classes: age 2;03.24

In the second recording session (Figure 15), the same general trends found in the previous session are replicated.

[45] In only two anomalous cases, explained below, the AI is not the most frequent verb class in terms of verb tokens.

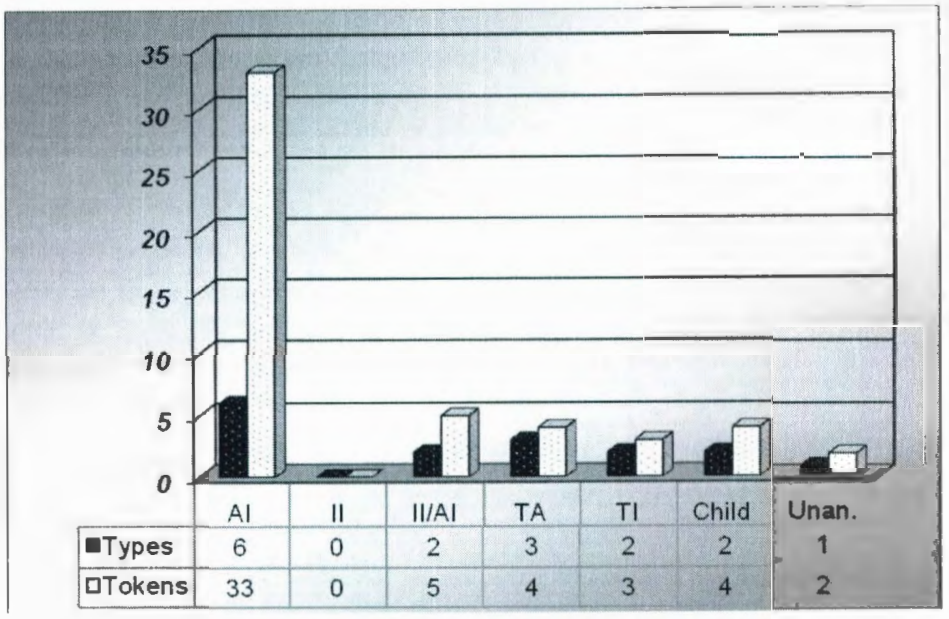


Figure 16. Transitivity classes: age 2;06.05

The same general trends which were found in the previous session reoccur during the third recording session (Figure 16).

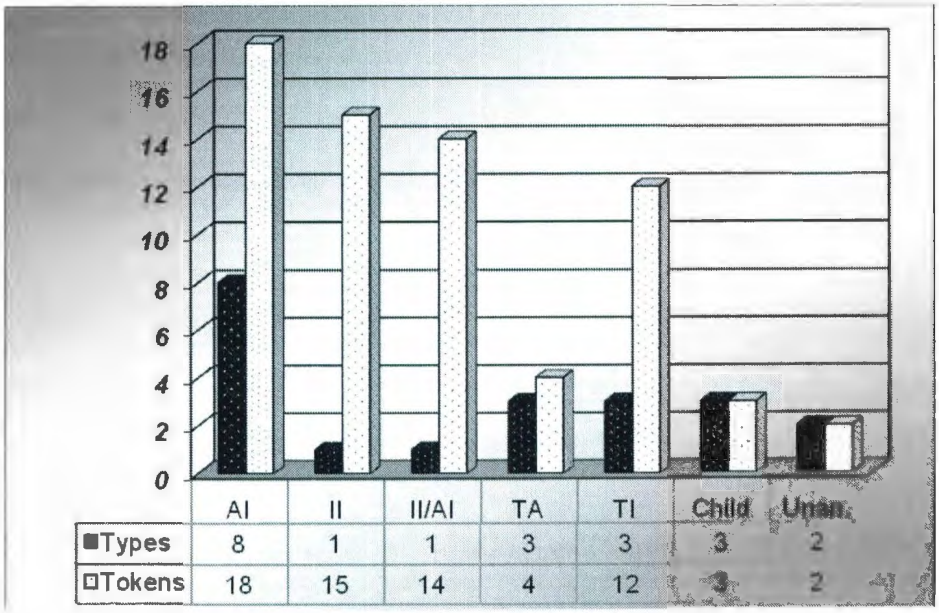


Figure 17. Transitivity classes: age 2;07.19

In the fourth recording session (Figure 17), the AI verb class remains the most frequent verb class in terms of both types and tokens. However, relative to the previous sessions, there is a spike in the number of tokens in the II, II/AI, and TI classes. These spikes are anomalous as they result from cases where one verb type is repeated frequently. Of the 12 TI tokens, 5 and 6 respective tokens belong to two types.

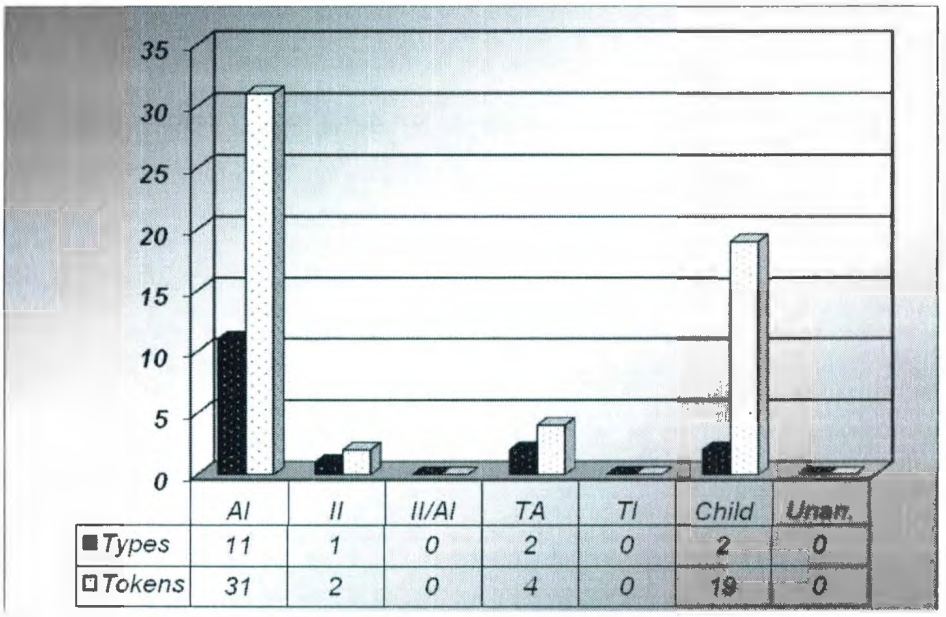


Figure 18. Transitivity classes: age 2;09.28

In the fifth recording session (Figure 18), the general trend of the majority of types and tokens belonging to the AI class continues, while the others are relatively infrequent. Of the 19 child vocabulary form tokens, 16 belong to one verb type.

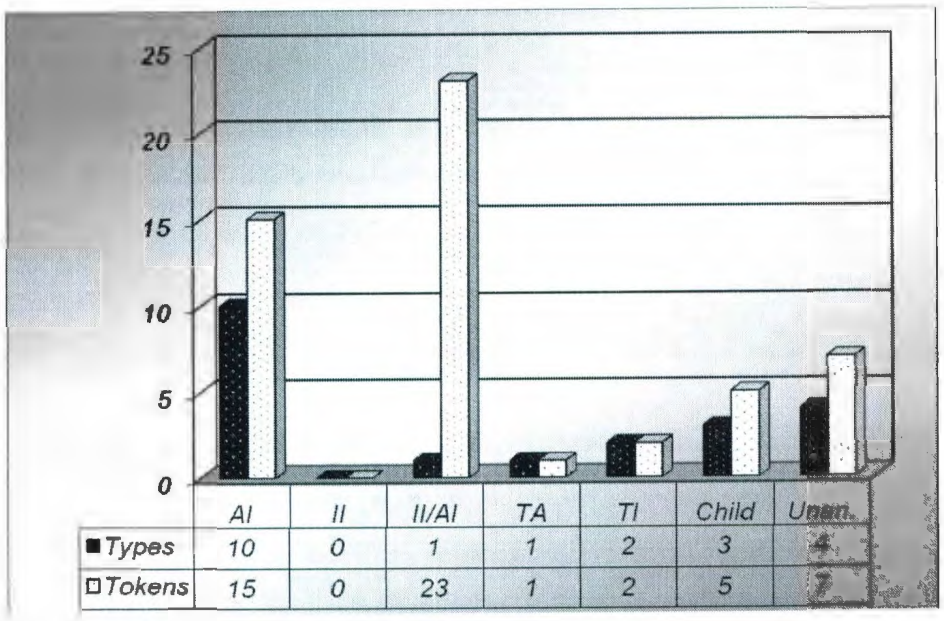
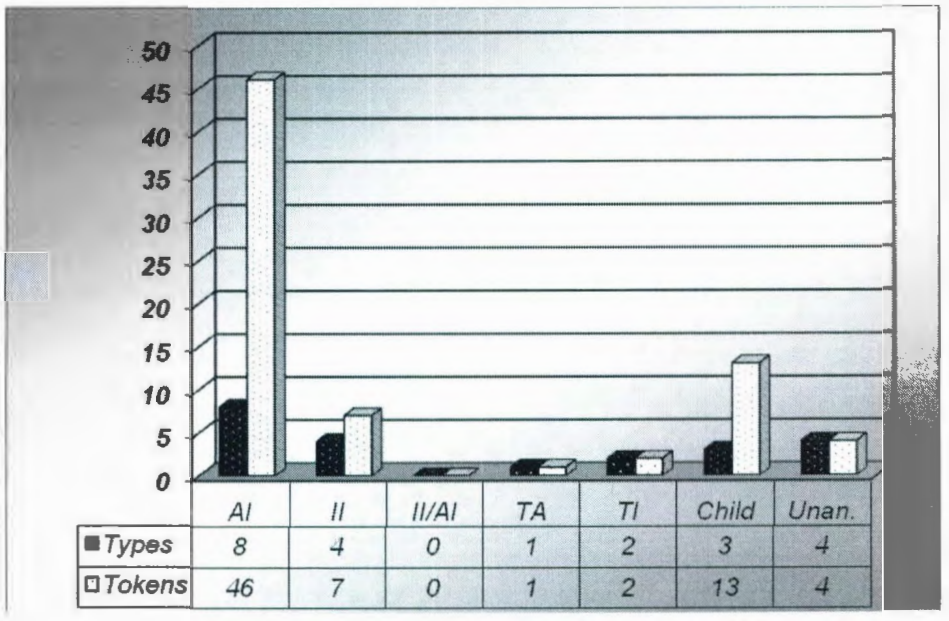


Figure 19. Transitivity classes: age 2;11.15

The general trend of the predominance of AI types and tokens continues in the sixth recording session (Figure 19). The spike in the number of tokens in the II/AI is anomalous as all of the tokens belong to one type.[46]

[46] I use the term 'anomalous' in this context to refer to frequently repeated tokens which cause the token figures for the corresponding verb class to be unrepresentative of the usage of that class (in relation to the corresponding number of verb types). This in no way suggests that the child's frequent repetition of some tokens is anomalous.



	AI	II	II/AI	TA	TI	Child	Unan.
Types	8	4	0	1	2	3	4
Tokens	46	7	0	1	2	13	4

Figure 20. Transitivity classes: age 3;01.18

In the seventh recording session (Figure 20), the AI class continues to predominate. However, we begin to see an increase in the frequency of the II: a trend which continues in the subsequent sessions. Two of the II verb types (three tokens) are forms which are sung by the child after hearing the words sung by the caretaker (see chapter 5, section 2.2 for examples of songs sung by the NE Cree caretaker).

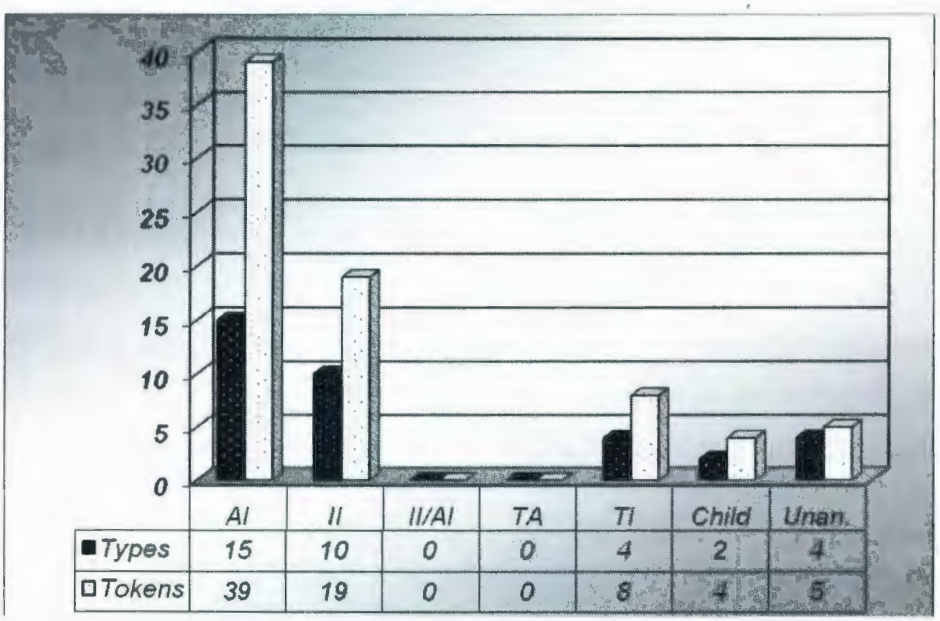


Figure 21. Transitivity classes: age 3;04.09

In the eighth recording session (Figure 21), the AI remains the most frequent verb class, but there is a marked jump in the frequency of the II. Only one II verb type (one token) is, however, not a sung form.

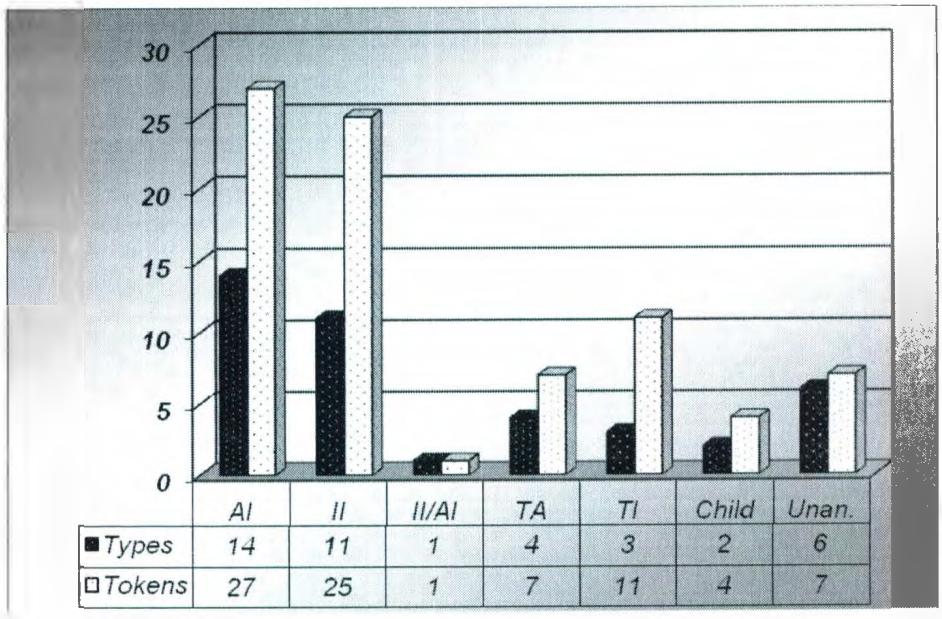


Figure 22. Transitivity classes: age 3;06.23

During this, the ninth session (Figure 22), the level of II frequency, in terms of both types and tokens, begins to approach that of the AI. Only six II verb types (nine tokens), however, are forms that are not sung.

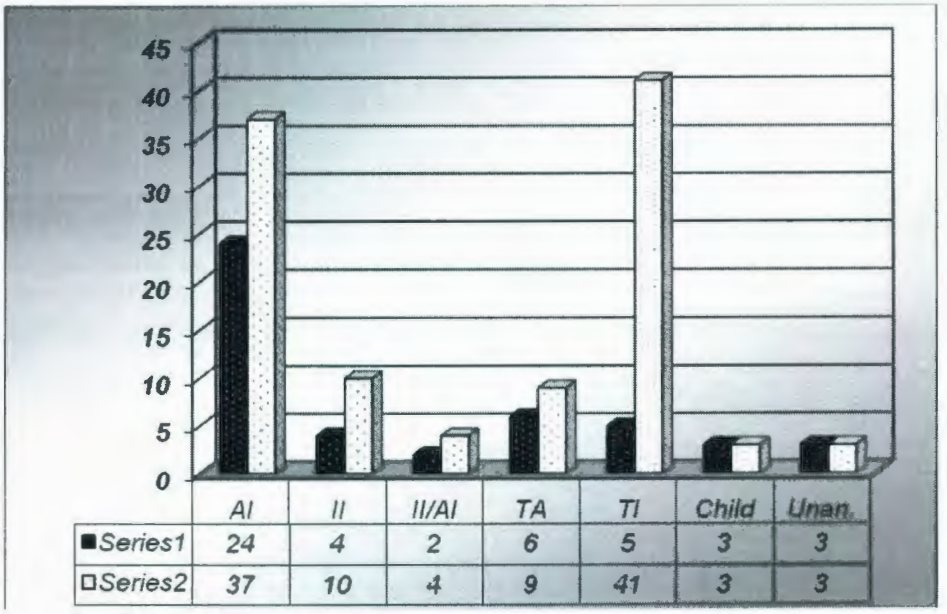


Figure 23. Transitivity classes: age 3;08.24

In the final recording session (Figure 23), the AI continues to be the most prominent class in terms of type frequency while the TI has overtaken it in terms of token frequency. This is, however, anomalous as 31 of the 41 tokens belong to one verb type. The frequency level of the II class has diminished dramatically from the preceding session. However, unlike in the previous three sessions, none of the II verb types or tokens is a sung form.

In sum, the main finding of this investigation into the relative frequency of verb classes in the speech of Child (A1) is that the AI class is generally the most frequent in terms of verb types and, ignoring anomalous cases, in terms of verb tokens. The II becomes more frequent in the later recording sessions, although this result is confounded somewhat by the child singing songs which contain these forms during these sessions. The transitive verb classes, the TI and TA, are relatively infrequent in terms of both types and tokens, when several anomalous cases are disregarded.

Due to the relative infrequency of transitive tokens in the data, the remainder of this study does not focus on the emergence of transitive inflectional morphology but

rather centres on that of the intransitive. Transitive verbs indubitably become more frequent later on in the child's development. It is suggested, therefore, that future research should investigate the emergence of transitive morphology in an older NE Cree-speaking child.

3. The Emergence of Animate Intransitive (AI) Inflection

In the following section, I present observations on the emergence of AI inflection. I provide data on the relative frequency of the different verb orders (independent, imperative and conjunct) for AI verbs before describing the emergence of the more specific inflectional classes: independent indicative neutral (IIN), imperative (neutral) and conjunct independent neutral (CIN) paradigms. Only these three verb paradigms (of the 16 in the adult language, see chapter 3, section 4.2) are represented in the child's AI verb productions, each corresponding to one of the three orders.

3.1. Relative Frequency of the Orders in AI Verbs

In Figure 24, the relative frequency (by count of verb type) of the three orders, the independent (IIN), imperative (neutral) and conjunct (CIN) is graphed.

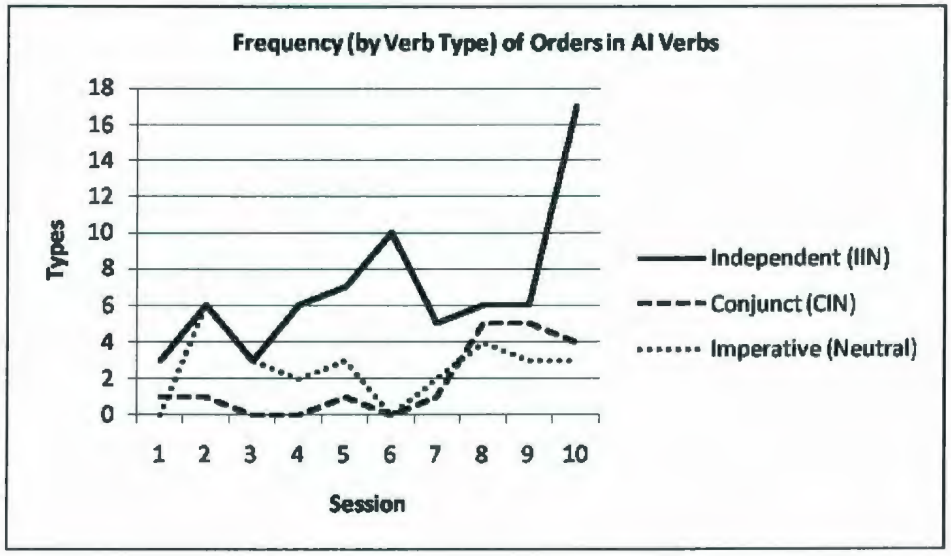


Figure 24. Relative frequency (by verb type) of orders in AI verbs

The independent (IIN) is the most frequent order of the AI verb types throughout the sessions, and there is a general upward trend in the frequency of this order as Child (A1) gets older. The frequency of the imperative order (neutral) remains relatively stable throughout the ten sessions. The conjunct order (CIN) is produced very rarely before the eighth session (at age 3;04.09) when its frequency rises sharply.

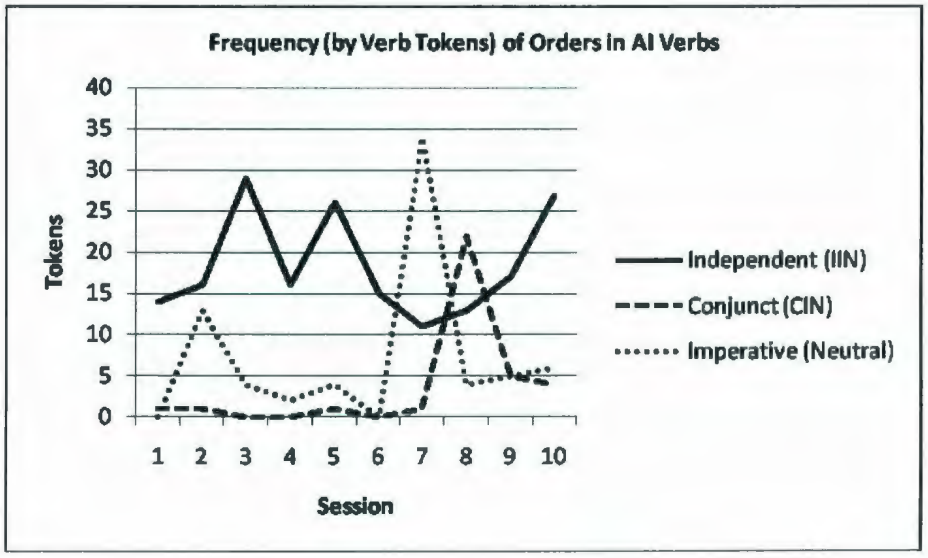


Figure 25. Relative frequency (by verb tokens) of orders in AI verbs

A comparison of the frequency of verb tokens in the three orders (Figure 25) shows a similar pattern to that seen in Figure 24 (frequency of verb types) with the independent (IIN) generally being the most frequent order. There are two distinct spikes in the chart: one for the imperative order at session 7 and another for the conjunct order at session 8. Both spikes are anomalous; the result of a small number of verb types being repeated numerous times. In session 7, one imperative verb type has a total of 33 tokens; in session 8, two conjunct types have a combined total of 19 tokens.

There is evidence that Child (A1) erroneously uses IIN inflection on verbs in syntactic positions requiring the conjunct order. During the earliest session, the child uses

an IIN verb with the *wh-* question word *tân* 'where' which requires a verb in the conjunct order (52). The correct form in this syntactic context is AI CIN *tân âhtâ-yi-ch.*

(52) Ungrammatical use of IIN inflection in context requiring conjunct (age 2;01.12)[47]

**tân*	*ihtâ*	*-yi*	*-u*[48]
*ˈdæn	ˈda	-j	-o
how	be.final	-obv	-3
p,quest	initial.(AI)final	-obv	-IIN
'where is s/he?'			
*dʌ	da	-j	-wo

Based on the frequency data and the erroneous form in (52), it is evident that the independent order (and the IIN paradigm in particular) predominates in Child (A1)'s speech during the time period under study.

3.2. The Emergence of IIN Inflection (AI)

In this section, I present data on the emergence of inflectional morphology in the most frequent paradigm in Child (A1)'s speech: the IIN. For the outline of the AI IIN inflectional system, see chapter 3, section 4.2.1.1.

The table in Figure 26 provides the gross number of all suffixes and prefixes in the AI IIN found in both the adult target forms and child forms throughout the ten

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[47] The format of all NE Cree examples in this chapter is:
-*Cree Orthography*
-Adult Target Form (IPA) (or, if ungrammatical, the adult's interpretation of what the child is trying to say)
-Morpheme Meaning Breakdown
-Morpheme Type Breakdown
-'Gloss'
-Child Actual Form(s) (IPA)

[48] The *ih* portion of the stem *ihtâ-* is not pronounced in most contexts (as in the target here). The spelling given here is conservative. In the CIN form, *âhtâ-yi-ch,* the *âh* portion (changed form) is pronounced in most contexts.

sessions. The percentage figure indicates the frequency with which the child produces the inflectional affixes.[49]

	Suffixes			Prefixes		
Child (A1)'s Age	**Target**	**Actual**	**Percentage**	**Target**	**Actual**	**Percentage**
2;01.12	17	16	**94.1**			
2;03.24	17	12	**70.6**	2	0	**0**
2;06.05	29	25	**86.2**			
2;07.19	18	11	**61.1**	4	0	**0**
2;09.28	26	23	**88.5**	2	0	**0**
2;11.15	15	12	**80**	3	1	**33.3**
3;01.18	11	5	**45.5**	2	1	**50**
3;04.09	13	11	**84.6**	1	0	**0**
3;06.23	17	16	**94.1**	3	0	**0**
3;08.24	29	20	**69**	12	5	**41.7**

Figure 26. Gross figures of all affixes in the AI IIN

The child generally produces suffixes at a high rate but has marked dips in productivity at ages 2;07.19, 3;01.18 and 3;08.24 where the percentage of production drops below 70 percent.

The frequency of attempted forms which require prefixes is far less than that of forms requiring suffixes. In the child's IIN attempted forms, those having third person subjects which do not require prefixes, outnumber those with a first or second person subject (SAP forms) which require both prefixes and suffixes).[50] Furthermore, no prefix is produced by the child until age 2;11.15, and the percentage of production of prefixes never rises above 50 percent during the case study.

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[49] The child's production of an affix has been qualitatively determined. An affix is deemed produced if the child has articulated sounds which share features with the affix in adult target form in the same position within the word.

[50] While one might expect a preponderance of you-me forms, given that the child is interacting with her caregiver, it should be remembered that many of the likely functions of interaction will elicit contexts requiring other orders (CIN for *wh*-questions, or the Imperative).

In the remainder of this section, I present data on the emergence of inflectional morphemes specific to the third person forms and SAP forms.

3.2.1. Third Person Singular Forms

The most frequently attempted forms, within the AI IIN, have third person singular subjects. The table in Figure 27 provides the number of occurrences of the AI IIN third person singular inflectional suffix *-u* in both the adult target and child productions. Comparison between these numbers provides an indication of the child's ability to produce the suffix at a given point in time.

	Suffix *–u*		
Child (A1)'s Age	**Target**	**Actual**	**Percentage**
2;01.12	14	13	**92.9**
2;03.24	13	9	**69.2**
2;06.05	29	25	**86.2**
2;07.19	10	6	**60**
2;09.28	24	20	**83.3**
2;11.15	12	9	**75**
3;01.18	9	3	**33.3**
3;04.09	12	10	**83.3**
3;06.23	14	13	**92.9**
3;08.24	15	13	**86.7**

Figure 27. Rate of production of AI IIN third person singular suffix *-u*

In Figure 28, the percentage of the child's production of *-u* forms over the ten sessions is graphed.

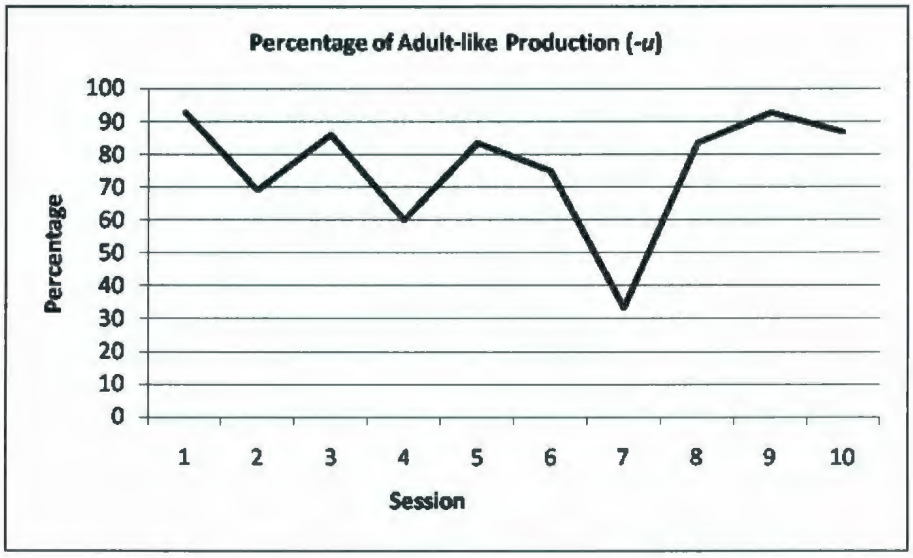

Figure 28. Percentage of adult-like production (*-u*)

There is a rough U-shaped pattern in the percentage of child productions of the suffix with the percentage generally diminishing from the first session until it rises sharply at session 8.

Several issues are, however, present within the *-u* suffix category that may skew the statistics in Figures 27 and 28. First, two distinct allomorphs are identified in the adult target forms: third person (singular) *-u* is realized as [o] when preceded by a high vowel (e.g. in (53)), and as [w] when preceded phonetically by a low vowel (e.g. in (54)). These forms differ in the ambient language and, therefore, may be perceived differently by the child, and, accordingly, behave differently during the child's acquisition path.

Secondly, one particular verb type, *ihtâu* 's/he is (t)here', is very frequent throughout the recordings, and, therefore, its high rate of production suggests that the child may produce the third person (singular) *-u* suffix at a higher rate with this form.

Thirdly, *wiyiwîu* 's/he goes out', patterns much like a child vocabulary form in Child (A1)'s speech (see chapter 5, section 4 and chapter 6, section 5) although it is part

of the normal adult lexicon; it is initially uninflected (categorically) and produced as two reduplicated syllables.[51]

In order to investigate these three issues, the third person suffix *-u* data (initially presented in Figure 27 and 28 above) is further subdivided based on the distinction between the two allomorphs of *-u* and the specific behaviour of *ihtâu* and *wiyiwîu* in Figure 29.

	-u realized as [o]			*-u* realized as [(v)w]			*-u* in *ihtâu*			*-u* in *wiyiwîu*		
Child (A1)'s Age	**Targ**	**Act**	**%**	**Targ**	**Act**	**%**	**Targ**	**Act**	**%**	**Targ**	**Act**	**%**
2;01.12	10	10	**100**				4	3	**75**			
2;03.24	1	1	**100**	4	1	**25**	7	7	**100**	1	0	**0**
2;06.05				2	2	**100**	24	23	**95.8**	3	0	**0**
2;07.19	1	1	**100**	2	1	**50**	6	3	**50**	2	0	**0**
2;09.28	5	3	**60**	3	3	**100**	14	14	**100**	2	0	**0**
2;11.15	7	7	**100**				4	2	**50**	1	0	**0**
3;01.18				1	1	**100**	4	2	**50**	4	0	**0**
3;04.09	1	1	**100**	2	1	**50**	8	8	**100**	1	0	**0**
3;06.23	6	5	**83.3**	3	3	**100**	5	5	**100**			
3;08.24	10	8	**80**	2	2	**100**	1	1	**100**	2	2	**100**

Figure 29. Rate of production of *-u* forms in the AI IIN third person

In forms in which *-u* is realized as the allomorph [o], the suffix is generally produced at a high rate during the first eight sessions; it is present in 100 percent of the forms except for a dip to 60 percent at age 2;09.28. In the final two recording sessions, the percentage of production of *-u* in [o] forms drops to 83.3 percent and 80 percent respectively. Examples of both uninflected and inflected child forms are shown in (53).

[51] Although the translator of the forms consistently translates *wiyiwîu* as 's/he goes out', the East Cree Online Dictionary (http://www.eastcree.org/en/dictionary.html) provides another translation: 's/he defecates'. This meaning supports the proposal that this word behaves like other members of the special child form class because words denoting bodily functions are common amongst the child forms (e.g. *pûpûsh* 'she urinates'). Additionally, the NE Cree native speaker often provides the uninflected form ['wiwi] as the adult target for the child's productions; she similarly frequently provides the uninflected form of other child vocabulary items as the adult target for these words.

(53) *-u* Forms ([o] in target)

a. Inflected (age 3;06.23)

api	*-u*
ˈɛb(v)[52]	-o
sit.final	-3
initial.(AI)final	-IIN
's/he is sitting'	
eb	-ʊː

b. Uninflected (age 3;06.23)

nîmi	*-u*
ˈnim(v)	-o
dance.final	-3
initial.(AI)final	-IIN
's/he is dancing'	
ɪm	-Ø

AI IIN third person forms realized as [(v)w] are also generally produced with the inflection intact. The inflection is produced 100 percent of the time except in three sessions at ages 2;03.24, 2;07.19 and 3;04.09 where the rate drops to 25, 50 and 50 percent respectively. Both uninflected and inflected forms are exemplified in (54).

[52] (v) in the examples represents an underlying vowel.

(54) *-u* Forms ([(v)w] in target)

a. Inflected (age 3;06.23)

nipâ	*-u*
nəˈba	-w
sleep.final	-3
initial.(AI)final	-IIN
's/he is sleeping'	
ba	-w

b. Uninflected (age 3;04.09)

pîhchichâ	*-u*
ˈbitʃa	-w
go.in.final	-3
initial.(AI)final	-IIN
's/he is going in'	
midʒɑ	-Ø

Therefore, it appears that both allomorphs of *-u*, [o] and [(v)w] are generally produced at a high rate throughout the sessions, with dips in the rate of production of both allomorphs during several sessions.

The *-u* suffix in the verb *ihtâu* is generally produced at a high rate except for during three sessions near the middle of the period under study, at ages 2;07.19, 2;11.15 and 3;01.18, where it drops to 50 percent. There is, therefore, a general U-shaped pattern in the production of the suffix in this form (with a spike back to 100 percent at age 2;09.28). Examples of both inflected and uninflected child productions of *ihtâu* are found in (55).

(55) *-u* Forms (*ihtâu*)

a. Inflected (age 3;04.09)

ihtâ	*-u*
'da	-w
be.final	-3
initial.(AI)final	-IIN
's/he is (t)here'	
da	-w

b. Uninflected (age 3;01.18)

ihtâ	*-u*
'da	-w
be.final	-3
initial.(AI)final	-IIN
's/he is (t)here'	
dɑ	-Ø

The *-u* suffix in *wiyiwîu* 's/he goes out, s/he defecates' is not produced by the child at all until the very last recording session at age 3;08.24. This verb form, therefore, follows a similar pattern to child vocabulary forms in Child (A1)'s speech (see section 6 below). Examples of both inflected and uninflected child forms of *wiyiwîu* are found in (56).

(56) *-u* Forms (*wiyiwîu*)

a. Inflected (age 3;08.24)

wiyiwî	*-u*
ˈwiwij	-o
go.out.final	-3
initial.(AI)final	-IIN

's/he goes out, s/he defecates'

wiwij	-o

b. Uninflected (age 3;01.18)

wiyiwî	*-u*
ˈwiwij	-o
go.out.final	-3
initial.(AI)final	-IIN

's/he goes out, s/he defecates'

wiwi	-Ø

In sum, there are three general patterns in the production of *-u*; adult target forms in which *-u* is produced as [o] or [(v)w] are generally produced at a high percentage with dips in production during some sessions, *-u* in the frequent verb *ihtâu* is produced at a high rate during the early and late sessions of the case study with a general dip during the middle sessions (U-shaped developmental pattern), *-u* in the verb *wiyiwîu* is not produced at all until the very last session of the case study (and follows the same pattern as child vocabulary forms).

3.2.1.1. IIN Third Person (Singular) Forms as Defaults

There is evidence that Child (A1) uses the AI IIN third person singular types as 'defaults'; these forms are used with first and second person intended meanings (sometimes along with first or second person emphatic pronouns). This phenomenon only occurs in the AI IIN during the final two sessions under study, at ages 3;04.09 and 3;08.24. For example, at age 3;06.23, the child uses third person singular inflection in a

verb which has an intended second person meaning and which is accompanied by the second person emphatic pronoun *chîyi*. (This is the only example of this type of error with the second person in the case study.)

(57) Erroneous use of AI IIN third person singular inflection with second person intended meaning (age 3;06.23)

**shâsh*	*chîyi*	*û*	*api*	*-u*
ˈʃæʃ	ˈʤi	ˈo	ˈɛb(v)	-o
already	2	this	sit.final	-3
p,time	pro	pro	initial.(AI)final	-IIN
'you are sitting'				
*pæʃ	diəhe	Ø	eb	-ʌ

AI IIN third person singular verbs also occur with intended first person singular meaning and the first person emphatic pronoun *nîyi*. This type of error occurs once at age 3;04.09, and five times at age 3;08.24. Note that this error occurs most frequently at the same age, 3;08.24, when the child's AI IIN first person singular forms are in flux (see section 3.2.3).

(58) Erroneous use of AI IIN third person singular inflection with first person intended meaning (age 3;08.24)

**kiyâh*	*nîyi*	*ituhtâ*	*-u*
ˈgija	ˈni	ˈit^{h}da	-w
also	1	go.final	-3
p,conj	pro	initial.(AI)final	-IIN
'I am going'			
*gʌn	nes	da	-w

3.2.2. Other AI IIN Third Person Inflection

Several other third person AI IIN inflections appear rarely in Child (A1)'s productions. These are the third person plural suffix *-ich* and the obviative suffix *-yi*. In the table in Figure 30, the frequency of these suffixes in both the adult target forms and child forms is presented. The percentage of the child's rate of production is also provided.

	-yi obviative			*-ich* 3pl		
Child (A1)'s Age	**Target**	**Actual**	**Percentage**	**Target**	**Actual**	**Percentage**
2;01.12	3	3	**100**			
2;03.24				1	1	**100**
2;06.05						
2;07.19				2	2	**100**
2;09.28						
2;11.15						
3;01.18						
3;04.09						
3;06.23						
3;08.24	2	2	**100**			

Figure 30. Rate of production of AI IIN suffixes *-ich* (third person plural) and *-yi* (obviative)

The obviative suffix *-yi* is produced only in the very first and last recording sessions. The child produces adult-like forms 100 percent of the time. All 5 tokens in which this inflection occurs are of the same verb type (59).

(59) Forms with obviative suffix *-yi*

ihtâ	*-yi*	*-u*
ˈda	-j	-o
be.final	-obv	-3
initial.(AI)final	-obv	-IIN
's/he is there'		
(Age 2;01.12)		
da	-j	-wo
da	-j	-na
da	-j	-wa
(Age 3;08.24)		
da	-j	-ʌ
da	-j	-o

The third person plural is attempted during only two sessions at ages 2;03.24 and 2;07.19. The child produces the *-ich* suffix 100 percent of the time. All three tokens in which this suffix occurs are of the same verb type (60).

(60) Forms with plural suffix *-ich*

ihtâ	*-w*	*-ich*
ˈda	-w	-ətʃ
be.final	-3	-pl
initial.(AI)final	-IIN	-pl
'they are (t)here'		
(Age 2;03.24)		
dæ	-d	-ɛ
(Age 2;07.19)		
bæ̱	-Ø	-t^h
a	-w	-tʃ

3.2.3. First Person Forms

In the following section, I present data on Child (A1)'s production of AI IIN first person (singular) forms which require both a prefix (*ni-*) (see chapter 3, section 4.2.1.1 for information on the allomorphs of this prefix) and the SAP suffix (*-n*) in the adult language.

In the table in Figure 31, the frequency of first person prefixes and suffixes found in both the adult target forms and child forms are provided. The percentage of the child's rate of production is also provided.

	Prefix (*ni-*)			Suffix (*-n*)		
Child (A1)'s Age	**Target**	**Actual**	**Percentage**	**Target**	**Actual**	**Percentage**
2;01.12						
2;03.24						
2;06.05						
2;07.19	4	0	**0**	4	4	**100**
2;09.28	2	0	**0**	2	2	**100**
2;11.15	3	1	**33.3**	3	3	**100**
3;01.18	2	1	**50**	2	2	**100**
3;04.09	1	0	**0**	1	1	**100**
3;06.23	3	0	**0**	3	3	**100**
3;08.24	14	7	**50**	14	7	**50**

Figure 31. Rate of production of affixes in the AI IIN first person (singular)

Until the recording at age 2;07.19, none of the child's forms are in the first person. From age 2;07.19 to 3;06.23, forms such as the one in (61), in which the suffix *-n* is produced but the prefix *ni-* is missing, predominate, with the prefix only being produced twice.

(61) Example of first person form with suffix *-n* produced, prefix *ni-* missing (age 2;09.28)

ni-	*kîhtâ*	*-n*
nɪ-	kəˈda	-n
1-	future.be.final	-1/2 here
1-	preverb.initial.(AI)final	-IIN
'I will not be here'		
Ø-	gəda	-n

During the final recording session (at age 3;08.24), however, there is a change in this pattern. The child begins producing the prefix *ni-* more frequently but begins to drop the suffix *-n* which, previously, was produced in 100 percent of the first person forms. At this age, the child's productions do not follow any general pattern (such as deleting the suffix when the prefix is present, etc.). Rather there are four different configurations which occur in the child's speech: prefix missing/suffix missing (62a), prefix present/ suffix present (62b), prefix present/suffix missing (62c), and, finally, prefix missing/suffix present (62d).

(62) Examples of first person child productions (age 3;08.24)

a.

ni-	*iskulu*	*-n*
nə-	ˈskʊlu	-n
1-	go.to.school.final	-1
1-	initial.(AI)final	-IIN
'I go to school'		
Ø-	ɛskolo	-Ø

b. *ni- kushtâ -n*
nə- ˈkʊʃda -n
1- be.afraid.final -1/2
1- vai + o -IIN
'I am scared of it'
nɛ- ʃdɪ -n

c. *ni- kischihu -n*
ˈnɪ- kstsʊ -n
1- know.how.to.do.final -1/2
1- initial.(AI)final -IIN
'I know how to do'
nɪ- ʃʤa -Ø

d. *ni- mâchî -n*
nə- ˈmadʒi -n
1- leave.final -1/2
1- initial.(AI)final -IIN
'I am leaving'
Ø- mʌʤi -n

At the same age, 3;08.24, the child begins to use the first person emphatic pronoun *nîyi* with these forms (there are no cases of *nîyi* used with first person singular verb forms before this age). There is, however, no distinct pattern in the use of *nîyi* in relation to the morphology present in the first person singular forms. Of the six cases where *nîyi* and first person forms co-occur, two of the verb forms carry neither the prefix nor the suffix, one carries the prefix but not the suffix, two carry the suffix but not the prefix and one carries both the prefix and the suffix. Note that this is also the age at which the child also uses third person singular forms with intended first person meaning (see section 3.2.1.1).

In the table in Figure 32, data on the production of the two *ni-* allomorphs that Child (A1) attempts are presented. The allomorph [nə- ~ nɪ-] (occurring before consonants) is the most frequently attempted allomorph. The allomorph [ənd-] (occurring before vowels other than /u/) is attempted only twice. The allomorph [n-] (occurring before /u/) is not attempted. Forms in which the target has the allomorph [nə- ~ nɪ-] are the only type for which Child (A1) ever produces the prefix. This may not be significant, however, because of the rarity of [ənd-] attempted forms in the data.

	Allomorph [nə- ~ nɪ-]			Allomorph [ənd-]		
Child (A1)'s Age	Target	Actual	%	Target	Actual	%
2;01.12						
2;03.24						
2;06.05						
2;07.19	4	0	0			
2;09.28	1	0	0	1	0	0
2;11.15	3	1	33.3			
3;01.18	2	1	50			
3;04.09	1	0	0			
3;06.23	3	0	0			
3;08.24	13	7	53.8	1	0	0

Figure 32. Production of *ni-* by allomorphs

3.2.4. Second Person Forms

AI IIN second person forms require both a prefix *chi-* (see chapter 3, section 4.2.1.1 for information on the allomorphs of this prefix) and the SAP subject suffix *-n* in the adult language. In the table in Figure 33, the frequency of second person prefixes and suffixes found in both the adult target forms and child forms is provided. The percentage of the child's adult-like productions is also indicated.

	Prefix (*-chi*)			Suffix (*-n*)		
Child (A1)'s Age	Target	Actual	Percentage	Target	Actual	Percentage
2;01.12						
2;03.24	2	0	0	2	1	50
2;06.05						
2;07.19						
2;09.28						
2;11.15						
3;01.18						
3;04.09						
3;06.23						
3;08.24						

Figure 33. Rate of production of affixes in the AI IIN second person (singular)

Child (A1) rarely attempts AI IIN second person (singular) forms during the entire case study. The sole exceptions to this occur at age 2;03.24, when the child produces two tokens of the same verb type (63) (in this case the allomorph of *chi-* in the adult language is [ʃ]).

(63) Child (A1)'s AI IIN second person forms (age 2;03.24)

chi-	*chihchipiyi*	*-n*
ʃ-	ʃtəˈbi	-n
2-	go.away.inchoative	-1/2
2-	initial.(AI)final	-IIN
'you are going away'		
Ø-	dɪb	- Ø
Ø-	əbi	-n

The child's two productions are similar in form to early AI IIN first person productions (see section 3.2.3) in that the person prefix (*chi-*) is not represented. The more general SAP agreement suffix *-n* is represented in one of the two instances.

3.3. The Emergence of Imperative (Neutral) Inflection (AI)

In this section, I present data regarding the emergence of AI imperative (neutral) inflection: beginning with the second person singular suffix and followed by the first person plural (inclusive) suffix. For the outline of the AI imperative (neutral) inflectional system, see chapter 3, section 4.2.1.1.

3.3.1. Second Person Singular Forms

The table in Figure 34 provides data on the frequency of the AI imperative (neutral) second person singular suffix *-h* in terms of both adult target and child forms. The percentage of the child's adult-like productions is also provided.

Suffix (*-h*)			
	Target	**Actual**	**Percentage**
2;01.12			
2;03.24	13	10	**76.9**
2;06.05	3	3	**100**
2;07.19	1	1	**100**
2;09.28	4	3	**75**
2;11.15			
3;01.18	33	5	**15.2**
3;04.09	3	2	**66.7**
3;06.23	4	4	**100**
3;08.24	6	6	**100**

Figure 34. Rate of production of the second person singular (*-h*) suffix

The second person singular inflection is generally produced at a high rate throughout the ten recording sessions with the apparent exception of the session at age 3;01.18, where the production rate dips to 15.2 percent. The 33 AI imperative (neutral) tokens in this session are of the same verb type *ihtih* 'do!'. In this session, the child repeats this verb in rapid succession several times. For example, in one seven second-long stretch of speech, the child repeats this form eleven times (this verb is always preceded by the negative particle aka 'not' in this session, indicating that this is an unanalyzed amalgam). This behaviour appears to result in the lack of the *-h* suffix in these cases (or at least the inability to identify it on the part of transcribers). Therefore, the reduced percentage of production in this session is anomalous.

(64) Production of imperative (neutral) second person singular forms

a. Inflected (age 2;06.05)

chîyipî	*-h*
dʒiˈbi	-h
hurry.final	-2s
initial.(AI)final	-IMP
'hurry up!'	
ʤɪbɪ	-h

b. Uninflected (age 3;01.18)

ihti	*-h*
ˈiθt(v)	-ʰ
do.final	-2s
initial.(AI)final	-IMP
'do it!'	
di	-Ø

3.3.2. Second Person Plural (Inclusive) Forms

In the table in Figure 35, data on the frequency of the AI imperative (neutral) second person plural (inclusive) *-tau* suffix in terms of both adult target and child forms are provided. The percentage of the child's rate of production is also provided.

	Suffix (*-tau*)		
	Target	**Actual**	**Percentage**
2;01.12			
2;03.24			
2;06.05	1	1	**100**
2;07.19	1	1	**100**
2;09.28			
2;11.15			
3;01.18	1	0	**0**
3;04.09	1	1	**100**
3;06.23	1	1	**100**
3;08.24			

Figure 35. Rate of production of second person plural (inclusive) *-tau* suffix

This suffix is attempted infrequently: only five times throughout the entire ten sessions. It is generally produced where required with the exception of one form at age 3;01.18 in which the suffix is not produced (65).

(65) Production of imperative (neutral) second person plural (inclusive) forms

a. Inflected (age 3;06.23)

ushihtâ	*-tâu*
wɪʃˈdə	-daw
make.causative.final	-21pl
initial.(AI)final.vai + O.final	-IMP
'let's (you and I) make it'	
mɛsdɑ	-daw

b. Uninflected (age 3;01.18)

**nîy*	*-ân*	*chîwâ*	*-tâu*
**'nij*	-an	'ʤiwa	-da
1	-pl	go.home.final	-21pl
1	-pl	initial.(AI)final	-IMP

'let's (you and I) go home'

*nij	-an	duwa	-Ø

The form in (65b) co-occurs with the first person plural pronoun *nîyân* 'we (but not you)' (this is the first person plural exclusive, the child should use the second person plural inclusive pronoun *chîyânû* 'we (including you)' with this verb). This is the only form with which the pronoun co-occurs, and, interestingly, it co-occurs with the only second person plural inclusive form that does not carry inflection.

3.4. The Emergence of CIN Inflection (AI)

In this section, I present data on the emergence of AI CIN inflection in the speech of Child (A1). For the outline of the AI CIN inflectional system, see chapter 3, section 4.2.1.1.

The table in Figure 36 provides frequency data on all AI CIN suffixes (recall that conjunct forms do not have person prefixes) throughout the ten recording sessions in terms of both adult targets and tokens. The resulting percentage of production of the suffixes is also provided.

All AI CIN Suffixes			
	Target	Actual	Percentage
2;01.12	1	1	100
2;03.24	1	1	100
2;06.05			
2;07.19			
2;09.28	1	1	100
2;11.15			
3;01.18	1	1	100
3;04.09	23	13	56.5
3;06.23	5	2	40
3;08.24	4	3	75

Figure 36. Rate of production of all AI CIN suffixes

Before age 3;04.09, AI CIN verbs occur rarely but where they do they are produced in an adult-like manner. Beginning with the recording at age 3;04.09, however, there is a distinct change in this pattern; AI CIN verbs begin to be attempted far more frequently, and they are produced less faithfully to the adult target than they were initially.

3.4.1. AI CIN Third Person Suffixes

In the table in Figure 37, frequency data on all AI CIN third person suffixes found in the Child (A1) data are provided.

	Third Person Singular Suffix (*-t*)			Third Person Plural Suffix (*-ch*)			Obviative Suffix (*-yi*)		
Age of Child (A1)	**Target**	**Actual**	**%**	**Target**	**Actual**	**%**	**Target**	**Actual**	**%**
2;01.12									
2;03.24				1	1	**100**			
2;06.05									
2;07.19									
2;09.28	1	1	**100**						
2;11.15									
3;01.18									
3;04.09	1	1	**100**				1	1	**100**
3;06.23	5	2	**40**						
3;08.24	2	2	**100**						

Figure 37. Rate of production of AI CIN third person suffixes

The most frequent AI CIN third person form found in Child (A1)'s speech is the singular. It does not, however, appear until age 2;09.28, and it is used only sporadically after this age. In most cases, the child produces the third person singular suffix, as in (66).

(66) Child (A1)'s production of third person suffix *-t* (age 3;06.23)

âhtâ	*-t*
ˈætda	-d
over.there be.final	-3s
initial(IC).(AI)final	-CIN
's/he is over there'	
adɑ	-dɑ

It is only at age 3;06.23, when the production rate falls to 40 percent, that Child (A1) fails to produce the third person *-t* suffix as in (67). Child (A1) fails to produce the suffix with three different verb types.

(67) Child AI's failure to produce-*t* suffix (age 3;06.23)

châpîhchichâ	*-t*
ʤəˈbitʃæ	-d
future.3.go.in.final	-3
preverb(IC).initial.(AI)final	-CIN
'she will go in'	
ʤɑbiʤɪ	-Ø

Child (A1) produces one AI CIN third person plural form, requiring the suffix *-ch*. At age 2;03.24, the suffix is produced in an adult-like manner (68).

(68) Child (A1)'s production of AI CIN third person plural form

Suffix *-ch* produced (age 2;03.24)
ihtâ *-ch*
dʌ -tʃ
be.final-3pl
initial.(A1)final -CIN
'they are (t)here'
tɪ -tʃ

In 69, we also see the only instance of the AI CIN obviative suffix *-yi* attempted by Child (A1) in the entire corpus. The child fails to produce the third person suffix *-ch* in this case.

(69) Production of the AI CIN obviative suffix *-yi*, nonproduction of *-ch* (age 3;04.09)

ihtâ	*-yi*	*-ch*
ˈda	-j	-t^h
be.final	-obv	-3
initial.(AI)final	-obv	-CIN
'they are (t)here'		
da	-j	-Ø

3.4.2. AI CIN First and Second Person Suffixes

Child (A1) sporadically produces the AI CIN first person singular suffix *-yan* and the second person singular suffix *-yin*. The table in Figure 38 provides information on the frequency of these suffixes.

	First Person (sg) Suffix (*-yan*)			Second Person (sg) Suffix (*-yin*)		
Age of Child (A1)	**Target**	**Actual**	**Percentage**	**Target**	**Actual**	**Percentage**
2;01.12				1	1	**100**
2;03.24						
2;06.05						
2;07.19						
2;09.28						
2;11.15						
3;01.18	1	1	**100**			
3;04.09				20	11	**55**
3;06.23						
3;08.24	2	2	**100**			

Figure 38. Rate of production of AI CIN first and second person suffixes

The AI CIN first person singular suffix *-yan* is not produced until age 3;01.18. In the three instances it is attempted, it is produced as in (70).

(70) Child (A1)'s production of *-yan* (age 3;01.18)

ihti	*-yân*
ˈdj(v)	-ɛn
do.final	-1s
initial.(AI)final	-CIN
'I do'	
d(v)	-ɛn

One AI CIN first person singular verb co-occurs with the first person emphatic pronoun *nîyi* at age 3;08.24: the same age where these pronouns most frequently co-occur with AI IIN first person singular verbs.

The AI CIN second person singular suffix *-yin* is attempted once in the very first session, at age 2;01.12, but not again until age 3;04.09. At age 2;01.12, the suffix is

represented in the child's production (71a). However, at age 3;04.09, it is produced only 55 percent of the time. It should be noted, however, that, of the three (AI CIN 2s) verb types attempted at this time, only one type (*âht-i-yin*) is regularly uninflected (nine out of ten times), the two other verb types carry the inflection 100 percent of the time. An example of an uninflected form of *âht-i-yin* is shown in (71b). Note also that this verb is the same type produced with the suffix in the earlier session.

(71) Child (A1)'s AI CIN second person singular productions

a. Produced with *-yin* (age 2;01.12)

âhti	*-yin*
ˈdi	-n
do.final	-2s
initial.vai(IC).final	-CIN
'you are doing it'	
dæ	-ɹ

b. Nonproduction of suffix (age 3;04.09)

âhti	*-yin*
aˈti	-n
do.final	-2s
initial.IC.(AI)final	-CIN
'you are doing it'	
ɑdi	-Ø

3.5. Summary of Findings on the Emergence of AI Inflection

Child (A1) attempts only three different paradigms with AI verbs: the IIN, imperative (neutral) and CIN: each paradigm belonging to one of the three different inflectional orders.

The most frequently attempted paradigm is the IIN. Within this paradigm the most frequently attempted inflection is the third person singular suffix *-u*. The child generally

produces the two realizations of this suffix, [(v)w] and [o], at a high rate. The suffix is roughly produced in a U-shaped pattern in the frequently attempted form *ihtâu* 's/he is (t)here'. The child's productions of the verb *wiyiwîu* 's/he goes out' follow the same pattern as child vocabulary forms; it is initially uninflected and is inflected only in the final session under study.

The first person singular, which requires both the prefix *ni-* and SAP suffix *-n*, is the second most frequently attempted form in the IIN. However, these forms are not attempted until age 2;07.19. In the earliest attempted forms, the suffix is generally produced while the prefix is dropped. During the final session, at age 3;08.24, this trend is reversed somewhat, the child drops the suffix (50 percent of the time) and produces the prefix more frequently (also at a rate of 50 percent).

Other forms in the AI IIN are rare; the second person (prefix *chi-* and SAP suffix *-n*) is attempted only twice, the obviative suffix *-yi* five times, and the third person plural suffix *-ich* only three times. No other inflectional affixes in the AI IIN are attempted.

After the IIN, the most frequent paradigm in the AI is the imperative (neutral). The most frequently produced inflection within the imperative (neutral) is the second person singular suffix *-h*, followed by the first person plural inclusive suffix *-tan* (attempted only five times). Child (A1) generally produces both of these suffixes at a high rate. No other AI imperative (neutral) suffixes are attempted.

Suffixes in the AI CIN are rarely attempted. The most frequent (ignoring the anomalous case of *-yin*, see below) is the third person singular suffix *-t* (attempted 9 times). Other suffixes are attempted rarely: the third person plural *-ch* (1 instance), the obviative *-yi* (1 instance), the first person singular *-yan* (3 instances), and the second person singular *-yin* (21 instances). However, 20 instances of the latter appear in one session, where two verb types are rapidly repeated (9 and 10 times respectively). No other AI CIN inflectional affixes are attempted during the ten sessions under study.

4. The Emergence of Inanimate Intransitive (II) Inflection

In this section, I present data on the emergence of II Inflection. I begin by providing statistics on the frequency of the inflectional orders in II verbs. Data on the emergence of

II IIN and CIN inflection are then presented. For the outline of the II inflectional system, see chapter 3, section 4.2.1.2. Recall that the child does not need to acquire a person opposition within the II, as all II verbs are third person.

4.1. Frequency of Orders in II Verbs

The relative frequency of the independent and conjunct orders in terms of numbers of verb types is presented in Figure 39. Only two paradigms occur with II verbs in the child's speech, the IIN and the CIN.

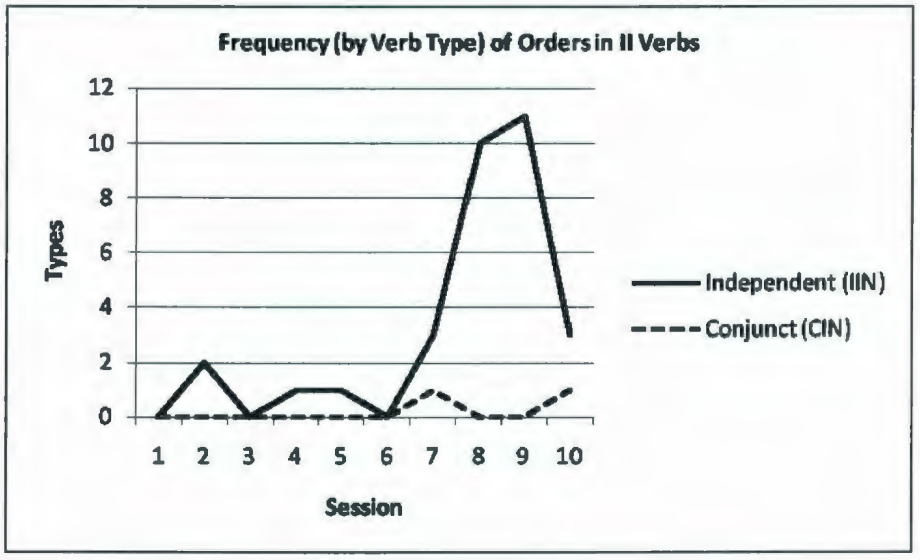

Figure 39. Relative frequency (by verb type) of orders in II verbs

The independent order (IIN) is infrequent until the seventh recording session at 3;01.18 when its frequency rises sharply. The conjunct order is very infrequent with only two instances, one at age 3;01.18 and one at 3;08.24.

In Figure 40, the relative frequency of the independent and conjunct orders in the II is provided in terms of numbers of verb tokens.

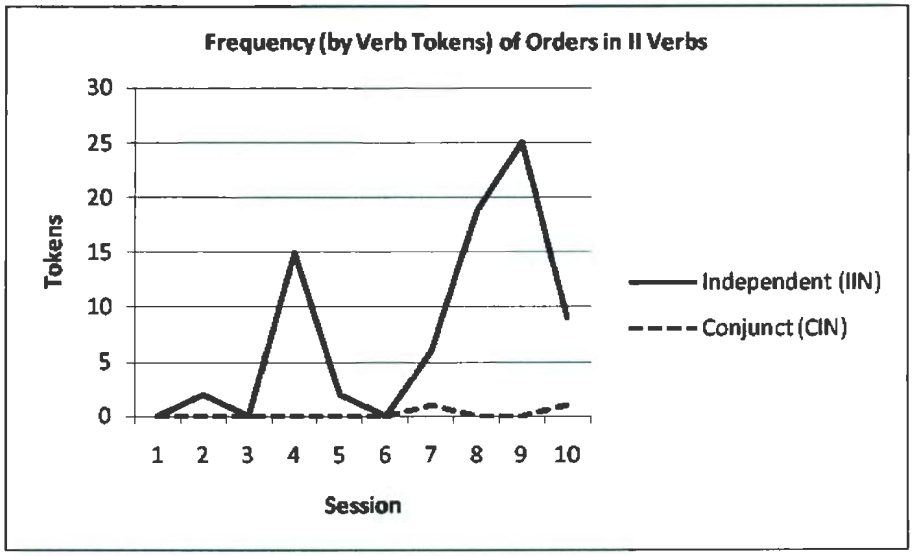

Figure 40. Relative frequency (by verb tokens) of orders in II verbs

The frequency of the orders in II verbs by verb tokens generally follows the same pattern as that of the frequency by types. During session four, at age 2;07.19, however, there is a spike in the frequency of tokens of the independent. This is the result of one verb type being repeated fifteen times.

4.2. The Emergence of IIN Inflection (II)

In Figure 41, the frequency of all II IIN suffixes is presented. In the II IIN, third person (proximate) singular, *n*-stem verbs do not carry any overt inflection as in the example in (72). In these cases, the child must eventually learn that the lack of an overt inflection is morphologically significant. The frequency of these verbs in terms of tokens is also included.

(72) Example of II IIN third person (proximate) singular *n*-stem verb

michin
'mɪʧən
be.dirty.final.0
initial.(II)final.IIN
'it is dirty'
mɪʧɪn

	II IIN Suffixes			-*n* Stems
Child A1's Age	**Target**	**Actual**	**Percentage**	
2;01.12	0	0	**0**	0
2;03.24	2	1	**50**	0
2;06.05	0	0	**0**	0
2;07.19	0	0	**0**	15
2;09.28	0	0	**0**	2
2;11.15	0	0	**0**	0
3;01.18	3	1	**33.3**	3
3;04.09	19	14	**73.7**	1
3;06.23	20	16	**80**	5
3;08.24	9	7	**77.8**	0

Figure 41. Rate of production of II IIN suffixes

Only two inflected II IIN forms are attempted before age 3;01.18, both at age 2;03.24 when the suffixes are produced at a rate of 50 percent. When these forms are next attempted at age 3;01.18, the suffixes are produced a rate of 33.3 percent. From this time on, there is a general upward trend in the rate of production.

As mentioned in section 2, however, there is a confounding factor in these statistics. From age 3;01.18 to 3;06.23, many of the II IIN forms are sung by the child. In Figure 42, these sung forms are excluded from the frequency figures. The sung forms are not considered further in this section. When these forms are excluded, only one suffix, the

third person singular *-u,* is found in Child (A1)'s speech. (The one exception to this generalization being one instance of the II IIN obviative suffix *-yi* at age 3;04.09.)

	Suffix (*-u*)			*-n* Stems
Child (A1)'s Age	**Target**	**Actual**	**Percentage**	
2;01.12				
2;03.24	2	1	**50**	
2;06.05				
2;07.19				15
2;09.28				2
2;11.15				
3;01.18				3
3;04.09	1	1	**100**	
3;06.23	5	4	**80**	5
3;08.24	9	7	**77.8**	

Figure 42. Rate of production of II IIN third person singular suffix *-u* (sung forms excluded)

With the sung forms excluded, the spike in frequency of the II IIN *-u* suffixes during the final four sessions is greatly diminished. However, the general high percentage of child production of the *-u* suffix in the final three sessions continues. In (73), examples of inflected and uninflected child forms are provided.

(73) Production of II IIN third person suffix *-u*

a. Inflected (age 3;04.09)

chikimu	*-yi*	*-u*
tʃəgu'm(v)	-ij	-o
be.stuck.final	-obv	-0
initial.(II/AI).final	-obv	-IIN
'it is stuck'		
kom	-ɪnj	-o

b. Uninflected (age 3;06.23)

kichîhchâyâ	*-u*
ʤi'ʤaja	-w
be.square.final	-0
initial.(II)final	-IIN
'it is square'	
ʤiʤɛija	-Ø

Example (73a) also attests to the only instance of the II IIN obviative suffix *-yi* in non-sung II IIN forms.

It is also interesting to note that Child (A1) never adds the third person singular *-u* suffix to the third person (proximate) singular *n*-stem verbs she produces.

4.3. The Emergence of CIN Inflection (II)

Only two instances of II CIN verbs occur during the entire ten recording sessions. Both are third person singular forms (*-ch* in the adult language). Child (A1) produces phonetic variants of this suffix in both cases, as shown in (74).

(74) Production of II CIN third person singular forms (age 3;08.24)

a.	*kâitwâhtih*	*-ch*
	geˈdɑdɪ	-tʃ
	that.make.certain.noise.final	-0s
	pvb.IC.initial.(II)final	-CIN
	'that it is making a certain noise'	
	bəɹɑpɪ	-d

b.	*nwâkih*	*-ch*
	ˈnɑkʰ(v)	-tʃ
	be.visible.final	-0s
	initial(IC).(II)final	-CIN
	'it is visible'	
	nʌ	-s

4.4. Summary of Findings on the Emergence of II Inflection

Child (A1) attempts forms in two II paradigms: the IIN and CIN. (Imperative forms do not exist for II verbs.)

The IIN is infrequently attempted before age 3;01.18. When sung forms are excluded, the child attempts only two suffixes in the IIN. The third person singular suffix *-u* is attempted a total of 17 times. The obviative suffix *-yi* is produced only once.

The II CIN is practically non-existent in Child (A1)'s speech; the third person singular suffix *-ch* is only attempted twice.

5. Child Vocabulary Forms

The frequency of inflected versus uninflected child vocabulary forms is graphed in Figure 43.

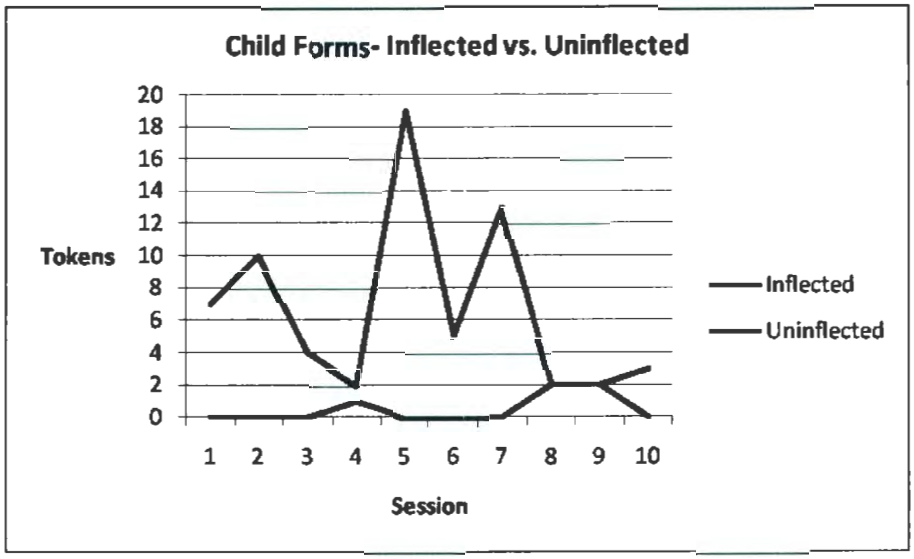

Figure 43. Frequency of inflected versus uninflected child vocabulary forms

The child vocabulary forms are generally not inflected until age 3;04.09, except for one token at age 2;07.19. At the same stage that the frequency of inflected forms increases, the frequency of uninflected forms decreases. In (75), both inflected and uninflected forms are exemplified.

(75) Examples of child vocabulary forms

a. Uninflected (age 2;03.24)
mîmî
mimi
sleep
(AI)child.form
'sleep'
diwi

b. Inflected (age 3;08.24)

mîmî	*-u*
mi'mi	-jo
sleep	-3
(AI)child.form	-IIN
's/he sleeps'	
mimi	-jo:

Uninflected forms are used with a variety of different intended meanings. For example, *mîmî* 'sleep' is translated as first person 'I am sleeping' and third person 'Barbie is sleeping' depending on the context in which the form occurs.

When these child vocabulary forms are inflected, they generally carry the AI IIN third person singular suffix *-u* as in (75b) above. However, in the final session, at age 3;08.24 two forms are in the AI IIN first person singular requiring both a prefix and suffix. In one form (76a), the prefix is represented in the child's speech but the suffix is not. In the other (76b), the suffix is present but the prefix is missing. This inconsistency is also found in the 'normal' AI IIN first person singular at the same age (see section 3.2.3).

(76) Child vocabulary forms inflected in the AI IIN first person singular (age 3;08.24)

a.

ni-	*kibyebyeu*	*-n*
ni-	gəba'baj?ʊ	-n
1-	future.leave.final	-1/2
1-	preverb.child.form.initial.(AI)final	-IIN
'I will go bye-bye'		
bi-	bʌbajo	-Ø

b.	*ni-*	*kîkîsh*	*-n*
	nə-	ˈgigiʃ	-ɪn
	1-	be.hurt.DIM	-1/2
	1-	(AI)child.form.DIM	-IIN
	'I am hurt'		
	Ø-	gigis	-jɪd

6. Other Acquisition Phenomena

In this section, I present data regarding the role of perceptual salience and the presence of bare stems in Child (A1)'s productions of verbs.

6.1. The Role of Perceptual Salience

In order to investigate the role that perceptual salience plays in Child (A1)'s productions, inflectional affixes (in intransitive verbs[53]) are coded as to whether they occur in: a final/stressed syllable, a final/unstressed syllable, a medial/stressed syllable, a medial/unstressed syllable, an initial/stressed syllable or an initial/unstressed syllable in the adult target form. In this way, two factors of perceptual salience, word position and prominence (stress) are examined. The results of this study are presented in Figure 44.

[53] Verbs were not included in these figures if they were: child vocabulary forms (whether uninflected or not), tokens of the verb type *wiyiwîn* 's/he goes out' because it patterns like child vocabulary forms, sung forms, and the anomalous tokens of the verb type *ihtih* 'do!' (at age 3;01.18) and the verb type *âhtiyin* 'you are doing' (3;04.09); these forms are repeated very rapidly in these sessions and, therefore, inclusion of these verbs in the study would skew the statistics unnecessarily.

	Child (A1)'s Age	2;01 .12	2;03 .24	2;06 .05	2;07 .19	2;09 .28	2;11 .15	3;01 .18	3;04 .09	3;06 .23	3;08 .24
Final/ Stressed Syllable	Actual	11	21	26	9	21	31	6	20	13	9
	Target	12	24	27	13	22	33	8	21	13	9
	%	**91.7**	**87.5**	**96.3**	**69.2**	**95.5**	**93.9**	**75**	**95.2**	**100**	**100**
Final/Un-stressed Syllable	Actual	3	3	4	3	5	4	1	7	14	29
	Target	3	7	4	3	7	4	2	9	19	39
	%	**100**	**42.9**	**100**	**100**	**71.4**	**100**	**50**	**77.8**	**73.7**	**74.4**
Medial/ Stressed Syllable	Actual								1		
	Target								1		
	%								**100**		
Medial/ Un-stressed Syllable	Actual										
	Target										
	%										
Initial/ Stressed Syllable	Actual										1
	Target										1
	%										**100**
Initial/Un-stressed Syllable	Actual		0		0	0	1	1	0	0	6
	Target		2		4	2	3	2	1	3	13
	%		**0**		**0**	**0**	**33.3**	**50**	**0**	**0**	**46.2**
Diphth. Affix ([54])	Actual	3	1		1						2
	Target	3	1		2						2
	%	**100**	**100**		**50**						**100**

Figure 44. Productivity of affixes by position and prominence

The vast majority of affixes that Child (A1) attempts occur in syllables that are stressed and in word final position (182 attempted forms overall). However, affixes which occur in word final syllables, but which are unstressed, are the most frequent type in the final two sessions (ages 3;06.23 and 3;08.24) (97 attempted forms overall). Affixes appearing in medial position (both stressed and unstressed) are infrequent (only one instance throughout the period covered by this case study). Affixes (prefixes) occurring in initial syllables which are stressed are also rare; there is only one form attempted during the final session. Prefixes occurring in initial, stressed syllables are attempted more frequently (but far less frequently than word final affixes), and their frequency increases

[54] This category covers diphthongized affixes (always suffixes) which occur between the ultimate and penultimate syllables; it is unclear whether these diphthongs are codas in the penultimate syllables or onsets in the ultimate syllables. In all of these cases, it is the penultimate syllable which is stressed.

as Child (A1) gets older. (30 affixes in this position are attempted throughout the case study.)

In addition to being the most frequently attempted position, affixes appearing in word final, stressed syllables are produced at the highest rate; overall, Child (A1) produces affixes in this position 91.8 percent of the time. The next most frequent type, affixes occurring in word final, unstressed syllables, are produced at an overall rate of 75.3 percent. Affixes appearing in word initial, unstressed position are produced at a rate of 26.7 percent overall.

Additionally, when Child (A1) truncates multisyllabic adult forms, she always realizes the stressed syllable of the adult word, regardless of morphological boundaries, as in (77).

(77) Child's truncated form (age 2;01.12)

mâtu	*-u*
mæˈd(v)	-o
cry.final	-3
initial.(A1)final	-IIN
's/he cries'	
d	-ʌ

The child never produces only single syllables of words categorically and, generally, when these forms do occur they are produced alongside multisyllabic productions of the same verb type. For example, at the same time that Child (A1) produces the single syllable form in (77), she produces two syllable forms of the same word.

Child (A1)'s preference for producing words of a certain phonological shape is responsible for truncations of this type. Child (A1) initially prefers words of one or two syllables in length (with words having two syllables in the target sometimes being produced with only one syllable, and words having three syllables being produced with only one or two syllables). The syllables the child produces are influenced by perceptual

salience. The child always produces the stressed syllable (or a portion thereof) of the adult target. If another syllable is produced, it tends to be adjacent to (and follow, in the case of words with penultimate stress) the stressed syllable.

In later recording sessions, the child progressively produces more and more words with more than two syllables. This suggests that her phonological template gets larger as time goes on.

The role that perceptual salience is playing in Child (A1)'s is discussed in chapter 7, section 2.1. The role that Child (A1)'s phonological template plays is further discussed in chapter 7, section 2.3.

6.2. Bare Stems

In order to investigate Child (A1)'s production of bare stems (uninflected forms), the total number of intransitive inflected tokens and the number of corresponding bare stems were calculated for each session.[55] Two patterns were noticed in the bare stem forms; many were the result of the child not producing the suffix [(v)w] (the allomorph of the A1 IIN third person singular suffix) and the suffix [h] (the imperative (neutral) second person singular suffix). Therefore, bare stems were further sub-categorized into: (1) nonproduction of diphthong [(v)w]; (2) nonproduction of [h]; and (3) other. The results of this study are provided in Figure 45.

[55] Verbs were not included in these figures if they were: child vocabulary forms (whether uninflected or not), tokens of the verb type *wiyiwîu* 's/he goes out' because it patterns like child vocabulary forms, sung forms, and the anomalous tokens of the verb type *ihtih* 'do!' (at age 3;01.18) and the verb type *âhtiyin* 'you are doing' (3;04.09); these forms are repeated very rapidly in these sessions and, therefore, inclusion of these figures would skew the statistics unnecessarily. Furthermore, forms that carry no overt inflection in the adult target were, of course, not included in these figures.

Child (A1)'s Age	Total Tokens (w/ Inflected Adult Form)	Total Bare Stems	Percentage	Nonproduction of Diphthong [(v)w]	Nonproduction of [h]	Other
2;01.12	15	1	**6.7**	1		
2;03.24	31	8	**25.8**	3	3	2
2;06.05	31	1	**3.2**	1		
2;07.19	16	3	**18.8**	3		
2;09.28	29	3	**10.3**		1	2
2;11.15	37	2	**5.4**	2		
3;01.18	10	3	**30**	2		1
3;04.09	29	2	**6.9**	1	1	
3;06.23	36	6	**16.7**	1		4
3;08.24	48	9	**18.8**			7

Figure 45. Production of bare stems

Although bare stems occur in every recording session, they are never in the majority; the highest rate of these forms occurs at age 3;01.18 when it reached 30 percent. Overall, however, the rate of bare stem productions is 17 percent.

From age 2;01.12 to 3;04.09, the majority of bare stems are either forms in which the diphthongized suffix [(v)w] (78a) or the suffix [h] are dropped (78b).

(78) Example of bare stems

a. [(v)w] dropped (age 2;03.24)

pîhchichâ	*-u*
ˈbitʃa	-w
enter.final	-3
initial.(AI)final	-IIN
‘s/he is going in’	
bida	-Ø

b. [h] dropped (age 2;03.24)

îtâpi	*-h*
iˈdap(v)	-ʰ
look.final	-2s
initial.(AI)final	-IMP
'look!'	
dʌ̲b	-Ø

These two types of bare stems generally become less frequent during the later sessions; neither occur at age 3;08.24.

During the final two sessions, at ages 3;06.23 and 3;08.24, a wider variety of bare stem types are produced. The following affixes are not produced during these sessions, creating bare stems: AI CIN third person singular suffix *-t* (79a), the AI IIN third person singular suffix *-u* (realized as [o]) (79b), the AI CIN first person singular suffix *-vam* (79c) and the AI IIN first person singular prefix *ni-* and suffix *-n* (79d).

(79) Examples of bare stems

a. Nonproduction of the suffix *-t* (age 3;06.23)

kâapi	*-t*
ˈgæbɪ	-t
that.sit.final	-3s
comp.initial.(AI)final	-CIN
'that s/he is sitting'	
gʌpe	-Ø

b. Nonproduction of the suffix *-u* (realized as [o]) (AI) (age 3;06.23)

nîmi	*-u*
ˈnim(v)	-o
dance.final	-3
initial.(AI)final	-IIN
's/he is dancing'	
ɪm	-Ø

c. Nonproduction of the suffix *-yan* (age 3;08.24)

iskulu	*-yan*
skəˈlʊ	-jæn
go.to.school.final	-1s
initial.(AI)final	-CIN
'I am going to school'	
skolo	-Ø

d. Nonproduction of prefix *ni-* and suffix *-n* (age 3;08.24)

ni-	*iskulu*	*-n*
nə -	ˈskʊlu	-n
1-	go.to.school.final	-1
1-	initial.(AI)final	-IIN
'I am going to school'		
Ø-	ɛskolo	-Ø

In summary, bare stems are present in every recording session under study but are never prevalent. Most of the examples of bare stems before the age of 3;06.23 result from the nonproduction of two specific suffixes. However, during the recording sessions at age 3;06.23 and 3;08.24 the frequency of bare stems resulting from the nonproduction of other affixes greatly increases. Child (A1)'s bare stem productions are discussed in chapter 7, section 2.4.

Chapter 7 - Discussion

1. Introduction

In this chapter, I examine the research questions outlined in chapter 2, section 3 which the observations made in the case study of Child (A1)'s speech (chapter 6) address.

2. Discussion of Research Questions

In the following sections, I examine the following phenomena in the emergence of Child (A1)'s system of intransitive inflection: the prevalent role of perceptual salience, the role of input frequency, the production of (partially) unanalyzed amalgams, the production of bare stems, the initial prevalence of agglutinative morphology, the production of affixes in the proper order, 'extragrammatical' morphology, U-shaped acquisition patterns and the lack of evidence of overgeneralization.

2.1. The Prevalent Role of Perceptual Salience

Ample evidence suggests that perceptual salience plays a prominent role during the emergence of intransitive inflection in Child (A1)'s speech.

Affixes occurring in perceptually prominent syllables are produced at a far greater frequency than those occurring in perceptually weak syllables (see chapter 6, section 6.1). Affixes in stressed word final syllables are produced at a very high rate (overall produced at 91.8%), whereas affixes in unstressed word final syllables, are produced at a lesser rate (75.3%). The lowest rate of production (26.7%) is found in affixes occurring in the perceptually weaker unstressed word-initial position.[56]

This observation at least partially accounts for the asymmetry between the rate of adult-like AI IIN third person (singular) forms and AI imperative second person (singular) forms (requiring suffixes and generally produced in an adult-like manner) and AI IIN SAP (singular) forms (requiring both prefix and suffix, generally produced in non-

[56] Peters (1983, 1985) lists word-initial syllables as perceptually salient units. Given the nature of NE Cree prosody, however, syllables at the end of the word seem are more prominent perceptually. This is the result of the metrical parameters of the language: for example, the settings headedness: right-headed and end rule: right (Swain 2008).

adult-like manner) due to the nonproduction of required prefixes. The child seems to pay greater attention to the ends of words, resulting in this assymetry. Note also that there is no major difference in the semantic 'weight' of the first person prefix *ni-* and the third person suffix *-u*; both affixes encode person only. Furthermore, the first person prefix may be more pragmatically salient because we expect that conversations between mother and child would include a higher number of first and second person forms than third person forms. The much higher production rate of the suffix is driven by its higher level of perceptual, rather than semantic or pragmatic, salience.

Additionally, when Child (A1) truncates multisyllabic adult forms, she always realizes the stressed syllable of the adult word, regardless of morphological boundaries, as illustrated in (80).

(80) Child's truncated form (age 2;01.12)

mâtu	*-u*
mæˈd(v)	-o
cry.final	-3
initial.(AI)final	-IIN
's/he cries'	
d	-ʌ

In this case, if the child were paying more attention to the semantically salient syllable, we would expect her to produce the syllable corresponding to the stem, [mæd] (if she were to truncate the word to only one syllable). However, the child produces the final stressed syllable [do], indicating that perceptual salience is playing a more prominent role than semantic salience.

This type of truncation to a single syllable is not categorical in Child (A1)'s speech at any stage under study. From the very first recording, the child produces words with more than one syllable. This behaviour differs from the findings for Quiché Mayan (age 2;2) (Pye 1980) and Mohawk (age 1;9) (Mithun 1989) at early stages. It is possible, however, that Child (A1) may have passed through a similar stage at an age before the

period under investigation, in spite of the fact that the ages of the Quiché Mayan and Mohawk children are comparable to the age of Child (A1) at the beginning of the study (2;01.12).

2.2. The Role of Input Frequency

Although no in-depth study into NE Cree caretaker speech exists, and, consequently, little is known about the frequency of individual inflectional affixes in the input, the observations about the nature of the NE Cree caretaker's speech in this case study (chapter 5) provide some clues about the role that input frequency may or may not be playing in the emergence of Child (A1)'s speech.

In the study of the communicational intent of child-directed speech from one of the recording sessions, of 269 analyzed utterances 4.8 % were statements; 44.6% were questions; 10.8% were commands or requests; and 39.8% were fragments. Based on these observations, it appears that verbs in the independent order (i.e. those occurring in matrix clauses (i.e. statements) and polar questions) are not much more frequent in child-directed speech than conjunct order verbs. If this observation is indicative of general NE Cree child-directed speech, and if input frequency plays a determining role in guiding the child's acquisition path, we expect that verbs inflected in the independent order will be infrequent in the child's productions. This hypothesis is, however, not supported by the child production data; the independent is the most frequent order in the child's speech (see chapter 6, sections 3.1 and 4.1).

Furthermore, we expect (although this cannot be claimed with certainty: the caretaker's utterances were not tagged for syntactic categories) that questions would frequently be encoded using the conjunct order. Recall from chapter 3 that, in clauses containing *wh-* words, verbs are encoded in the conjunct order). If this observation were in any way indicative of general child-directed speech, and input frequency were to play a determining role in guiding the child's acquisition path, we would expect verbs inflected in the conjunct order to be very frequent in the child's productions. This hypothesis is, again, not supported by the data; the conjunct is not frequently produced by the child (see chapter 6, sections 3.1 and 4.1).

It should be noted that, in an adult Cree conversation, if one interlocutor were to use a high number of interrogative forms (and, therefore, *wh-* question conjunct forms), we might expect the other interlocutor to use a higher number of indepent forms in response. If the Cree child followed the same pattern, we would expect her to use a higher proportion of statements and, accordingly, independent forms (as found in the present case study). This would require the child to have acquired the distinction between the independent and conjunct orders and to use them in the proper environments. There is little evidence, however, that Child (A1) has acquired this distinction during the period under study, and, therefore, unlikely that discourse factors are responsible for the attested higher rate of use of the independent order.

In the case of verb orders, input frequency does not seem to be playing a key role in guiding the child's acquisition path. That input frequency does not make correct predictions may, however, be the result of differences in morphological characteristics between the independent and conjunct orders (see the discussion in section 2.5).

Speculatively, however, frequency effects do explain what the child does *not* produce. The child rarely utters intransitive verbs which contain plural or obviative inflectional affixes. The child never produces inflectional affixes marking mood (e.g. dubitative, etc.) or tense (preterit) (the child does, however, occasionally use preverbs, not examined in the current case study, which mark tense and mood). I speculate that adults do not use verbs containing these inflectional contrasts as frequently with children as the forms which Child (A1) *does* regularly produce. In line with these observations, these types of inflection are rarely or never produced by the child during the early period of her development.

2.3. The Production of (Partially) Unanalyzed Amalgams

There is substantial evidence that Child (A1) produces (partially) unanalyzed amalgams in the case study.

AI IIN third person forms are used as defaults for first and second person forms, as we saw in chapter 6, section 3.2.1.1. These forms suggest that the child has stored the third person form as an amalgam, without having segmented or analyzed the morphology

corresponding to the actor's person. Therefore, the child produces these forms regardless of the person of the actor Child (A1) is attempting to denote.

The production of (partially) unanalyzed amalgams also helps explain the nearly perfect production of suffixes which Child (A1) rarely attempts (see chapter 6). Rarely attempted suffixes, such as the third person AI CIN third person plural suffix *-ch*, tend to be produced at a higher percentage than more frequently attempted suffixes, such as AI IIN third person *-u*. This trend can be explained under the hypothesis that the child stores rarely attempted forms as (partially) unanalyzed amalgams (i.e. errors in more frequent forms may be the result of the child's analysis). This process is supported by evidence that the child produces forms in adult-like fashion before producing erroneous forms (suggesting that analysis has begun; see section 2.8 below).

The data from the study of Child (A1)'s speech indicates that, in fact, the overwhelming majority of her productions are (partially) unanalyzed amalgams. There is very little indication that morphological analysis has actually begun (except in the two final sessions in the case study; see sections 2.4 and 2.8). As a result, Child (A1)'s productions are limited by phonological shape, rather than morphological complexity (see chapter 6, section 6.1). The phonological shape of these amalgams appears to be influenced by perceptual salience; the child always produces the stressed syllable (or a portion thereof) of the target. The overwhelming majority of Child (A1)'s productions are limited to one (the stressed) or two syllables. When the production consists of two syllables, the other (unstressed) syllable tends to be a syllable adjacent to the stressed syllable in the target (with another tendency being that this is the syllable following the stressed syllable in words with penultimate target stress). Truncations, consequently, tend to be the result of the nonproduction of syllables which are non-adjacent and precede the stressed syllable. Person prefixes generally fall outside of this phonological shape in the target language, as they are word initial (i.e. often unstressed in pre-tonic syllables); this helps explain their low production rate. However, the child progressively produces more multi-syllabic words (i.e. more pre-tonic, unstressed syllables); this growing phonological shape no doubt allows the child to discover person prefixes.

This pattern is reminiscent of that found in the productions of young Mohawk-learning children (Mithun 1989). In both Mohawk and NE Cree, the children's initial productions centre on stressed syllables, the amalgams 'move' rightward to include post-tonic syllables, before moving leftward to pre-tonic syllables.[57] When certain affixes fall outside of the child's general phonological production abilities at a given stage, like the person prefixes during initial stages in NE Cree, it is not surprising that the output forms are devoid of any evidence of production.

2.4. The Production of Bare Stems

Child (A1) does produce bare stems during each of the ten sessions in the current case study (see chapter 6, section 6.2). However, these bare stem productions are never prevalent and account for only 17 % of total forms in the case study. Of these, 69.6%, before the final two sessions under study (at ages 3;06.23 and 3;08.24), are accounted for by the nonproduction of two suffixes, the AI imperative (neutral) second person singular suffix, *-h,* and the diphthongized [(v)w] allomorph of the AI IIN third person singular suffix *-u.*

The AI imperative (neutral) second person suffix *-h* is not perceptually prominent in the input the child receives. As we see in the waveform and spectrogram of an adult's production of *pâtâ-h* 'bring it!' in Figure 46, the phonetic prominence of the suffix as far less than that of the other segments. One of the child's main cues to the presence of the *-h* suffix is the stress shift to the final syllable it causes. However, generally the child produces this suffix at a high rate, 29 times out of 34 attempted forms. Swain (2008) points out that Child (A1) is able to identify and produce word-final stress at an extremely high rate. This helps explain the child's high rate of production of this suffix. Due to its lack of perceptual salience, and the quality of recordings resulting from a naturalistic approach, it may be the case that the bare stems found in the Child (A1) result from the inability of transcribers to detect the suffix in the child's speech.

[57] Interestingly, the metrical structure of NE Cree and Mohawk differs. In Mohawk, the penultimate and final syllable form a constituent (a final trochee). The penult in NE Cree, however, is at the end of an iamb, and the final syllable is an extrametrical constituent (Carrie Dyck, p.c.).

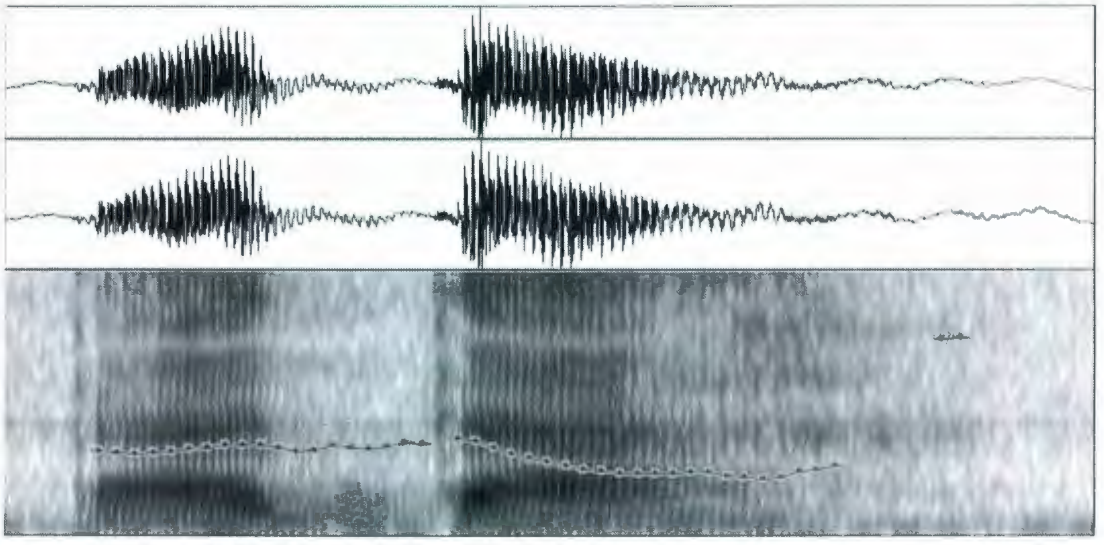

Figure 46. Waveform and spectrogram of a form containing the *-h* suffix

Many of the bare stems resulting from the nonproduction of the diphthongized allomorph of the AI IIN third person suffix [(v)w] may result from similar difficulties faced by transcribers; as there is no clear segmental boundary between this suffix and the preceding vowel, it may be difficult to identify.

Additionally, in both cases, bare stem tokens and inflected tokens generally exist alongside each other for the same verb type at the same time. This indicates that the bare stem productions in these cases are not systematic and, as such, do not correspond to a particular developmental stage.

However, during the final two sessions under study (ages 3;06.23 and 3;08.24), bare stems resulting from other processes (i.e. nonproduction of a variety of other suffixes) become more prevalent (see chapter 6, section 6.2). Only 3 of the 11 bare stem tokens of this kind occur alongside inflected tokens of the same verb type. This suggests that at this stage the bare stem productions may be the result of the child's intermediate analysis (i.e. segmenting the verb stem from the affixes).

These observations stress the point that researchers must examine bare roots/stems in child productions from a number of angles in order to determine whether they are the result of (partial) morphological analysis or other factors (i.e. perceptual saliency effects). In the case of Child (A1), the current analysis indicates that bare stems only result from morphological analysis during the final two sessions of the case study.

2.5. The Initial Prevalence of Agglutinative Morphology

As mentioned in chapter 3, section 4.2, inflectional affixes in the independent order are more agglutinative in nature, while inflectional affixes in the conjunct order are more fusional.

In Child (A1)'s speech, the independent order is far more prevalent than the conjunct order with regard to both AI and II verbs (chapter 6, sections 3.1 and 4.1). However, preliminary observations into the nature of caretaker speech (chapter 5, section 2.1) suggest that conjunct forms are just as frequent, if not more frequent, than independent forms in NE Cree child-directed speech.

These findings, while indicating that input frequency is not playing a prominent role, appear to lend support to Pinker's Hypothesis Testing model which predicts that agglutinative morphology will be acquired before fusional morphology due to the greater number of 'calculations' that the child is required to make in order to correctly analyze fusional morphology. However, any learning model which predicts that simple units (in the case of agglutinative morphology, simple in terms of a one to one morpheme to function ratio) are acquired more easily than complex units (i.e. fusional morphology, complex in terms of a one to two or more morpheme to function ratio) would predict the same result. Therefore, the evidence from NE Cree does not necessarily support Pinker's Hypothesis Testing model in a conclusive fashion.

Furthermore, I have already pointed out that there is no evidence that the child has begun morphological analysis until very late in the case study. Consequently, it is unlikely that Child (A1) has discovered the morphological distinction between the independent and conjunct order during the period under study. Child (A1) has not begun to make the 'calculations' which would result in agglutinative morphology being acquired

before fusional morphology. Therefore, the morphological argument based on complexity (agglutinative vs. fusional) presented here cannot explain the more frequent use of the independent order at this stage in the child's development. Why then does the child produce the independent order (which, based on the observations from NE Cree child-directed speech, are infrequent in the input) much more frequently then the conjunct (which seems to be more frequently found in the input)? It may be the case that a fuller study of NE Cree child-directed speech would find that the independent is actually more frequent. Although the CCLAS method generally falls within the naturalistic approach to data collection, the mother of Child (A1) (who is the interlocutor during the recording sessions) knows that the goal of the project is to analyze the child's speech. This may cause her to ask a higher rate of questions (and, hypothetically, conjunct order verbs) than is normal in child-directed speech.

2.6. The Production of Affixes in the Proper Order

There is no evidence that Child (A1) produces affixes in non-adult-like order. The same result has been found in several studies into the acquisition of other polysynthetic languages (see chapter 2, section 2.2.4.3).

Seemingly, the child's correct ordering of affixes is predicted by Pinker's Hypothesis Testing model because it has the child constructing a template of affix ordering.

However, during the period under study, the Child (A1) data lend themselves to an alternate explanation. As noted in section 2.3, there is ample evidence that Child (A1) produces (partially) unanalyzed amalgams. Given that the inflectional morphology in these amalgams is unsegmented, no process affecting the configuration of affixes in her productions of these words is expected. Consequently, it is the child's lack of analysis that should be taken as the driving factor behind the apparently correct affix ordering -amalgams imply that there is no real affix in her productions- rather than this being the result of her analysis.

2.7. 'Extragrammatical' Morphology

As mentioned in section 2.3, there is evidence of (partially) unanalyzed amalgams in Child (A1)'s speech. The phonological template of these amalgams sometimes results in truncations of adult forms at a given stage of the child's development (e.g. the child sometimes produces only one syllable (the stressed one, regardless of morphological boundaries; see section 2.1) of words which are multisyllabic in the adult language). These forms are clearly extragrammatical, as no adult morphological process simply deletes all syllables but the stressed syllable (and/or other syllables that fit into the template of the amalgam at a given stage).

In addition to truncations caused by (partially) unanalyzed amalgams, other examples of extragrammatical morphology processes, as defined by adherents to the pre- and protomorphology model, may also be found in a wider study (beyond intransitive verbs) of NE Cree child speech.

Although (partially) unanalyzed amalgams and truncations are predicted in the pre- and protomorphology model at a stage before the morphology module has emerged, this is not the only available explanation for these processes which do not conform to 'normal' morphological rules. For example, storing unanalyzed amalgams is a natural first step in morphological analysis (even when a morphological module is available). Truncations could just as easily be the result of perceptual or production constraints as the result of 'bizarre' premorphological rules. Nothing about Child (A1)'s production of truncated forms seems to result from any kind of morphological analysis whatsoever. This raises the question as to why these apparent processes should be referred to as 'extragrammatical morphology' at all.

2.8. U-shaped Acquisition Patterns

There is evidence of U-shaped acquisition patterns in Child (A1)'s productions; or, more specifically, the child gets worse before she gets better in her productions of morphological constructions. For example, in her attempts at the frequent verb type *ihtàu* 's/he is (t)here', Child (A1) initially (during the first three recording sessions, age 2;01.12-2;06.05) produces the inflectional suffix at a high rate: 33 out of 35 times. From

age 2;07.19 to 3;01.18, however, this production rate dips noticeably, with only 21 out of 28 attempted forms carrying the suffix. During the final three sessions (age 3;04.09 to 3;08.24), the suffix is produced in all 14 attempted forms. A comparable pattern occurs with the (neutral) second person singular suffix *-h* (see chapter 6, section 3.3.1). However, note that both of these patterns may be explained by non-grammatical factors (see section 2.4).

Additionally, in the cases of both the AI IIN third person singular suffix *-u* allomorph [o] (see chapter 6, section 3.2.1) and the AI IIN SAP suffix *-n* (see chapter 6, section 3.2.3), the suffixes are initially produced at a high rate before being less frequently produced during the final two recording sessions (age 3;06.23 and 3;08.24). Even if limitations related to the period of data recording prevent full empirical verification of this, it is presumed that the rate of production of these suffixes will eventually return to a high, adult-like rate at some later stage in development (conforming to the U-shaped pattern).

It is also interesting to note in this context that these suffixes become less frequently produced at the same time the child begins producing person prefixes more frequently. This indicates that the enlargement of the phonological template of (partially) unanalyzed amalgams, and the resulting identification of personal prefixes is crucial to the child's discovery of morphology, much like Mithun (1989) found for Mohawk children (see chapter 2, section 2.1.1.1).

Additionally, the lower observed rate of production of these suffixes occurs immediately after the session where the child begins to more frequently inflect child vocabulary forms (at age 3;04.09, see chapter 6, section 5). Recall that anecdotal reports suggest that caretakers begin adding inflection to child vocabulary forms at around three years of age. Through comparison of these inflected child vocabulary forms and his or her stored uninflected forms, the child may be in a better position to assign some grammatical function independent from the root itself. The child may be led to the hypothesis that these endings have meaning, and the child, therefore, may segment them from the root in ways that would enable the formation of early morphological generalizations.

These observations thus conspire to suggest that the dips in the rate of production of these two suffixes (*-u* and *-n*) can be related to Child (A1)'s emerging analysis on the verbs in question and, consequently, the segmentation of the inflectional suffixes from the stem. When the child eventually returns to adult-like productions, we can hypothesize that the child is implementing a (correct) generalization that she has made.

2.9. The Lack of Evidence of Overgeneralizations

Although over-regularization errors, such as those found in the oft-cited example of the acquisition of English irregular past tense forms, were not expected to be found in Child (A1)'s speech (due to the lack of irregular verb paradigms), it is plausible that the NE Cree child might produce overgeneralized forms through, for example, adding the SAP prefixes to conjunct verbs, despite this being ungrammatical in the adult language (recall that, unlike the independent, person is marked solely by suffixes on conjunct verbs). There is, however, no indication that such overgeneralizations occur in the current case study.

Rather than this lack of overgeneralization being the result of Child (A1) having an accurate understanding of the target language's morphological system, it is likely that the child has not performed enough analysis to allow her to overgeneralize at this stage in her development. For example, it seems that she has only begun to analyze the AI IIN first person singular morphology during the final recording session (at age 3;08.24) when she begins producing the prefix more frequently, but also begins to not produce the suffix (which previously had generally been produced). It would be interesting to see whether the child, when she has concretely analyzed the *ni-* prefix as the first person marker, would add this, erroneously, to first person conjunct forms. The question of whether NE Cree children do this is left to future research.

Chapter 8 - Conclusion

1. Summary of Findings

In this chapter, I first summarize the observations on the case study of the caretaker's and Child (A1)'s speech. I then outline the implications of these observations and make suggestions for future research regarding the acquisition of inflection in NE Cree.

1.1. Caretaker Speech

Observations on the speech of Child (A1)'s mother suggest that questions and commands/requests are frequent in NE child-direct speech. The caretaker engages the child as a conversational partner in several language socialization routines. There is noticeable modification to the caretaker's pitch when she speaks to the child, although acoustic comparison is necessary to confirm this observation. The caretaker also uses a special child form vocabulary and frequent diminutive forms with the child.

1.2. Child (A1)'s Intransitive Verb Productions

In the following subsections, I summarize observations on Child (A1)'s productions of intransitive verbs. I begin with general trends before dividing the child's development into two general stages: the production of (partially) unanalyzed amalgams followed by the emergence of morphological analysis.

1.2.1. General Trends

In six of the recording sessions, verbs represent between 10.4 to 13.9 percent of all tokens. In the other four sessions, this percentage rises significantly (up to 32.9 during one session). These increases do not, however, follow any identifiable gradual or stage-like pattern.

The vast majority of verbs throughout the ten sessions are intransitive. Transitive verbs are infrequent in all sessions (when anomalous cases are ignored). Of intransitive verbs, the most frequent class is AI with II verbs initially not being produced frequently

but becoming more so (relatively) in the later sessions. Child forms are produced most frequently during the middle sessions of the case study.

AI verbs are produced in the IIN, imperative (neutral) and CIN paradigms. The IIN is the most frequently produced paradigm, followed by the imperative (neutral) and then the CIN.

In the IIN, verbs most frequently occur in the third person singular and the obligatory suffix is generally produced at a high rate. Third person verbs are sometimes used by the child with intended second or first person meaning, indicating that they are used as defaults. The first person form, requiring both a person prefix and a suffix, is attempted at an increasingly frequent rate in the later sessions. Initially, the prefix is not produced while the suffix is produced at a high rate. During the final session, however, the child begins to produce the prefix, in approximately 50 percent of attempted forms. Other AI IIN forms, the second person singular, the third person obviative and plural, are produced rarely. The production of affixes in these forms follows the same trends noted above, however, with suffixes produced at a high rate and prefixes (second person) not.

In the imperative (neutral), the most frequently attempted form is the second person singular form, followed by the second person plural (inclusive of first person). In both cases, however, the required inflectional suffixes are generally produced at a high rate.

The most frequently produced form in the CIN is, again, the third person singular, which becomes increasingly frequent during the later sessions under study. The AI CIN third person singular suffix is generally produced at a high rate, although its rate of production drops significantly during the final two sessions. AI CIN third person obviative and plural, and first and second person singular forms are infrequently produced. Generally, the suffixes of these forms are produced at a high rate.

II verbs are produced in the IIN and CIN paradigms. The II IIN becomes more frequently produced after age 3;01.18. The only form produced (except for one instance of an obviative form) is the third person singular. The II CIN is only produced twice; in both case the third person singular suffix is produced.

Child vocabulary forms are initially produced without inflection. At age 3;04.09, inflected forms (A1 IIN inflection) become more frequent. At the same time, the frequency of uninflected forms is diminished.

1.2.2. Stage One: Production of (Partially) Unanalyzed Amalgams

From age 2;01.12 to 3;04.09, the intransitive verbs that Child (A1) produces are (partially) unanalyzed amalgams. There is no evidence that suggests that the child has analyzed these as morphologically complex forms. The phonological shape of these amalgams is influenced by perceptual salience (i.e. stressed syllables are always realized) and the child's general phonological abilities. Initially the majority of the child's productions tend to consist of one (the stressed syllable) or two syllables (the stressed syllable and an adjacent syllable which tends to be the final syllable in words with penultimate stress).

Consequently, affixes occurring in stressed (and, to a lesser degree, unstressed) word final position are produced at a much higher frequency than affixes occurring in unstressed word initial position. This explains the low frequency with which Child (A1) produces first and second person prefixes as compared to suffixes.

Bare stems and U-shaped development curves during this stage result from non-grammatical factors (e.g. suffixes are possibly undetectable due to recording problems, etc.) rather than because of the child's fledgling analysis.

Child vocabulary forms are generally uninflected before 3;04.09. This is unsurprising given that we have anecdotal evidence that adults use uninflected forms with children until around three years of age.

1.2.3. Stage Two: Emergence of Analysis Stage

At age 3;04.09, we witness the beginning of a change in this pattern. At that age, Child (A1) begins to use child vocabulary forms with inflectional suffixes. The addition of inflection to these words seems to provide an important clue to the child that the endings on words are meaningful in some way. At age 3;06.23, the child does not produce several suffixes which, before this age, were produced at a relatively high rate. This creates bare stem productions (a trend which is continues in the last session at age 3;08.24),

suggesting that the child is performing a morphological analysis, segmenting the stem from affixes.

During the same period, at age 3;08.24, Child (A1) begins to produce AI IIN (first) person prefixes at a much higher rate. It seems likely that this is the result of the child's phonological abilities expanding to include pre-tonic syllables. At the same time, the child begins to produce AI IIN first person verbs missing the AI IIN SAP suffixes; these were previously produced at an almost perfect rate. Once again, it appears that this is evidence of the initial steps of Child (A1)'s morphological analysis on these forms.

2. Implications and Suggestions for Future Research

In sum, the child initially produced (partially) unanalyzed forms before performing her first morphological analyses of the target language, which result in the segmentation of (some) affixes from stems. The implications of these observations for theoretical frameworks of morphological acquisition are that frameworks must take as a starting point the storage of whole chunks of linguistic material in the child's lexicon. The storage and subsequent production of these units is guided by perceptual salience; the child most easily stores and produces perceptually salient units. When the child's perceptual and production abilities reaches a certain point and as they are exposed to sufficient data, the child is in a position to start discovering aspects of word-internal morphology and begins to analyze forms through the segmentation of affixes from the root. This analysis supports theoretical frameworks which propose that children perform abstract analyses (e.g. Pinker 1984, 1999; Pinker and Prince 1988, 1994) of this type, rather than concrete analyses which place primary importance on input frequency (e.g. Rumelhart and McClelland 1986; Bybee 1985, 1995) as input frequency does not appear to play a determining role in the order of acquisition of inflectional morphology in the speech of the NE Cree child.

During the period under study, from age 2;01.12 to 3;08.24, we witness only the very first steps of an NE Cree child breaking into the language's intransitive verb inflectional system. Future research should examine the development of the system beyond these initial stages. Such a research programme would be facilitated by CCLAS's corpus of older NE Cree children (from the B cohort, as described in chapter 4, section 2).

Through the examination of older children's speech, researchers would be able to examine how the child proceeds in making contrasts between inflectional categories (e.g. SAP vs. non-SAP morphology) once affixes are segmented from the stem.

Other interesting opportunities for future research include the investigation of the emergence of transitive inflectional morphology and a more complete study of NE Cree caretaker speech. Transitive verbs present an even more complex system of inflection than that which is found in intransitive. The study of the transitive system would provide further insights into how children acquire complex morphological systems. A more detailed study of NE Cree caretaker speech could also provide a better understanding of the input the child receives, allowing for arguments about how the child analyzes the input to be better grounded in empirical evidence.

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Appendix A: Age 2;01.12 (A1-2005-03-08)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
AI	CIN	âhti-yin (you are doing)	ˈdi -n do.final -2s initial.vai(IC).final -CIN dæ -ɹ	ihtâu (s/he is (t)here)	112
AI	IIN	ihtâ-u (s/he is (t)here)	ˈda -w be.final -3 initial.(AI)final -IIN d -u d -u j -o ha -Ø	ihtâu (s/he is (t)here)	117, 118, 185, 217
AI	IIN	ihtâ-yi-u (s/he is (t)here)	ˈda -j -o be.final -obv -3 initial.(AI)final -obv -IIN da -j -wo da -j -na da -j -wa	ihtâu (s/he is (t)here)	105, 115
AI	IIN	mâtu-u (s/he cries)	mæˈd(v) -o cry.final -3 initial.(AI)final -IIN ɹɛd -o mæd -iʌ dæd -ə d -ʌ d -ʌ bʌtsd -ə hoz -o	matû (s/he cries)	129, 188
Child	Child	chûchû (drink)	ˈʤoʤo bottle child.form boʤo ʤʌ əʤʌ ʤu	chûchûsiu (s/he is breastfed/ bottle-fed)	101, 152, 153

Appendix A: Age 2;01.12 (A1-2005-03-08)

Child	Child	nânâ (eat)	ˈnana food.child.form (Al)child.form nʌnʌ nʌnɪ nanʌ	nânâshiu (s/he eats)	227, 228, 230

Appendix B: Age 2;03.24 (A1-2005-05-18)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
AI	IMP	apui-h (sit!)	ˈɪp(v) -ʰ sit.final -2s initial.(AI)final-IMP bʌbu -h bubu -h	apiu (s/he sits)	195, 196
AI	IIN	chi-chihchipiyi-n (you are going away)	ʃ- ʃtɔˈbi -n 2- go.away.inchoative -1/2 2- initial.(AI)final -IIN Ø- dɪb - Ø Ø- ɔbi -n	chihchipiyiu (s/he leaves (by vehicle))	156, 185
AI	IMP	chîyipî-h (hurry!)	dʒiˈbi -h hurry.final -2s initial.(AI)final -IMP bij -ho	chîyipîu (s/he hurries)	192
AI	IIN	ihtâ-u (s/he is (t)here)	ˈda -w be.final -3 initial.(AI)final-IIN *dobedʌbɛtab da -w da -w da -w da -w da -w da -wː da -w	ihtâu (s/he is (t)here)	64, 69, 161, 168, 171, 180, 320, 453
AI	IIN	ihtâ-w-ich (they are (t)here)	ˈda -w -ɔʧ be.final -3 -pl initial.(AI)final-IIN -pl *dɪdmʌnlʌkat dæ -d -ɛ	ihtâu (s/he is (t)here)	330, 331
AI	CIN	ihtâ-ch (they are (t)here)	ˈdʌ -ʧ be.final -3pl initial.(AI)final-CIN tı -ʧ	ihtâu (s/he is (t)here)	329
AI	IMP	pâchiîtâpi-h (look here!)	baʧˈdap(v) -ʰ to.here.look.final -2s preverb.initial.(AI)final -IMP bajdʌp -ʰ	îtâpiu (s/he is looking)	452

Appendix B: Age 2;03.24 (A1-2005-05-18)

AI	IMP	îtâpi-h (look!)	iˈdap(v) -ʰ look.final -2s initial.(AI)final-IMP dʌp -ʰ dʌ̱b -Ø i̱dʒ̱b -Ø i̱dʌ̱b -Ø	îtâpiu (s/he is looking)	452, 453
AI	IIN	mâchî-u (s/he is leaving)	maʤij -ˈo leave.final -3 initial.(AI)final-IIN naj -o	mâchîu (s/he goes away)	164
AI	IMP	pâtâ-h (bring it)	baˈda -h bring.final -2s initial.(AI)final-IMP bɔda -h bada -h bɔdʌ -h bɔdʌ -h	pâtâu (s/he brings it)	160, 211, 409
AI	IIN	pîhchichâ-u (s/he is going in)	ˈbitʃa -w enter.final -3 initial.(AI)final-IIN gaba -Ø bida -Ø bigʌ -Ø bitʰʌ -b	pîhchichâu (s/he goes in)	311, 312, 418
AI	IMP	pîhtikitâ-h (put it in!)	bitɪgɔˈda -h bring.final -2s initial.(AI)final-IMP ʔbida -h	pîhtikitâu (s/he puts it in)	85
AI	IIN	wiyiwî-u (s/he goes out)	wiˈwij -o go.out -3 (AI)child.form -IIN wiwi -Ø	wiyiwîu (s/he goes out)	126
Child	Child	chûchû (drink)	ˈʤoʤo drink (AI)child.form dadaw	chûchûsiu (s/he is breastfed/ bottle-fed)	80

Appendix B: Age 2;03.24 (A1-2005-05-18)

Child	Child	mîmî (sleep)	ˈmimi sleep (AI)child.form diwi memi əm mɪmih	mîmîu (s/he is sleeping)	79, 124, 127, 246
Child	Child	nânâ (eat)	ˈnana eat (AI)child.form nana mana hʌmnahʌmna nʌna nɔ	nânâshiu (s/he is sleeping)	128, 129, 130, 131, 279
II	IIN	chîmiywâyi-u (it is very nice)	ʧɪmiˈjaj -o past.be.nice.final -0 preverb.initial.(II)final -IIN dunaj -o	miywâyiu (it is nice)	333
II	IIN	pimipiyi-u (it functions/works)	bɔmˈbij -o function.inchoative -0 initial.(II)final -IIN bi -O	pimipiyiu (it functions/ works)	310
II/AI	IIN	pihchishin/ pihchihtin (s/he falls down, it falls down)	bɪtʃɪn fall.final.0 initial.(II/AI).final.IIN bidʌ bɔjʌ bɔdʌb bʊtʌ:	pihchishin/ pihchihtin (s/he falls down, it falls down)	22, 23

Appendix C: Age 2;06.05 (A1-2005-07-29)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
A1	IIN	chîwâ-u (s/he is going home)	dʒiˈwo -w go.home.final -3 initial.(A1)final -IIN ʤ -o ɪw -o	chîwâu (s/he is going home)	143, 145
A1	IMP	chîyipî-h (hurry!)	dʒiˈbi -h hurry.final -2s initial.(A1)final -IMP ʤɪbɪ -h	chîyipîu (s/he hurries)	169
A1	IIN	ihtâ-u (s/he is (t)here)	ˈda -w there not be.final -3 initial.(A1)final -IIN da -w da -w da -w da -w da -w dʌ -O da -we da: -w da: -w da -w tə -pʰ ga -w da -w da -w do -w da -w da -w da -w ʤa -w ʤa -w da: -w da: -w da -w da -wigl	ihtâu (s/he is (t)here)	43, 48, 49, 78, 84, 113, 152, 153, 162, 163, 217, 230, 265, 272, 273, 275, 355, 287, 288, 289, 420, 421, 461, 462

Appendix C: Age 2;06.05 (A1-2005-07-29)

AI	IMP	pâtâ-h (bring it!)	baˈda -h bring.it.final -2 initial(AI)final -IMP bɪdɛ -h dɪdɛ -h	pâtâu (s/he brings it)	208
AI	IMP	wiyiw-î-tâu (let's go out)	wiˈwi -daw out.final -1pl.incl initial.(AI)final -IMP iwibʌ -dʌkʰə	wiyiwîu (s/he goes out)	326
AI	IIN	wiyiwî-u (s/he goes out)	wiˈwij -o go.out -3 vai -IIN wi: jæd -Ø wiwi -Ø wi: -Ø	wiyiwîu (s/he goes out)	326, 327, 353
Child	Child	kîkî (hurt)	ˈgigi hurt (AI)child.form jɛgɪ: digi	kîkîshiu (s/he is hurt)	197
Child	Child	mîmî (sleep)	ˈmimi sleep (AI)child.form mimi mimi	mîmîu (s/he is sleeping)	218, 220
II/AI	IIN	nipîu-u (s/he is wet, it is wet)	nəˈbij(o) -o be.wet.final -3/0 initial.(II/AI)final -IIN bi:j -o	nipîû (s/he is wet, it is wet)	158
II/AI	IIN	pihchishin/ pihchihtin (s/he falls down, it falls down)	bɪtʃɪn fall.down.final.30 initial. (II/AI)final.IIN tʃu: tʃu: tʃən tʃu	pihchishin/ pihchihtin (s/he falls down, it falls down)	94, 95, 96, 98

Appendix D: Age 2;07.19 (A1-2005-09-14)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
AI	IIN	ihtâ-u (s/he is (t)here)	ˈda -w be.final -3 initial.(AI)final -IIN dʌ -Ø da -w d -o da -ʔ de -Ø nɛ -Ø	ihtâu (s/he is (t)here)	220, 221
AI	IIN	ihtâ-w-ich (they are (t)here)	ˈda -w -ʧ be.final -3 -pl initial.(AI)final -IIN -pl bæ̱ -Ø -tʰ a -w -ʧ	ihtâu (s/he is (t)here)	255, 256
AI	IMP	mîchi-h (eat it!)	ˈmitʃ(v) -ʃ eat.it.final -2s initial.(AI)final -IMP mɪntʃ -ʃ	mîchiu (s/he eats it)	299
AI	IIN	nipâ-u (s/he is sleeping)	ˈnəba -w sleep.final -3 initial.(AI)final -IIN nəpa -Ø	nipâu (s/he is sleeping)	223
AI	IIN	pâpiy-u (s/he is arriving by (car))	ˈbæbij -o arrive.by.vehicle.inchoative -3 initial.(AI)final -IIN nawij -o	pâpiyu (s/he is arriving by (car))	262
AI	IIN	ni-kipihchishini-n (s/he falls down)	nə- gəbɪˈʧɪn(i) -(n) 1- future.fall.final.final -1/2 1- preverb.initial.(AI)final.(AI)final -IIN Ø- ʧ -ɪn Ø- pʊʧ -u Ø- pʊʧ -u Ø- pʊʧ -ul	pihchishin (s/he falls down)	197, 198

Appendix D: Age 2;07.19 (A1-2005-09-14)

AI	IIN	wiyiwî-u (s/he goes out)	wiˈwij -o go.out -3 vai -IIN wiwi -Ø wiwi -Ø	wiyiwîu (s/he goes out)	194, 196
AI	IMP	wiyiwî-tâu (s/he goes out)	wiwi -ˈdaw go.out.final -2pl initial.(AI)final -IMP biwi -ʤʌ	wiyiwîu (s/he goes out)	195
Child	Child	kîkî (hurt)	ˈgigi hurt (AI)child.form gəgɪni	kîkîshiu (s/he is hurt)	120
Child	Child	mîmî (sleep)	ˈmimi sleep (AI)child.form bibiç	mîmîu (s/he is sleeping)	201
Child	Child	pâîpâî-u (s/he says bye-bye (is leaving))	baˈbaj -o leave -3 (AI)child.form -IIN wabaj -ɔɹ	pâîpâîu (s/he says bye-bye (is leaving))	78
II	IIN	ihtikun (it is there)	dɛˈgʊn be.final.0 initial.(II)final.IIN budu dugu dɪdɪ gu dəgʊpʰ dəgu: gʊ ʤəgʊ ʤəgu ʤəgʊ ʤəgu gu dugu gʊn gəda	ihtikun (it is there)	28, 149, 150, 155

Appendix D: Age 2;07.19 (A1-2005-09-14)

II/AI	IIN	pihchishin/ pihchihtin (s/he falls down, it falls down)	bɪʧɪn fall.final.3/0 initial.(II/AI)final.IIN biʧin bʧɪn bʦ biʧ miʧɪə̃ bɪʧin biʧin ʧɔn bɪʧin biʧin biʧin ɔʧɪn bɪʧɪn bɪʧɔn	pihchishin/ pihchihtin (s/he falls down, it falls down)	236, 273, 274, 275, 276, 302, 303, 304

Appendix E: Age 2;09.28 (A1-2005-11-21)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
AI	IIN	nit-api-n (I sit)	ən'd- ɪbɪ -n 1- sit.final -1/2 1- initial.(AI)final -IIN Ø- əba -mʌ	apîu (s/he sits)	9
AI	IMP	api-h (sit!)	'ɪp(v) -ʰ sit.final -2s initial.(AI)final -IMP ɛ -h	apîu (s/he sits)	190
AI	CIN	âhtâ-t (s/he is (t)here)	'atæ -d is.there be.final -3s (IC)initial.(AI)final -CIN bʌtba -k	ihtâu (s/he is (t)here)	164
AI	IIN	ni-kiihtâ-n (I will be (t)here)	nɪ- kə'da -n 1- future.be.final -1/2 1- preverb.initial.(AI)final -IIN Ø- gəda -n	ihtâu (s/he is (t)here)	50
AI	IIN	ihtâ-u (s/he is (t)here)	'da -w be.final -3 initial.(AI)final -IIN da -w da -w da -w da -w da -w d -o da -w da -w d -o da -w da -w da -w dɛ -ɹ da -w	ihtâu (s/he is (t)here)	94, 95, 97, 118, 120, 127, 128, 185, 195, 291, 351, 360, 361, 390, 391
AI	IMP	itwâ-h (cry!)	i'dɑ -h cry.final -2s initial.(AI)final -IMP dɑ -h	itwâu (s/he is crying)	54

Appendix E: Age 2;09.28 (A1-2005-11-21)

AI	IMP	pâtâ-h (bring it!)	baˈda -h bring.final -2s initial.vai + o.final -IMP bʌpʌ -Ø bʊda -wb	pâtâu (s/he brings it)	212
AI	IIN	pâyikushi-u (s/he is alone)	ˈbajkʃ -o be.alone.final -3 initial.(AI)final -IIN bʌtʃi -Ø	pâyikushiu (s/he is alone)	180
AI	IIN	pîhchichâ-u (s/he goes in)	biˈʤa -w go.in.final -3 initial.(AI)final -IIN bʌdʒ -o bʌtʃ -o kʌdʒɪ -k^h	pîhchichâu (s/he goes in)	206, 380
AI	IIN	pûtu-u (s/he is fat)	ˈbʊd -o be.fat.final -3 initial.(AI)final -IIN wʊd -o bʊ -Ø bʊd -o bʊd -o	pûtû (s/he is fat)	291
AI	IIN	wiyiwî-u (s/he goes out)	wiˈwij -o go.out -3 vai -IIN miwɪ -Ø wiwi -Ø	wiyiwîu (s/he goes out)	209
Child	Child	kîkî (hurt)	ˈgigi hurt (AI)child.form ʤie gɪgɪ kiki	kîkîshiu (s/he is hurt)	141, 142, 143

Appendix E: Age 2;09.28 (A1-2005-11-21)

Child	Child	mîmî (sleep)	ˈmimi sleep (AI)child.form mimi mimi mimi mimi mimi mimi mimɪ mimi nini ɔmi ɔmi mimi mimi mimi mimi memi	mîmîu (s/he is sleeping)	145, 146 147, 152, 154, 155, 236, 237, 242, 387
II	IIN	ihtikun (it is there)	dəˈgun be.final.0 initial.(II)final.IIN dəgɔjn dəgʌ	ihtikun (it is there)	35

Appendix F: Age 2;11.15 (A1-2006-01-09)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
AI	IIN	chishâyâkunâkusu-u (s/he looks like a bear)	ʧejægəˈnuks(v) -o bear.look.like.final -3 initial.(AI)final -IIN tʰjæʔʧn -o	chishâyâkunâkusû (s/he looks like a bear)	111
AI	IIN	ihtâ-u (s/he is (t)here)	ˈda -w be.final -3 initial.(AI)final -IIN *maəmbədɛdnʌʔʤinbənd da -Ø da -Ø da -ə da -bunkʰ	ihtâu (s/he is (t)here)	15, 219, 220
AI	IIN	mâchî-u (s/he is leaving)	ˈmaʤij -o leave.final -3 initial.(AI)final -IIN pəʤij -ʌ	mâchîu (s/he is leaving)	15
AI	IIN	ni-mîchi -n (I am eating it)	nə- ˈmiʤɪ -n 1- eat.final -1/2 1- initial.(AI)final -IIN ə- mikĩ: -(nasalization)	mîchiu (s/he eats it)	92
AI	IIN	ni-mîchisu -n (I am eating it)	nə- miˈʧu -n 1- eat.final -1/2 1- initial.(AI)final -IIN Ø- miʧu -n *ʧənʌpəgɑtʃu	mîchiu (s/he eats it)	72, 82
AI	IIN	pâpiyi-u (s/he is coming)	baˈbij -o come.inchoative -3 initial.(AI)final -IIN bʌbijɔ -jɔ	pâpiyiu (s/he is coming)	111
AI	IIN	pâtu-u (s/he is taking a bath)	bʌˈt(v) -o take.bath.final -3 initial.(AI)final -IIN badʊ: -v bʌd -o	pâtû (s/he is taking a bath)	211, 212
AI	IIN	ni-pihchishini-n (I fall down)	nə- bɪˈʧɪn(i) -(n) 1- fall.final -1/2 1- initial.(AI)final -IIN Ø- hɛʧə -n	pihchishin (s/he falls down)	41

Appendix F: Age 2;11.15 (A1-2006-01-09)

A1	IIN	pûtu-u (s/he is fat)	bu'd(v) -o be.fat.final -3 initial.(A1)final -IIN udo -w bud(v) -o	pûtû (s/he is fat)	257, 260
A1	IIN	wiyiwî-u (s/he goes out)	wi'wij -o go.out -3 vai -IIN wiwi -Ø	wiyiwîu (s/he goes out)	38
Child	Child	chûchû (drink)	'ʤuʤu drink (A1)child.form duduo dodɔw	chûchûsiu (s/he is breastfed/bottle-fed)	263, 264
Child	Child	kîkî (hurt)	'gigi hurt (A1)child.form gigi	kîkîshiu (s/he is hurt)	101
Child	Child	nânâ (sleep)	'næna eat (A1)child.form nonaw nænæ	nânâshiu (s/he is sleeping)	264, 266

Appendix F: Age 2;11.15 (A1-2006-01-09)

II/AI	IIN	nipî-u (s/he is wet, it is wet)	nəbiˈj -o be.wet.final -3/0 initial.(II/A1)final -IIN bij -o bij -o bij -o bij -o bij -o nabij -o bij -õ bij -o bij -o bij -o nɪbij -õ *jijo̱aj̱minətonə bij -o: bij -õ bij -o bij -o əbij -o bij -o bij -o̱ bij -o bij -o bij -o abij -o bij -o	nipîû (s/he is wet, it is wet)	146, 148, 149, 169, 194, 195,196, 197, 200, 201, 203, 204, 205, 206, 209, 210

Appendix G: Age 3;01.18 (A1-2006-03-14)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
AI	IMP	chîwâ-tâu (let's go home)	ˈʤiwa -da go.home.final -21pl initial.(AI)final -IMP duwa -Ø	chîwâu (s/he is going home)	69
AI	IIN	ihtâ-u (s/he is (t)here)	ˈda -w bcfinal -3 initial.(AI)final -IIN bɛ -ɹ da -w dʌ -Ø dɑ -Ø	ihtâu (s/he is (t)here)	241, 244, 245, 400
AI	CIN	ihti-yân (I do)	ˈdj(i) -ɛn do.final -1s initial.(AI)final -CIN d -ɛn	ihtiu (s/he does)	84

Appendix G: Age 3;01.18 (A1-2006-03-14)

A1	IMP	ihti-ɦ	ˈi0ɪ(v)	-^{h}	ihtiu	47, 74,
		(do!)	do.final	-2s	(s/he does)	86, 407,
			initial.(A1)final	-IMP		408
			di	-0		409,
			di	-0		410,
			di	-0		411,
			di	-:		412,
			ʤi	-0		422,
			ʤi	-0		428,
			t	-^{h}		429
			di	-0		
			di	-0		
			di	-0		
			di	-0		
			bi	-0		
			di	-0		
			di	-0		
			di	-0		
			di	-0		
			di	-0		
			di	-0		
			di	-0		
			di	-:		
			ʤi	-0		
			di	-:		
			di	-0		
			di	-k		
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			di	-0		
			di	-0		
			di	-0		
			di	-0		
			di	-0		
			di	-0		
			di	-0		
			di	-0		
A1	IIN	ituhtâ-u	itʃˈda	-w	ituhtâu	61
		(s/he is going)	go.final	-3	(s/he is going)	
			initial.(A1)final	-IIN		
			tʰəhesa	-w		

Appendix G: Age 3;01.18 (A1-2006-03-14)

AI	IIN	ni-kinipa-n (I will sleep)	nə- ˈɡɪnəba -n 1- fut.sleep.final -1/2 1- preverb.initial.(AI)final -IIN ɪnə- gʌ -n	nipâu (s/he is sleeping)	445
AI	IIN	ni-pîpîshi-n (I am a baby)	nə- bibiˈʃo -n 1- be.baby.dim.final -1/2 1- initial.dim.(AI)final -IIN Ø- bibisu -n	pîpîu (s/he is a baby)	268
AI	IIN	wiyiwî-u (s/he goes out)	wiˈwij -o go.out -3 vai -IIN wiwi -Ø wiwi -O wiwi -Ø wiwi -Ø	wiyiwîu (s/he goes out)	78, 170, 171, 172,
Child	Child	mîmî (sleep)	ˈmimi sleep (AI)child.form mimi mim mimi mimi mimi	mîmîu (s/he is sleeping)	303, 306, 403, 427
Child	Child	pûpûsh (pee)	boˈbʌʃ pee (AI)child.form bubuʃ bubuʃ bubuʃ bubu: bubɪʃ bubuʃ bubuʃ	pûpûshiu (s/he urinates)	214, 215, 217, 218, 219, 223
Child	Child	wîpûpûsh (I want to pee)	webo'bʌʃ want.pee preverb.(AI)child.form wububuʃ	pûpûshiu (s/he urinates)	216
II	IIN	chîshikâ-u (it is daytime)	ˈdʒiʃəga -w be.daytime.final-0 initial.(II)final -IIN ʤiʃida -w (sung)	chîshikâu (it is daytime)	202

Appendix G: Age 3;01.18 (A1-2006-03-14)

II	IIN	ihtikun (it is (t)here)	dɔˈgon be.final.0 initial.(II)final(IIN) dɔgʌn jɛgon dikgon	ihtikun (it is (t)here)	390, 443
II	CIN	nwâki-hch (it is visible)	ˈnɑkʰ(i) -tʃ be.visible.final -0 initial(IC).(II)final -CIN nʌ -s	nûkun (it is visible)	189
II	IIN	tiwishtâ-u (it is a week)	ˈdʊʃda -w be.week.final -0 initial.(II)final -IIN didʌ -O (sung) diʤʌ -O (sung)	tiwishtâu (it is a week)	203, 204

Appendix H: Age 3;04.09 (A1-2006-06-02)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
AI	IMP	chikimuhtâ-h (stick it on!)	ʤəgum(v) ˈda -h be.stuck.final.final.final -2s initial.vai/(II)final.causative.vai+o.final-IMP dəwɪtˀda -h	chikimuhtâu (s/he sticks it on)	323
AI	CIN	âihtâ-yin (you are there)	ajˈta -jn preverb.be.final -2s preverb.IC.initial.(AI)final -CIN ənda -jŋ	ihtâu (s/he is (t)here)	421
AI	CIN	âhtâ-yin (you are there)	aˈta -jn be.final -2s initial.IC.(AI)final -CIN ɑda -jŋ ɑda -jn ɑda -jn da -j ɑda -je ɑda -jn ɑda -jn əda -jn da -j	ihtâu (s/he is (t)here)	332, 345 349, 367, 371, 414, 422, 411, 443
AI	CIN	ihtâ-yi-ch (s/he is (t)here)	ˈda -j t^h be.final -obv -3 initial.(AI)final -obv -CIN da -j -Ø	ihtâu (s/he is (t)here)	478
AI	IIN	ihtâ-u (s/he is (t)here)	ˈda -w be.final -3 initial.(AI)final -IIN da -w dɑ -ɹ da -w dɑ -n da -w da -w da -w *? da -w	ihtâu (s/he is (t)here)	81, 182, 187, 199, 355, 358, 362, 513, 598

Appendix H: Age 3;04.09 (A1-2006-06-02)

AI	CIN	âhti-yin (you do)	a'ti -n do.final -2s initial.IC.(AI)final -CIN ɑdi -Ø adi -Ø adi -Ø di -Ø ɑdi -Ø ɑdi -Ø adi -Ø ɑdʒi -Ø əti -Ø ɑdi -ʔ	ihtiu (s/he does)	327, 330, 342, 373, 374, 378, 418, 421, 440
AI	IMP	mâchî-h (leave!)	ma'dʒi -h leave.final -2s initial.(AI)final -IMP nɪndu -Ø	mâchîu (s/he is leaving)	387
AI	IIN	mâtu-u (s/he is crying)	'mad(v) -o cry.final -3 initial.(AI)final -IIN mɑd -o	mâtû (s/he is crying)	139
AI	IMP	nikim-tâu (s/he is singing)	nə'gum -daw sing -2pl initial.vai -IMP nə -daw	nikimû (s/he is singing)	250
AI	IIN	nipâ-u (s/he is sleeping)	'nɪba -w sleep.final -3 initial.(AI)final -IIN meba -w	nipâu (s/he is sleeping)	357
AI	IMP	pâtâsh-h (bring it!)	ba'daʃ -ʃ bring.final.dim -2s initial.vai+o.final.dim -IMP bedɛs -s	pâtâu (s/he brings it)	37
AI	IIN	pîhchichâ-u (s/he goes in)	'bitʃa -w go.in.final -3 initial.(AI)final -IIN midʒɑ -Ø	pîhchichâu (s/he goes in)	412
AI	IIN	ni-wîwiyiwî-n (I am going out)	nə- wi'wiwɪ -n l- want.go.out.final -1/2 l- preverb.initial.(AI)final -IIN Ø- wiwɪ -n	wiyiwîu (s/he goes out)	69

Appendix H: Age 3;04.09 (A1-2006-06-02)

AI	CIN	châwiyiwî-t (s/he will go out)	ʤa'wiwi -t^h future.go.out.final -3s preverb.initial.(AI)final -CIN nojuwi -tˀ	wiyiwîu (s/he goes out)	552
AI	IIN	wiyiwî-u (s/he goes out)	wi'wij -o go.out -3 vai -IIN duwi -Ø	wiyiwîu (s/he goes out)	81
Child	Child	mîmî (sleep)	'mimi sleep (AI)child.form mimi: minik	mîmîu (s/he is sleeping)	498, 617
Child	Child	mîmî-u (s/he is sleeping)	'mimi -jo sleep -3 (AI)child.form -IIN ɪmi -ɔ mimi -o	mîmîu (s/he is sleeping)	356, 465
II	IIN	chikimu-yi-u (it is attached, stuck)	ʧəgu'm(v) -ij -o be.stuck.final -obv -0 initial.vai/(II)final-obv -IIN kom -ɪnj -o	chikimû (it is attached, stuck)	200
II	IIN	chishîkâ-u (it is day)	'ʤiʃiga -w be.day.final -0 initial.(II)final -IIN metʃedɑ -Ø (sung)	chishîkâu (it is day)	316
II	IIN	nîshuchishikâ-u (it is Tuesday)	niʃɔ'ʤiʃəga -w two.day.final -0 initial.(II)final -IIN deʃeda -w (sung)	nîshuchishikâu (it is Tuesday)	65
II	IIN	pâyikutûshtâ-u (there is one week)	bajkə'duʃda -w be.one.week.final -0 initial.(II)final -IIN əbajgojɑ -Ø (sung) bajgoda -w (sung) bajgoəda -w (sung) bajgəda -w (sung)	pâyikutûshtâu (there is one week)	63, 64, 315
II	IIN	pichiskinâ-u (it is blue)	bɪts'kɪna -w be.blue.final -0 initial.(II)final -IIN ena -w (sung) k^hɪnɑ -Ø (sung) bɪtʃəa -w (sung)	pichiskinâu (it is blue)	93, , 96, 110

Appendix H: Age 3;04.09 (A1-2006-06-02)

II	IIN	shikutâunâkun (it is yellow (lit. it looks like bakeapple))	ʃɪgʊdawˈnægʊn bakeapple.looks.like.0 initial.(II)final.IIN jugʊnʊŋ (sung)	shikutâunâkun (it is yellow (lit. it looks like bakeapple))	111
II	IIN	ushâwâ-u (it is green)	usˈawa -w be.green.final -0 initial.(II)final -IIN ossowɑ -Ø (sung)	usâwâu (it is green)	112
II	IIN	ushâwâshi-u (it is yellow)	uʃawaˈʃ(v) -u be.yellow.final -0 initial.(II)final -IIN uʃɑʃ -u (sung) dʒɑʃt -o (sung) ostɔw -ɔ (sung) ʃ -u (sung)	ushâwâshiu (it is yellow)	62, 96, 98, 109
II	IIN	wâpâ-u (it is white)	waˈba -w be.white.final -0 initial(II)final -IIN b -o (sung) wæbʌ -Ø (sung)	wâpâu (it is white)	99, 113
II	IIN	wiyipâ-u (it is black)	wiˈba -w be.black.final -0 initial.(II)final -IIN ba -w (sung)	wiyipâu (it is black)	100

Appendix I: Age 3;06.23 (A1-2006-08-16)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
A1	CIN	kâapi-t (that s/he sits)	ˈgæbɪ -t that.sit.final -3s comp.initial.(A1)final -CIN gʌpe -Ø	apîu (s/he sits)	36
A1	IIN	api-u (s/he sits)	ˈɛb(v) -o sit.final -3 initial.(A1)final -IIN eb -uː mɪeb -ʌ web -ʌ eb -ʌ	apîu (s/he sits)	3, 5, 6, 7
A1	IMP	api-h (sit!)	ˈɪp(v) -ʰ sit.final -2s initial.(A1)final -IMP ʔibi -h ɪːp -ʰ	apîu (s/he sits)	54, 372
A1	IMP	chiyipî-h (hurry!)	dʒiˈbi -h hurry.final -2s initial.(A1)final -IMP ʤəbe -h ʤəbe -h	chiyipîu (s/he hurries)	165
A1	CIN	âhtâ-t (s/he is (t)here)	ˈætda -d over.there be.final -3s initial(IC).(A1)final -CIN adɑ -dɑ	ihtâu (s/he is (t)here)	164
A1	IIN	ihtâ-u (s/he is (t)here)	ˈda -w be.final -3 initial.(A1)final -IIN dɪ -k da -w da -w gɑː -wɪk da -w	ihtâu (s/he is (t)here)	126, 144, 149, 159, 365
A1	IIN	kwâshkuhti-u (s/he is jumping)	ˈgwɑʃd(v) -o jump.final -3 initial.(A1)final -IIN baʃd -u	kwâshkuhtiu (s/he is jumping)	199

Appendix I: Age 3;06.23 (A1-2006-08-16)

AI	IIN	nîmi-u (s/he dances)	ˈnim(v) -o dance.final -3 initial.(AI)final -IIN ɪm -Ø	nîmiu (s/he dances)	217
AI	IIN	nipâ-u (s/he is sleeping)	nəˈba -w sleep.final -3 initial.(AI)final -IIN ba -w da -w wa -w	nipâu (s/he is sleeping)	62, 140, 246
AI	CIN	châpîhchichâ-t (s/he will go in)	ʤəˈbiʧæ -d future.3.go.in.final -3 preverb(IC).initial.(AI)final-CIN ʤɑbiʤɪ -Ø	pîhchichâu (s/he goes in)	65
AI	CIN	pâhchâ-t (s/he goes in)	ˈbætʤæ -d enter.final -3s initial.(AI)final -CIN deʤa -b	pîhchichâu (s/he goes in)	139
AI	CIN	pîhchichâ-t (s/he goes in)	ˈbiʧæ -d go.in.final -3 initial.(AI)final -CIN biəgɪ -Ø	pîhchichâu (s/he goes in)	65
AI	IIN	ni-pîhchâ-n (I go in)	nə- ˈbiʧæ -n 1- enter.final -1/2 1- initial.(AI)final -IIN Ø- bɪʧa -n Ø- bɪʧʤa -n Ø- bɪʧa -n	pîhchichâu (s/he goes in)	463
AI	IMP	ushihtâ-tâu (let's make it)	ˈwɪʃdə -daw make.causative.final -21pl initial.(AI)final.vai + O.final -IMP mɛsdɑ -daw	ushihtâu (s/he makes it)	63
Child	Child	pâîpâî-u (s/he is going bye-bye (s/he is leaving))	bəˈbaj -o leave -3 (AI)child.form -IIN wəbaj -o ajwaj -u	pâîpâîu (s/he is going bye-bye (s/he is leaving))	461, 462

Appendix I: Age 3;06.23 (A1-2006-08-16)

Child	Child	pûpush (pee)	ˈbobʊʃ pee (A1)child.form bobʌʃ bobʌʃ	pûpushiu (s/he urinates)	404, 405
II	IIN	chishtwâwâpiyi-u (it is making a sound)	ɛʃtawɑˈbij -o initial.?.inchoative -0 initial.?.(II)final -IIN stɑbi -o	chishtwâwâpiyiu (it is making a sound)	345
II	IIN	ihtikun (it is (t)here)	dəˈgʌn be.final.0 initial.(II)final(IIN) dogə	ihtikun (it is (t)here)	168
II	IIN	kichîhchâyâ-u (it is square)	ʤiˈʤaja -w be.square.final -0 initial.(II)final -IIN ʤiʤɛija -Ø	kichîhchâyâu (it is square)	119
II	IIN	michin (it is dirty)	ˈmɪʧən be.dirty.final.0 initial.(II)final.IIN mɪʧɪn mɪʧɪn mɪʤɪn	michin (it is dirty)	16, 18, 19
II	IIN	mihkwâ-u (it is red)	ˈmɪk(v) -o be.red.final -0 initial.(II)final -IIN mʊg -o (sung) bɪʔg -eʔ (sung) meg -ɑʃ (sung) bɪg -o (sung) me -Ø (sung) meg -ɑ (sung)	mihkwâu (it is red)	8, 43, 60, 65, 116, 172
II	IIN	pichiskinâ-u (it is blue)	bɪsˈkɪna -w be.blue.final -0 initial.(II)final -IIN dɛskɛ -Ø (sung) bɪʧkɪʔnɑ -ː (sung)	pichiskinâu (it is blue)	44, 173

Appendix I: Age 3;06.23 (A1-2006-08-16)

II	IIN	pîkupiyi-u (it is broken)	ˈbigopij(v) -o break.inchoative.final -0 initial.(II)final.(II)final -IIN ʤibej -ʌ gəbej -ə	pîkupiyiu (it is broken)	102, 104
II	IIN	shikutâunâkun (it is yellow (lit. it looks like bakeapple))	ʃukəˈdawnəgun bakeapple.seems.like.0 initial.(II)final.IIN ʃogədɑnɑgʌn	shikutâunâkun (it is yellow (lit. it looks like bakeapple))	44
II	IIN	tihkâyâ-u (it is cold out)	təgeˈja -w be.cold.out.medial.final -0 initial.medial.(II)final -IIN gaj -o	tihkâyâu (it is cold out)	137
II	IIN	ushâwâ-u (it is green)	uˈʃaw(v) -o be.green.final -0 initial.(II)final -IIN wa -w (sung) uʃa:wa -w (sung)	usâwâu (it is green)	46, 47
II	IIN	ushâwashi-u (it is yellow)	ˈʃawəʃ -u be.yellow.final -0 initial.(II)final -IIN ʃɑʃ -u (sung) saʃ -ʌ (sung) ʃaʃ -u (sung) ʃawəʃ -u (sung) sɑ -Ø (sung)	ushâwâshiu (it is yellow)	8, 43, 60, 65, 172
II/AI	IIN	pihchishin/ pihchihtin (s/he falls down, it falls down)	bɪtʃɪn fall.down.final.3/0 initial.(II/AI)final.IIN bɛtsje	pihchishin/ pihchihtin (s/he falls down, it falls down)	300

Appendix J: Age 3;08.24 (A1-2006-10-18)

Verb Class	Paradigm	Orthography (Gloss)	Morphological Breakdown	Dictionary Form (Gloss)	CCLAS #
AI	IIN	nit-âhkusi-n (I am sick)	ən'd- akusə -n 1- be.sick.final -1/2 1- initial.(AI)final -IIN Ø- mɪʦ -Ø	âhkusiu (s/he is sick)	307
AI	IIN	âhkusi-u (s/he is sick)	ʔaks -o be.sick.final -3 initial.(AI)final -IIN ɑks -o	âhkusiu (s/he is sick)	9
AI	IIN	akwâtisî-u (s/he is the best)	ə'gutsij -o be.superlative.final -3 initial.(AI)final -IIN gʌdij -o kʌdij -o kak^{h} -Ø kadhæ -Ø	akwâtisîu (s/he is the best)	38, 40, 86, 87
AI	IIN	nit-akwâtisî-n (I am the best)	nə- 'gɑtsi -n 1- be.superlative.final -1/2 1- initial.(AI)final -IIN nɪ- kasɪ -Ø	akwâtisîu (s/he is the best)	42
AI	IMP	api-h (sit!)	'ɪp(v) -^{h} sit.final -2s initial.(AI)final -IMP jɪt -^{h} ɪt -^{h} ɪt -^{h}	apîu (s/he sits)	333, 334
AI	IIN	ni-kiashtâ-n (I will place it there)	nə- 'gɪʃda -n 1- future.put.final -1/2 1- preverb.initial.vai + o.final -IIN mə- dɪʃ -Ø	ashtâu (s/he places it there)	19
AI	IIN	chîhti-u (s/he functions)	'ʧit(i) -o function.final -3 initial.(AI)final -IIN ʤij -o	chîhtiu (s/he functions)	59
AI	IMP	chiyipî-h (hurry!)	ʤi'bi(v) -h hurry.final -2s (AI)(AI)final -IMP ʤɪbɛ -h ʤɪbɛ -h	chiyipîu (s/he hurries)	147

Appendix J: Age 3;08.24 (A1-2006-10-18)

AI	CIN	âihtâ-yân (when I am (t)here)	aj'ta -jajn when. be.final -1s preverb.(AI)final -CIN ʌda -jɛm	ihtâu (s/he is (t)here)	99
AI	IIN	ihtâ-u (s/he is (t)here)	'da -w be.final -3 initial.(AI)final -IIN da -w	ihtâu (s/he is (t)here)	338
AI	IIN	ihtâ-yi-u (s/he is (t)here)	'da -j -o be.final -obv -3 initial.(AI)final -obv -IIN da -j -ʌ da -j -o	ihtâu (s/he is (t)here)	191, 263
AI	CIN	iskulu-yan (I am going to school)	skə'lu -jæn go.to.school.final -1s initial.(AI)final -CIN skolo -Ø	iskulû (s/he is going to school)	101
AI	IIN	ni-iskulu-n (I am going to school)	nə-'skulu -n 1- go.to.school.final -1 1- initial.(AI)final -IIN Ø- ɛskolo -Ø Ø- skolʌ -n	iskulû (s/he is going to school)	102, 105
AI	IIN	îtuhtâ-u (s/he is going)	it^{h}'da -w go.final -3 initial.(AI)final -IIN d -o da -w	îtuhtâu (s/he is going)	32, 33
AI	CIN	kâiyi-t (that s/he said)	'gajɪ -t that.past.say -3s pvb.vai -CIN gaj -gə	iyiu (s/he says)	364
AI	IIN	ni-kischihu-n (I know how to do)	'nɪ- kstsʊ -n 1- know.how.to.do.final -1/2 1- initial.(AI)final -IIN nɪ- ʃʤa -Ø	kischihû (s/he knows how to do)	117
AI	IIN	ni-kushtâ-n (I am afraid)	nə- 'kuʃda -n 1- be.afraid -1/2 1- vai+o -IIN nɛ- ʃdɪ -n nɛ- sta -n	kushtâu (s/he is afraid)	352, 353

Appendix J: Age 3;08.24 (A1-2006-10-18)

AI	IIN	ni-mâchî-n (I am leaving)	nə- ˈmadʒi -n 1- leave.final -1/2 1- initial.(AI)final -IIN Ø- mʌʤi -n	mâchîu (s/he leaves)	350
AI	IMP	mâtiwâish-h (play!)	madˈwaʃ -ʃ play.dim -2s (AI)dim -IMP nədatʃ -ʃ	mâtiwâu (s/he is playing)	1
AI	IIN	ni-mâtu-n (I am crying)	nə- ˈmadɑ -n 1- cry.final -1/2 1- initial.(AI)final -IIN Ø- mʌto -Ø	mâtû (s/he is crying)	301
AI	IIN	ni-kimîchi-n (I will eat it)	nə- gəˈmidʒɪ -n 1- FUT.eat.final -1/2 1- FUT.initial.vai+o.final -IIN Ø- wiwiʧʰ -Ø	mîchiu (s/he eats it)	268
AI	IIN	ni-mîchi-n (I am eating it)	nə- ˈmiʤɪ -n 1- eat.final -1/2 1- initial.vai+o.final -IIN nɪ- nʧə -n nɪ- ʤə -t Ø- ʧʰə -n	mîchiu (s/he eats it)	270, 272, 271
AI	IIN	wiyiwî-u (s/he goes out)	wiˈwij -o go.out.final -3 initial.(AI)final -IIN wiwij -o wiwij -o	wiyiwîu (s/he goes out)	78, 80
Child	Child	ni-kîkîsh-n (I am hurt)	nə- ˈgigiʃ -ɪn 1- be.hurt.dim -1/2 1- (AI)child.form.dim -IIN Ø- gigis -jɪd	kîkîshiu (s/he is hurt)	261
Child	Child	mîmî-u (s/he is sleeping)	miˈmi -jo sleep -3 (AI)child.form -IIN mimi -jo:	mîmîu (s/he is sleeping)	290
Child	Child	ni-kipâîpâîu-n (I will go bye-bye, I am leaving)	ni- gəbaˈbajʔʊ -n 1- future.leave.final -1/2 1- preverb.child.form.initial.(AI)final -IIN bi- bʌbajo -Ø	pâîpâîu (s/he is going bye-bye (s/he is leaving))	283

Appendix J: Age 3;08.24 (A1-2006-10-18)

II	IIN	ashtâ-u (it is there)	ˈɪʃda -w it.is.there.final -0 initial.(II)final -IIN lɪʃda -w ɪʃd -o ɪʃd -o ɪʃd -o	ashtâu (it is there)	275, 276, 279, 280
II	IIN	chistâwâpiyi-u (it is making noise)	ʃtɑˈbij -o make.noise.(II)final -0 VII.final -IIN dabij -a dabij -o habij -a	chistâwâpiyiu (it is making noise)	356, 357
II	CIN	kâihti-t (that s/he does)	ˈgædɪ -tʰ that.do.final -3s preverb.IC.initial.(AI)final -CIN gati -tʰ	ihtiu (s/he does)	41
II	CIN	kâitwâhtih-ch (that it makes a certain noise)	geˈdɑdɪ -ʧ that.make.certain.noise.final -0s pvb.IC.(II)final -CIN bɔɹɑpɪ -d	itwâhtihu (it makes a certain noise)	7
II	IIN	itwâwâpiyi-u (it is making noise)	ɪˈdɑbij -o make.noise.medial.final.inchoative -0 initial.medial.(II)final -IIN ɪbʌbij -o wədʌbij -o	itwâwâpiyiu (it is making noise)	309, 327
II/AI	IIN	nipî-u (s/he is wet, it is wet)	nɪˈbij -o be.wet.final -3/0 initial.(II/AI)final -IIN epij -o wibij -o ɪbij -o	nipîû (s/he is wet, it is wet)	21, 23, 45
II/AI	IIN	pihchishin/ pihchihtin (s/he falls down, it falls down)	bɪtʃɪn fall.final.3/0 initial.(II/AI)final.IIN nɪʃdu	pihchishin/ pihchihtin (s/he falls down, it falls down)	321