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CHAPTER 22

POLYSYNTHESIS IN THE ACQUISITION OF INUIT LANGUAGES

SHANLEY E. M. ALLEN

22.1 INTRODUCTION

One of the main goals of the field of language acquisition is to determine which patterns and mechanisms in acquisition are universal to all children, and which are specific to individual languages or language typologies. To achieve this goal, we need research on the acquisition of languages of a variety of typologies since each type of language presents different acquisition challenges and thus provides different insights into the overall process. The majority of research to date has focused on the acquisition of analytic languages (e.g. English, German, Japanese), with a relatively small but growing amount of research on the acquisition of synthetic languages (e.g. Turkish, Hebrew, Hungarian). However, comparatively few studies of language acquisition focus on the acquisition of polysynthetic languages (Kelly, Wiggersworth, Nordlinger, and Blythe 2014). In the present chapter we take a step towards ameliorating this situation by bringing together the relevant research literature on the acquisition of Inuit languages, often cited as a quintessential example of polysynthesis.

Polysynthetic languages are “languages with complex morphologies capable of packing into a single word many morphemes that in more analytic languages would be independent words” (Fortescue 1994: 2606). Not surprisingly, they typically have a high number of morphemes per word; Greenberg (1966) calculates that Eskimo (i.e. Inuit) has 3.73 morphemes per word while English has only 1.68. This morphological complexity derives from a number of features, including the incorporation of the noun stem within the verbal complex, derivational processes that enable the shifting from noun to verb and back within a single word, a large inventory of bound morphemes including a variety of adverbial elements, and pronominal marking of subjects and objects (as well as other core arguments) on verbal forms as well as possessors on nominal forms (Fortescue 1994: 2601). Evans and Sasse (2002: 3) summarize this as follows:
A prototypical polysynthetic language is one in which it is possible, in a single word, to use processes of morphological composition to encode information about both the predicate and all its arguments, for all major clause types (i.e. one-, two-, and three-place predicates, basic and derived), to a level of specificity allowing this word to serve alone as a free-standing utterance without reliance on context.

This polysynthetic structure presents numerous challenges for language acquisition. How do children break into the language system and identify individual morphemes given the sheer length of typical words? How do children master the complexity of verbal and nominal morphology? How do children navigate argument structure, given that subjects and objects are realized in cross-referencing affixes on the verb, and overt noun phrases realizing arguments are optional? How do children learn structures like noun incorporation and nominalization where they must shift grammatical classes productively within the word? How do children negotiate syntactic structures like passive and causative that change valency, given that the relevant morphology is word-internal? Many of these challenges are not present in languages of other structures, and thus understanding how children acquire polysynthetic languages is crucially important to understanding what is universal and language-specific in the process of acquisition.

One polysynthetic language family for which there is a reasonable acquisition literature is the Inuit languages—particularly Eastern Canadian Inuktitut (e.g. Wilman 1988; Allen 1996; Crago and Allen 1998; Parkinson 1995; Swift 2004) and West Greenlandic (e.g. Fortescue 1984; Fortescue and Lennert Olsen, 1992). This literature covers a variety of topics from language socialization to morphosyntax to narrative to argument structure. However, a substantial portion of the literature focuses on the acquisition of structures relevant to polysynthesis, which is the focus of the present chapter.

The chapter is structured as follows. Section 22.2 briefly presents the structure of Inuit languages, concentrating on features relevant to polysynthesis. Section 22.3 introduces the existing literature on the acquisition of Inuit languages. Sections 22.4–22.6 overview the general trajectory of acquisition of morphosyntax during the preschool years, covering the one-morpheme stage (Section 22.4), the two-morpheme stage (Section 22.5), and the stages beyond two morphemes (Section 22.6). Sections 22.7–22.9 focus in more detail on the acquisition of three structures involving valency alternation: noun incorporation (Section 22.7), causative (Section 22.8), and passive (Section 22.9). Sections 22.10–22.11 highlight particularly complex structures produced by young children including those with multiple valency alternations within one word (Section 22.10) and multiple changes of word class within one word (Section 22.11). Finally, Section 22.12 concludes the chapter with a summary of ways in which the acquisition of a polysynthetic language informs our understanding of language acquisition in general.

### 22.2 INUIT LANGUAGES

Inuit languages are part of the Eskimo-Aleut language family, and are spoken by some 140,000 people across Alaska, northern Canada, and Greenland (Dorais 2010). Inuit languages are typically divided into four groups: Alaskan Inupiaq, Western Canadian Inuktitut, and Greenlandic Kalaallisut. Each of these is itself divided into dialects and subdialects, for a total of sixteen different dialects and numerous subdialects.

Although most speakers of Inuit languages in Alaska and western Canada are older adults, children still learn Inuit languages from birth in most areas of eastern Canada and Greenland. Most Inuit in these regions are native and fluent speakers of the language, using it as their main language at home and often at work as well. In addition, children typically learn an Inuit language at home as their native language. Some children are also simultaneous bilinguals, learning both an Inuit language and either English or French (Eastern Canada) or Danish (Greenland) from birth (Allen 2007).

Several structural characteristics of Inuit languages are particularly relevant with regard to polysynthesis (Dorais 2010; Fortescue 1994; Mithun 2000). First, they use morphology to express in one word what would be a complete sentence in a language like English. Words fall into three classes: verbs, nouns (including pronouns and demonstratives), and uninflected particles. The former two require a root and an inflection, and then allow up to eight or more derivational morphemes in between, affixed in order of accumulating semantic scope from left to right. A typical example is shown in (1).

(1) Iluq-salaa-jungu-san-maan-ting<br> Iluq-shuaalukut-mut-nag-qat-luq-sa-nagam-ting-nu-ta-ting-
 house-big-EMP-clit-ABS-VP-NEG-CTG-1SG-but-also
 'But also, because I never went to the really big house.'

(2) Ullaaq-saakun saq-saakun pillaalanguq-pullaaq-pullaaq<br> Ullaq-shua-nuq-tuaq-nuq-tuaq-tuaq
  morning-become-as-see-as-CTG.3SG PRE-this-one-ABS.SG  hoy-ABS.SG
  pullaq-tinguq-saak-pullaaq-pullaaq<br> pullaq-tuaq-m-saq-qaq-tuaq-tuaq
  thing-possession-have-NEG-CTG.3SG
 'When it became morning the boy tried to look at his frog but there was nothing.'

(Allen, Crago, and Pesco 2006:535)
As a result of the extensive verbal inflection system, ellipsis of both subjects and objects is very common in Inuit languages (Allen 2000). This is evident in both preceding examples where most subjects are omitted—that is, ‘in (4), pleonastic ‘it’ in (2), and ‘there’ in (1).

Finally, Inuit languages exhibit a structure virtually identical to classic noun incorporation. In Inuit languages, the noun root incorporates into a bound verb root instead of incorporating into an independent verb root as it does in English (Mithun 2000; Fortescue 1994). The preceding examples reveal three instances of noun incorporation (or quasi-incorporation)—that is, illul ‘house’ in (4), silla ‘morning’ in (2), and pi ‘thing’ in (2).

22.3 RESEARCH ON THE ACQUISITION OF INUIT LANGUAGES

The available research on the acquisition of polysynthesis in Inuit languages derives from four (sets of) studies. Each attests to the fluent acquisition of Inuit languages by preschool and early school-aged children, the age group that is the focus of this chapter. The first set of studies comprises spontaneous speech data from children aged 1 to 3. The age in years/months) learning Tarrarmiut, spoken along Hudson Strait in Nunavut, the northernmost region of Quebec, Canada. Crago (1998) reports on longitudinal data from four children aged 10-12 at outset, videotaped at four-month intervals for a total of four sessions per child. Allen (1996) reports on similar data from four children aged 10-11 at outset, videotaped monthly for nine months. Finally, Crago and Allen (2001) report on data from one five-year-old child with specific language impairment and a typically-developing child of the same age. Data in all of these studies were collected in the homes of the children, and comprise natural everyday interactions between the children and their families and friends. These studies have resulted in numerous publications related to the acquisition of polysynthesis (e.g., Allen 1996, 1998, 2000, 2013; Allen and Crago 1996; Allen and Dench 2013; Crago and Allen 1998, 2001; Skarabola 2007; Swift 2004).

The second set of studies comprises spontaneous speech data from children aged 1-5. Learning West Greenlandic, spoken along the western coast of Greenland. Fortescue (1995) analyzes naturalistic spontaneous speech samples from one child aged 21/2, while Fortescue and Lennert Olsen (1992) analyze similar data from five children aged 2-1/2, 3-1/2, 3-3/4, 3-7/12, and 4-1/2. Data in both these studies were collected by audiotape in the homes of the children, and comprise natural everyday interactions between the children and their families and friends. Several aspects of the acquisition of polysynthesis are covered in these two publications.

The third study comprises narrative and spontaneous speech data from 23 six-year-old children learning Tunugurnit, spoken along the northern coast of Baffin Island in Nunavut, the Inuit territory of Canada. Milman (1988) collected three types of data from each of the children: description of three pictures of scenes familiar to the children, narration of a wordless story book, and spontaneous speech in small group free play activities. These data were analyzed to determine the children’s mean frequency of use of roots, affixes, and combinations of affixes, to which they could be taught to inform curriculum development for primary school children. Information from this study about the overall complexity of utterances and the frequency of use of certain affixes is relevant to the acquisition of polysynthesis.

22.4 ONE-MORPMEME STAGE

The most obvious challenge facing children learning a polysynthetic language is breaking into the complex morphology of the language. Children must segment words in the language they hear around them into their component morphemes, and then learn to use those morphemes to build words in their own utterances. As well, in other languages, Inuit children's first utterances typically comprise one word, which is also one morpheme (Crago and Allen 1998). This can be an uninflected particle that can freely stand alone (3a), a single noun (3b), or a verb root that appears without inflection (3c).

(3) a. Auka. ‘No’. (Tunumi i; Crago and Allen 1998: 262)
 b. Pipi. ‘Baby’. (Sarah i; Crago and Allen 1998: 262)
Many of these early words are baby words—a nursery vocabulary that is used by and to children up to about age 3 (Crago, Allen, and Pesco 1998). The example in (4) shows a baby word verb as compared to its adult equivalent utterance.

(4) Apaapa.  [adult: Nirti-guma-junga,]
food/eat.  [ eat-want:PAR.1.SS]
'Food/eat.'  ['I want to eat.']  (Jini 18; Crago and Allen 1998: 264)

Importantly, these early productions are all identifiable morphemes. Note that noun and verb roots rarely appear in caregiver speech without affixation: Crago and Allen (1997) report that 90 percent of verb roots and 70 percent of noun roots are followed by at least one affix (mean 1.8 affixes for verb roots and 1.2 affixes for noun roots) in speech directed by four different mothers to their children aged 18-22. Thus, children’s early production of isolated morphemes shows that they are not simply repeating memorized forms but rather have been able to isolate individual morphemes from the input and can use them productively.

A first stage of producing individual morphemes is also found in other morphologically complex languages including Navajo, Quechua, and Tzeltal (Kelly et al. 2014)—all languages with relatively little fusion across morpheme boundaries in the adult language. In contrast, the first productions in morphologically complex languages with more fusion between morphemes (e.g. Mohawk, Eliche Mayan) tend to comprise the most prominent syllable of a word, whether or not it is a complete morpheme. This difference in patterning indicates that not only morphological complexity but also morphophonological patterns allowing identification of morphemes play a crucial role in early acquisition in polysynthetic languages.

22.5 TWO-MORPHEME STAGE

By around two years of age, Inuit children start producing an average of two morphemes per utterance. At this point, their utterances begin to differ substantially from those of children speaking more analytic languages, revealing their early sensitivity to language-specific patterns.

Children in the two-morpheme stage who are learning analytic languages (e.g. English, German) typically produce two separate words per utterance, and thus is this commonly known as the ‘two-word stage’ (Brown 1973). These children use very few grammatical morphemes reliably or productively, with most appearing only several months later. English-speaking children at this stage typically use only two inflectional affixes: present progressive –ing and plural –s (Brown 1973).

Children learning Inuit languages, in contrast, start adding grammatical morphemes to verb and noun roots during this stage (and earlier as well), so that many of their utterances are comprised of a root and an affix rather than two separate words. Thus, it makes more sense to refer to this as the ‘two-morpheme stage’ for polysynthetic languages. This acquisition pattern is similar to that for children learning agglutinative languages such as Turkish (Aksu-Koç and Slobin 1986) and Hungarian (MacWhinney 1985), who also produce many root + morpheme units at this stage. However, the variety of inflectional and derivational affixes used productively is likely higher for Inuit languages compared to agglutinative languages given the much higher number of such affixes regularly used in Inuit languages.

Data at this stage is available for both West Greenlandic and Tarramitu. For example, Fortescue and Lennert Olsen (1992) report that one West Greenlandic-speaking child aged 21 used ten verbal inflections, three nominal inflections, and eight derivational suffixes more or less productively in a data session comprising ten typed pages of transcription, and that his longest word contained four morphemes. Fortescue (1985) reports that another West Greenlandic-speaking child aged 21 used twenty-five verbal inflections, fifteen nominal inflections, and twenty-four derivational suffixes more or less productively in one half-hour session, and his longest word contained five morphemes. Exact figures are not available for Tarramitu, but the pattern is very similar (Allen, Dench, and Isakson, submitted). It is clear from these examples that children are already productively producing many derivational and inflectional morphemes at the two-morpheme stage.

Typical utterances comprising two morphemes include either a verb root or a noun root plus an affix. The utterances in (5) illustrate a verb root plus an inflection. The utterances in (6) illustrate a noun root plus an adjective (6a), instrumental case marker (6b), possessive marker (6c), conjunction (6d), and demonstrative enclitic (6e).

(5) a. Qi-git.
   come-INF.s
   '(You) come here.'
   (Jini 18; Crago and Allen 1998: 263)
   b. Aamar-poq.
   open-INN.3.S
   'It opens.'
   (L 22; Fortescue and Lennert Olsen 1992: 141)

(6) a. Qiimmi-aluk.
   dog-bad.
   'Bad dog.'
   (Lucas 28; Crago and Allen 1998: 263)
   b. Tissimisaru-nik.
   airplane-MOD.SG
   'With an airplane.'
   (L 22; Fortescue and Lennert Olsen 1992: 143)
   c. Ataa-ta.
   father-ABS.1.SG
   'My father.'
   (Agisiaaq 2:3; Fortescue 1985: 108)
   d. AnneMarie-lu.
   AnneMarie-and
   'And AnneMarie.'
   (Agisiaaq 2:3; Fortescue 1985: 108)
   e. Suna-ana.
   what-that
   'What is that?'
   (Agisiaaq 2:3; Fortescue 1985: 108)

Utterances at this stage may also contain two separate words of one morpheme each, as in (7a). It is rare to find a two-word utterance composed of a verb root plus a subject or object.
as in (2b), even though this is one of the more typical utterance types at the two-morpheme stage in English.

(2) a. Auka  Siasia.
    no  Jesse
   'No, Jesse.'  (Sarah 11; Crago and Allen 1998: 262)

b. Igalluk  uvaas.
    fish  bleed
   'The fish is bleeding.'  (Tunasi 21; Crago and Allen 1998: 264)

Finally, some utterances appear to be two morphemes in length but are more likely memorized fixed forms. The examples in (8), in which the verbal inflection is missing, are frequent expressions in both child and adult Tarramit (but not West Greenlandic). Since both the verb stem and the verbal inflection may be omitted in constrained contexts in Tarramit (but not West Greenlandic) adult colloquial speech, these utterances cannot be considered ungrammatical (Swift and Allen 2002a, 2002b).

(8) a. Su-nngit.  [Su-nngi-tunga.]  
   do-NEG  [do-NEG-PAR.1sS]  
   '(I'm) not doing anything.'  (Tunasi 21; Crago and Allen 2002: 80)

b. Tii-tuq.  [Tii-tu-tuma-gama]  
   tea-consume  [tea-consume-want-CTG.1sS]  
   '(I want to) have some tea.'  (Sarah 11; Crago and Allen, 2002: 81)

It is difficult to determine whether a given morpheme combination at this stage is used productively or reproduced as a fixed form. Fortescue (1985) and Allen and Crago (1996) discuss several criteria for determining productivity, some of which are discussed in later sections of this chapter.

In contrast with more analytic languages like English, the two-morpheme stage in Inuit languages is not considered telegraphic. This is the case for three reasons. First, subject and object ellipsis are common in the adult language, so omitting subject and object in child language is not seen as non-target-like. Second, Inuit languages do not have many of the function words typically omitted in early child English such as articles and auxiliaries. Third, Inuit-speaking children master verbal inflections (agreement) and nominal inflections (plural, possessive) very early compared to English-speaking children.

22.6 BEYOND THE TWO-MORPHEME STAGE

The trend of more separate words in analytic languages like English, and more morphemes within one word in Inuit languages, continues beyond the two-morpheme stage and into adulthood. One representative study of English-speaking children showed that three-year-olds had an average mean length of utterance (MLU) in words of 3.35, while their average MLU in morphemes was 5.38, yielding an average of 1.1 morphemes per word (Rice, Redmond, and Hoffman 2006: 798). In contrast, Allen and Dench (2015) found that Tarramit-speaking three-year-olds had an average MLU in words of 3.22 (range 1.10–4.38), while their average MLU in morphemes was 2.63 (range 1.88–3.60), yielding an average of 2.1 morphemes per word (range 1.69–2.44)—twice as many as in English. The mean length of the longest word in morphemes at age 3 in Tarramit was 6.29 (range 4–7), while the mean length of the longest utterance in morphemes was 8.57 (range 5–11).

The same pattern holds for slightly older children. Rice et al. (2006: 798) found that English-speaking five-year-olds had an average MLU in words of 4.06, while their average MLU in morphemes was 4.51, again yielding an average of 1.1 morphemes per word. In contrast, Wilman (1988: 92–7) found that Tunurinaq-speaking six-year-olds had an average MLU in words of 2.64 (range 1.14–2.67), and an average MLU in morphemes of 2.91 (range 2.69–3.59), yielding an average of 2.9 morphemes per word (range 2.16–2.92)—again twice as many as in English. The mean length of the longest utterance in morphemes at age 6 in Tunurinaq was 22.30 (range 10–39); data on longest words is not provided.

This pattern indicates considerably more complexity within words in Inuit languages as compared to English. Beyond the two-morpheme stage, Inuit children gradually produce more morphemes per word in their utterances. Fortescue and Lennert Olsen (1992) reported that the youngest children in their study (age 212, 233, and 317) used at most one derivational affix between the verb root and the inflection (for a total of three morphemes in the word). The child aged 314 produce 16 utterances with two derivational affixes between the root and the inflection, as well as one utterance with three derivational affixes. The child aged 417 used 45 utterances with two derivational affixes and 11 with three derivational affixes between the root and the inflection. This pattern is consistent with findings for Tarramit as well (Allen, Dench, and Inakson, submitted). Some ordering in the emergence of different types of affixes is also apparent across children (Allen, Dench, and Inakson, submitted; Fortescue 1985; Fortescue and Lennert Olsen 1992), with remarkable similarity in the patterns across Tarramit and West Greenlandic. This is covered in the following subsections.

22.6.1 Verbal inflectional and derivational affixes

Verbal inflections are produced among the first two-morpheme utterances, and are rarely omitted except in contexts where adults would also omit inflections in colloquial speech (Crago and Allen 2001; Swift and Allen 2002b). Imperative (e.g. -git 'IMP.2sS') and indicative (e.g. -juq 'PAR.3sS') inflections denoting singular subjects appear first. Infections in the contingent (e.g. -gama 'CTG.1sS') and interrogative (e.g. -vit 'INT.2sS') moods appear next, followed later by the more complex contemporaneous (e.g. -tansa 'CTM.4sS') and incontemporaneous (e.g., -tunsa 'CTM.3sS') moods that are used only in subordinate clauses. The contemporaneous inflection expresses that the action in the subordinate clause verb is happening or has already happened at the same time as the action in the main clause verb; the incontemporaneous inflection expresses that the action in the subordinate clause verb could in principle happen at the same time as the action in the main clause verb but has not yet. In addition, the range of persons and numbers denoted by the inflections gradually becomes more broad. The earliest inflections denote only subjects apart from one imperative inflection marking
both subject and object (\textit{guk 'IMP:2sSt.S})). However, more inflections marking both subject and object emerge as linguistic ability develops. Fortescue and colleagues report ten different productive verbal inflections for the child at age 22.5, around twenty-five different verbal inflections for each of the children aged 23.3–34.8, and then thirty-five to forty different inflections for each of the children aged 47.5 and 52.

The prevalence of verbal inflections denoting both subject and object in Inuit languages means that speakers can express a full sentence within one word, and adults very often do so. This holds for children as well; they express the subject only through verbal inflection (i.e. with no independent noun phrase or demonstrative) in about 85 percent of instances, and express the object only through verbal inflection in about 70 percent of instances (Allen 1992). Importantly, children are not random in how they express arguments. They use only verbal inflection when the identity of the intended subject or object is accessible to the interlocutor, such as through prior mention in the discourse or joint attention in the physical context. In contrast, they use an independent noun phrase or demonstrative when the identity of the intended subject or object is not accessible, such as when it is newly introduced in the discourse or not present in the physical context (Allen 2000; Skarabella 2007).

Interestingly, verbal inflections are identified as a difficult aspect of acquisition in the only study of specific language impairment (SLI) in Inuit languages (Crago and Allen 2001). The five-year-old Tarramit-speaking girl with SLI in this study used verbal inflections on only 60 percent of her verb stems (n=50) in one half-hour play session. This is in stark contrast to typically developing peers matched for age or language who used inflections on 98–100 percent of their verb stems (all figures not including situations where omission of inflection is permitted in colloquial speech, as discussed in section 22.5). The child with SLI omitted mention of the referent completely in a quarter of the instances (28), used an overt first or second person pronoun to realize the subject in another quarter of the instances (27), and substituted a non-finite inflection –mi in place of the target inflection in the remaining half of the instances (25). None of these options are grammatical in adult speech, nor are they found in the speech of typically developing children.

\begin{itemize}
\item a. Aaa qi-i. \hspace{1cm} \[=\text{Aaa qi-i-iuq}].
yes come-PRSP \hspace{1cm} \[=\text{yes come-PRSP-PAR.asS}]
\textit{Yes, is coming}. \hspace{1cm} \[=\text{Yes, he/she/it is coming}].
\text{(SFL: 54; Crago and Allen 2001: 93)}
\item b. Anaa anuruaa-MI uvanga. \hspace{1cm} \[=\text{Anaa anuruaa-si-junga}].
mother dress-MI I/me/my/mine \hspace{1cm} \[=\text{mother dress-PRSP-PAR.asS}]
\textit{Mom, dress I.} \hspace{1cm} \[=\text{Mom, I am about to get dressed}].
\text{(SFL: 54; Crago and Allen 2001: 95)}
\item c. Ah unila-MI ah sini-MI. \hspace{1cm} \[=\text{Sini-ngung-luk unila-MI}].
um boat-LOC.SG um sleep-MI \hspace{1cm} \[=\text{sleep-pretend-IMP:asS boat-LOC.SG}]
\textit{Um on the boat, um sleep}. \hspace{1cm} \[=\text{Let’s pretend to sleep on the boat}].
\text{(SFL: 54; Crago and Allen 2001: 94–5)}
\end{itemize}

Overall, this child with SLI does not use the morphosyntactic devices of her language appropriately, which leads to utterances that seem more analytic than polysynthetic.

22.6.2 Nominal inflectional and derivational affixes

We turn now to verbal derivational affixes in typically developing children. Tense and aspect markers are among the first derivational affixes to appear. Future markers appear first, used as early as 2.0. These include the near future -\textit{langu-} and -\textit{niiq-} as well as prospective aspect -\textit{nu-} in Tarramitin, and the future -\textit{aa-} and inceptive aspect -\textit{ler-} in West Greenlandic. Past-oriented aspect comes about the same time or slightly later in Tarramitin, with the affixes perfective -\textit{sim-} and the terminative -\textit{saaruk-} in Tarramitin, and -\textit{mun-} 'already' and -\textit{niiu-} 'have done' in West Greenlandic. Past tense then emerges somewhat later, first appearing between 2.6 and 3.0, with the earliest affixes being recent past -\textit{kaiman-} and yesterday past -\textit{lauq-} in Tarramitin. Swift (2004) provides a detailed overview of the acquisition of tense and aspect morphology in Tarramitin.

Also among the first verbal derivational affixes to appear are the negation marker -\textit{muit-} (for both languages), the politeness affix used to soften imperatives -\textit{lauq-} in Tarramitin, -\textit{aara-} in West Greenlandic, and two deverbal affixes in Tarramitin (-\textit{tu-} 'thing used for V', -\textit{jaq-} 'that which'). Next to emerge, sometime between 2.0 and 2.6, are affixes that change the valency of the verb — specifically the causative -\textit{tu-} and several denominalizing affixes (e.g. -\textit{a-} 'be' and -\textit{niiq-} 'go to' in Tarramitin, -\textit{tu-} 'be' and -\textit{niiq-} 'become' in West Greenlandic), as well as the passive -\textit{jau-} in Tarramitin (but not West Greenlandic). Around 2.6–3.0, affixes that translate as complement-taking verbs in English start to come in. These include -\textit{guma-} 'want to' and -\textit{niiuq-} 'pretend to' in Tarramitin, and -\textit{juma-} 'want to' and -\textit{niiuq-} 'can' in West Greenlandic. The habitual affix -\textit{rar-} and the passive participle -\textit{lauq-} also appear around this stage in West Greenlandic.

Until around 3.0–3.6, development in verbal derivational affixes is most noticeable in the addition of new categories of affixes, as we have just seen. Beyond this point, development focuses on adding more affixes in each category to cover a wider range of meanings and functions. Fortescue and colleagues report five to fifteen different productive verbal derivational affixes for the children 2.3–3.5, and twenty-five to thirty-five for the children aged 34–52.

\begin{itemize}
\item a. Aaa qi-i. \hspace{1cm} \[=\text{Aaa qi-i-iuq}].
yes come-PRSP \hspace{1cm} \[=\text{yes come-PRSP-PAR.asS}]
\textit{Yes, is coming}. \hspace{1cm} \[=\text{Yes, he/she/it is coming}].
\text{(SFL: 54; Crago and Allen 2001: 93)}
\item b. Anaa anuruaa-MI uvanga. \hspace{1cm} \[=\text{Anaa anuruaa-si-junga}].
mother dress-MI I/me/my/mine \hspace{1cm} \[=\text{mother dress-PRSP-PAR.asS}]
\textit{Mom, dress I.} \hspace{1cm} \[=\text{Mom, I am about to get dressed}].
\text{(SFL: 54; Crago and Allen 2001: 95)}
\item c. Ah unila-MI ah sini-MI. \hspace{1cm} \[=\text{Sini-ngung-luk unila-MI}].
um boat-LOC.SG um sleep-MI \hspace{1cm} \[=\text{sleep-pretend-IMP:asS boat-LOC.SG}]
\textit{Um on the boat, um sleep}. \hspace{1cm} \[=\text{Let’s pretend to sleep on the boat}].
\text{(SFL: 54; Crago and Allen 2001: 94–5)}
\end{itemize}
both languages. At later ages, a more varied range of adjectival markers emerges. Fortescue and colleagues report two to four different productive nominal derivational affixes for the children aged 2–3, and eight to ten affixes for the children aged 3½–5½.

The enclitics -tu and ritual question marker -di 'where', and reportive -qaq 'it is said' also appear early in both languages, the former two mostly on nouns and the latter mostly on verbs. These remain consistent throughout the ages covered in this chapter.

22.6.3 Relationship between words

The relationships between words in Inuit languages are less important than in English, largely because much of the syntactic 'action' happens within words. By age 3, however, children are beginning to produce some utterances with both main and subordinate clauses showing syntactic relationships. Some examples are in (10).

(10) a. U-na aniri-tllungara
this.ONE-ABS.SG be.outside-DS-ICM.1S
atjul-ri-ni-kainna-mi-ju-kuuluk ila'it
film-TR-ATP-PAST-also-PAR.3S-pitiful
'The boy was outside this pitiful person, I cried, right.'

(11) b. Ilia-ngaar-mat qia-voq
laugh-much-CTG.3S cry-IND.3S
'She is crying because he is laughing so much.'

K 324; Fortescue and Lennert Olsen 1992: 171

(11) c. Aaliguar-su-u(p) leega-qaanaa uungua-pallap-punga
fish-big-ERG.SG bite-ASL-对象-IND.3S.10 come.here-hurriedly-IND.1S
'The big fish wouldn't bite me.'

(11) d. Unga taakkortoq misuun-lingga neri-sar-tnuk-akka ila Nuka?
this.things be.small-CTM.3S ext/HAB-PERF-IND.1S.10 TAGQ Nuka
'When I was little I used to eat these, didn't I, Nuka?'

(417; Fortescue and Lennert Olsen 1992: 18)

These structures require not only a good mastery of morphosyntactic features such as subordinate clause inflections, but also a relatively sophisticated level of cognition in order to understand and appeal to the conceptual and contingent relationships between clauses.

To this point, we have focused on the overall picture of children's increasing facility with the morphological complexity of Inuit languages. We turn now to a more detailed view of three structures that reflect syntax involving valency changing within the word: noun incorporation, causative, and passive. We then highlight particularly complex utterances in which two or three of these structures appear within one word, and in which the word class changes at least twice within the word. The main goal in these sections is to show children's adeptness with these complex morphosyntactic manipulations at a very young age.

22.7 NOUN INCORPORATION

Noun incorporation (NI) is one of the most diagnostic structures of polysynthesis since it allows one word to contain both a verb and an object argument. In most polysynthetic languages, the verb can serve either as an independent root or as the host for an incorporated noun. In Inuit languages, however, verbs that allow incorporation are bound suffixes (Fortescue 1994b; Milbrath 2000). For some authors, this difference means that Inuit languages do not have true noun incorporation (e.g. Baker 1996). However, we will refer to this structure as noun incorporation for the purposes of the present chapter. Inuit-speaking children begin producing NI structures as early as two years of age, as exemplified in (11).

(11) a. Qaqqunjar-tu-rumall-paa!

Elijah 237;

cracker.consume-Year.for.OH-1S
'I yearn for munching crackers!' (Elijah 237; Allen, 1996: 167)

b. Tuttu-siu-la-qiijnuk?

(Paul 211; Allen, 1996: 167)

caribou.look.for-FUT-INT.1S
'Will we go look for caribou?'

(11) c. Qulu-nggor-pa?
ten-become-INT.1S
'Is it ten o'clock?'

(L. 327; Fortescue and Lennert Olsen 1992: 145)

Allen (1996) reports that an average of 12 percent of children's verbal clauses in Tarranunt contain NI structures between the ages of 2½ and 3½. The four children in her study use a total of seventeen different incorporating verb affixes, of which -ic- 'be', -raq- 'have', -gi- 'have as', -siiq- 'got to', -isaaq- 'consume', -tsqq- 'acquire', and -siiq- 'look for' are the most frequent. Fortescue and Lennert Olsen (1992) report that the five children in their study of West Greenlandic, aged 2½–3½, used nine different incorporating verb affixes including the first four just listed for Tarranunt. Wilman (1988) reports that twenty-three different incorporating verb affixes are used by the 6½-year-olds in his study.

These NI structures are not simply memorized and reproduced as unanalyzed units by the children, but rather are used productively (Allen 1996). This productivity is evidenced by children's use in the same sentence of one incorporating verb affix with two different incorporated nouns, or of a noun root both in an NI and in another structure with different morphology (e.g. case marking, adjectival marker). Productivity is also evidenced by children's overuse and overgeneralization of NI in structures where adults would not use it, as in (12).


this.ONE-ABS.SG sleep-INV-EMPH-BE-NEG-PAR.3S
'This one isn't sleeping.' [lit. this one is not one who is sleeping]

(12) b. Una sini-nngi-tu-uluq.
this.ONE-ABS.SG sleep-NEG-PAR.3S-EMPH
'This one isn't sleeping.' (target utterance; Allen, 1996: 169)
By age 3, children are producing more complex NI structures. One type is double NI, as shown in (11a), where a noun is incorporated into an incorporating verb affix (-qiqt ‘have’), which is then nominalized, and then this nominalized form is incorporated into another incorporating verb affix (-u ‘be’). Another complex form is modifier stranding, where an incorporated noun (sawik ‘knife’) is modified by a numeral or adjective outside the verbal word (mamattunik ‘ones like those’), as shown in (11b). Fortescue and Lennart Olsen (1992) show stranding structures in the speech of only the oldest child in their study, as shown in (11c). Here the modifier aliannisai ‘other’ modifies the noun root inti ‘place’.

(13a) Nunur-nik piira-qaq-su-uu-rrnata.
    polar-bear-MOD.PL baby-have-HAB-be-CTG.3PS
‘They have polar bear babies’ [lit. they are ones who have polar bear babies]
    (Paul 33; Allen, 1996:171)

b. Maassu-kikut imaa-it-tu-nik savik-qiqt.
    Matthew-group thus-be-NOM-MOD.PL knife-have-IND.3PS
‘Matthew and his friends have knives like that.’
    (Elijah 259; Allen, 1996:172)

c. Tavita qimmiit-t toqua-qunuk alla-nik
    then dog-ABS.PL die-CND.4PS other-MOD.PL
    inuqa-tsu-nqin-namikkit.
    place-FUT-have-NEG-CTG.4PS.3PO
‘So when dogs die, since they don’t have any other place for them...’
    (Paul 523; Fortescue and Lennart Olsen 1992:205)

Parkinson (1999) conducted two experimental studies to test whether Kivalina-speaking children understand the underlying syntax of NI or if they are simply attending to the linear order of elements within the word. In the first study, he asked children to repeat sentences that contained NI with modifier stranding, as in (14). In the second study, he asked children to select a picture from an array of three pictures to match sentences that contained NI with modifier stranding, as in (15), as well as similarly complex sentences without noun incorporation.

(14) Jessica piggu-jur-mik qimmi-qaq-tur-mik
    Jessica.ABS.SG strong-NOM-MOD.SG dog-have-NOM-MOD.SG
    taut-liq-tuq.
    look-at-start-PAR.3PS
‘Jessica starts to look at one who has a strong dog / ... at a strong one who has a dog.’
    (Parkinson 1999:136)

(15) Qimmiit-mik nahu-qaq-tur-mik aparuku-mik tikkuq-rut.
    dog-MOD.SG hat-have-NOM-MOD.SG pink-MOD.SG point-to-IMP.2S
‘Point to the dog with the pink hat / Point to the pink dog with the hat.’
    (Parkinson, 1999:168)

The NI sentences in both studies were constructed such that the modifier could be construed as modifying either the incorporated noun or the entire sentence. Several types of NI structures were used including ones where differences in number marking, plausibility of the adjective as a modifier, or differences in placement of the adjective forced only one of the two interpretations.

Children found the repetition task difficult and often simplified the sentences in their repetitions by either changing the word order or deleting words. However, they did not have more difficulty with NI sentences than with other complex sentences. Further, their differential behavior across the different types of NI structures showed that they have knowledge of the syntactic nature of NI and are not simply attending to the linear order of elements within the word. On the picture selection task, children selected the correct picture in 50 percent to 90 percent of instances depending on the child (chance is 33% or 66% depending on the condition). Children performed slightly better on the NI sentences than on the non-NI sentences, suggesting that they had no problem interpreting the NI structures. Further, children’s performance improved significantly with age, especially on the more complex structures. Overall, Parkinson’s results indicate that children aged 4–6 years understand even difficult NI structures and interpret them syntactically.

22.8 CAUSATIVE

Inuit languages have two types of causatives: a lexical causative and a morphological causative. In the lexical causative, exemplified in (16a), the causative meaning is inherent in the meaning of the verb. Lexical causative verbs often can also be expressed in the intransitive form without the causative meaning—termed the causative-inchoative alternation—as in the Inuktitut verb toCAUS. This morpheme is suffixes to the verb stem and adds a valency of one to the verbal structure.

(16) a. Una naavi-lagiti?
    this.one empty-IMP.S.3S
‘Shall I empty this one?’
    (Tumasini 21; Allen 1998:645)

b. Panik itam-mu-tit.
    daughter sit-CAUS-PAR.2S.3S
‘Daughter, you made it sit.’
    (Paul 335; Allen 1998:665)

We focus here on the morphological causative since it is of particular interest regarding polysynthesis.

Allen (1996) reports that an average of 2 percent of children’s verbal clauses in Tarrnamiit contain morphological causative structures between the ages of 3 and 5. The first morphological causatives first appear sometime between 310 and 310 (Allen 1998). These first instances are typically imperative commands or optative first person suggestions, and often
are missing either a verb root or an inflection. Example (17a) is a command missing the verbal inflection -gut 'IMP:2as,S:3S'; example (17b) is an optative first person suggestion missing the verb root, and example (17c) has both root and inflection.

(17) a. Tili-tir-ti-lauq-tea-consume-CAUS-POL
    'Let (her) eat tea.' (Sarah 209; Allen 1998: 648)

    b. Tili-lau-lagit?
    CAUS-POL-IMP:2as,S:3S
    'Shall I make you do X?' (Lizzie 217; Allen 1998: 650)

    c. Sikituur-ti-lau-laanga-
    ride-skidoo-CAUS-POL-IMP:2as,S:3S
    'Let me ride the skidoo.' (Elijah 210; Allen 1998: 655)

Structures without verb roots such as in (17b) occur at this age in contexts where the verb in a complete structure would take either a lexical causative or a morphological causative. This suggests that children at this age have mastered the concept of causation but are not yet sure which verb root requires which type of causative form. Although Tarramuit-speaking adults occasionally produce these rootless causatives, they are much more predominant among children. There is also some evidence that children are producing fixed forms rather than using the causative morpheme productively at early ages. For example, eleven of Elijah's thirteen causative productions at 210 use several different verbs with the same causative + inflection combination (-gut 'IMP:2as,S:3S'), as in (17c).

Since all the morphological causatives used at this stage are either commands or first person optatives, this suggests that children may first assume that the causative morpheme is a required part of the form to be used in commands. Some evidence for this comes from the errors in one of the children studied by Allen (1998). This child correctly uses the causative morpheme -tir- in commands, but fails to use the causative morpheme in declaratives and questions that require it. An example of the latter is in (18a), with the target utterance in (18b).

(18) a. Ijuuka-si-jara-
    fall-PRES-PAR:1as,S:3S
    'I'll fall!' (Louisa 321; Allen 1998: 670)

    b. Ijuuka-ti-tara-
    fall-CAUS-PAR:2as,S:3S
    'Let me make it fall.' (target utterance: Allen 1998: 670)

Around age 310, children begin to use morphological causatives in a more adult-like fashion. This is signaled by children's use of this structure with a wider variety of verb roots that are more consistently present in the utterances, as well as with inflections other than imperatives, such as indicative and interrogative, as exemplified in (19b). Children also begin to show signs of productivity. In particular, there are several examples of use of a given verb with the causative morpheme in a causative context, and without the causative morpheme in an inchoative context, indicating that the child understands the use of the causative morpheme. In the example in (19), Louisa is afraid that she has banged the head of one of her dolls. She asks her cousin the two questions in (19), appropriately using an intransitive inflection for the inchoative (19a) and a transitive inflection for the causative (19b).

(19) a. Ninqua-va?
    bump-head-INT:3S
    'Did it bump its head?' (Louisa 376; Allen 1998: 662)

    b. Ninqua-ti-tara?
    bump-head-CAUS-PAR:1as,S:3S
    'Did I make it bump its head?' (Louisa 376; Allen 1998: 662)

Less detail has been published about the acquisition of morphological causatives in West Greenlandic. No data is available on their frequency of use. However, several examples of this structure are present in the published data starting at 313; none are present for the data at 322. Further, the morphological causative is reported to be productive at each of the reported ages from 323 to 512 (Fortescue 1985; Fortescue and Lennert Olsen 1992). Interestingly, there is no evidence from the data available that children learning West Greenlandic go through the same early phase of fixed forms and restriction of the causative to command form as do children learning Tarramuit. This may be related to the fact that the causative morpheme cannot appear alone without a verb root in West Greenlandic as it can in Tarramuit (cf. (17b)). Examples at the youngest ages in West Greenlandic are with declaratives, as in (20).

(20) a. Uppu-ti-le-qa-akkit-
    fall-CAUS-begin-INTENS-IND:1as,S:2as
    'I'm going to make you fall.' (Agiss mom 23; Fortescue 1985: 108)

Not surprisingly, all twenty-three of the children in Wilman's (1988) study are also using the causative morpheme -tir- productively, with a total of 194 uses in 12,341 utterances.

22.9 Passive

The passive in Tarramuit is formed by affixing the passive morpheme -laus- to a transitive verb stem, which reduces the valency of the verb by one. Agents are expressed using allative case. As in many other languages, expression of the agent is optional.

Allen and Crago (1996) report that an average of 3 percent of children's verbal clauses in Tarramuit contain passive structures between the ages of 210 and 360. The first passives appear as early as 210 (Allen and Crago, 1996). About 80 percent of the total number of passives in the data are short passives, as shown in (21a), where the agent is not expressed. The remaining 20 percent are full passives with overt agents, as in (21b). Most of the full passives are produced by the most precocious child in their study.
pull-PASS-want-PAR.3sS
'I want to be pulled.' (Elijah 2:5; Allen and Crago 1996: 142)
b. Itsu-munga ai-jau-gamik
that-one-ALL.SG get-PASS-CTG.3sS
'You will be brought by that one.' (Louisa 2:10; Allen and Crago 1996: 144)

The passive occurs with more than thirty different verb roots in the data reported by Allen and Crago (1996), showing that it is not restricted to a few fixed forms. Several examples explicitly illustrate the productivity of this structure. In example (22), for instance, Lizzie overgeneralizes the passive in an intransitive construction, which does not allow the passive. She utters (22) just as she slips on the polished wooden base of a bed frame. Since there is no agent of sliding, but rather the sliding occurs unintentionally, the passive cannot be used.

(22) "Siaqti-tau-uq.
slide-PASS-IND.3sS
'It was slipped.' (Lizzie 3:3; Allen and Crago 1996: 140)

In example (31), Elijah alternates between a passive (31a) and a transitive (31b) use of the same verb root within the same conversation, illustrating his understanding of the difference between the two forms. In (31a) he reports to his mother that he will be filmed, while in (31b) he commands the photographer to film him.

(23) a. Aanaa atjlu-tau-si-gama.
mother film-PASS-PRES-CTG.3sS
'Mom, I'm going to be filmed.' (Elijah 2:5; Allen and Crago 1996: 142)
b. Aulla-la-dark atjlu-lau-nga.
leave-FUT-CTG.3sS film-POL-IMP.2sS 3sO
'Film me since you will leave.' (Elijah 2:5; Allen and Crago, 1996: 142)

It is striking that the passive is used so early and so frequently in Tarramuit. In languages like English, German, and Hebrew, the passive does not typically appear until around age 4, and even then is used infrequently. The early acquisition of the passive in Tarramuit is linked to three factors. First, it is more frequent in the input in Tarramuit (5.8 times per hour) than in English (1.1 times per hour; Allen and Crago 1996). Second, the structure of the passive is not uncommon in Tarramuit; several other morphemes occur in the language with similar morphological properties and syntactic repercussions. However, the structure of the passive is relatively uncommon in English, and thus learning the structural aspects presents a particular challenge to children. Interestingly, the passive is also used early and frequently in other morphologically complex languages where the passive occurs frequently in the input, such as Sesotho (Demuth 1990) and K'iche' Mayan (Pye and Quixtan Poz 1988). Finally, Tarramuit relies heavily on valency reducing structures—passive, antipassive, and noun incorporation—as part of its trend away from using ergative structures (Allen 2013). In Allen's (2013: 94) analysis of children's utterances with bivalent propositions (i.e. two implicit arguments) and third person subjects, the passive was used in 37 percent of cases and the ergative-absolutive structure in only 7 percent (antipassive was used in 22 percent, and noun incorporation in the remaining 34 percent).

In West Greenlandic, neither the neutral passive with -negor- nor the stative passive with -aus- appear in the child data until at least age 5.3. This is somewhat surprising in comparison with the early and relatively frequent use in Tarramuit. This may be because of the emergence of a pseudo-passive in West Greenlandic, which employs the causative morpheme -til- used reflexively (Fortescue and Lennert Olsen 1992: 155). This pseudo-passive appears in several utterances in the published data, including those shown in the conversation in (24).

(24) a. Pitu sulk-lumi-una
toqu-soq-man
toqu-soq-man
Peter how-CTM.4sS that-one die-PART-I-wonder
'How was it now that Pitu died?' (Mother; Fortescue and Lennert Olsen 1992: 155)
b. Bill-lu
apor-ti-lumi.
car-ALL.SG run-over-CAUS-CTG.4sS
'By being run over by a car.' (P 5:2; Fortescue and Lennert Olsen 1992: 155)
c. Ilq-ti-lumi.
throw-CAUS-CTG.4sS
'By being thrown out.' (N 5:2; Fortescue and Lennert Olsen 1992: 155)

Wilman (1988) reports that the passive morpheme is used productively by all 23 children in his study, with a total of 413 uses in 12,341 utterances.

22.10 COMBINING VALENCY ALTERNATING FORMS

Until this point we have seen examples of the use of individual morphemes with syntactic function. However, even young children are adept at combining these morphemes and functions within one word. This shows that they are able to manipulate multiple syntactic functions within one word, and understand how these functions interact. We offer three different types of examples here.

Example (35) shows two utterances including noun incorporation combined with the causative—a simple noun in (35a) and a locative in (35b).

gum-acquire-CAUS-POL.IMP.2sS 3sO
'Give me gum.' [lit. make me acquire gum] (Lizzie 2:10; Allen 1996: 118)
under-IVA.3sS GO CAUS-PAR.3sS 3sO
'I made it go through underneath.' (Paul 3:3; Allen, 1996: 108)
Some instances of the causative and passive within the same word also occur. However, it appears that this combination -titau- is an unanalyzed unit for at least some children at early stages (Allen 1996). This unit is also often used without either a verb root or inflection, as in (26).

(26) Aani-òlu ti-tau-lau-juguk ìlà?
    Annie-ABS.SG and CAUS-PASS-PAST-PAR.1S TAGQ
    'Annie and I were made to, right?' (Lizlze 33; Allen 1996: 106)

There is some evidence that linguistically more advanced children are able to control scope effects of these two morphemes by strategically using morpheme ordering, as shown in (27). In (27a), Elijah uses the passive within the scope of the causative to show that a passive action is caused. In (27b), in contrast, he uses the passive outside the scope of the causative to show that the causation itself is passivized.

    hat-ABS.SG remove-PASS-CAUS-3CM.XS.3S
    'Someone/thing caused his hat to be removed.' (Elijah 230; Allen 1996: 114)

b. Allanguar-ti-tau-junga.
    draw-CAUS-PASS-PAR.1S
    'Someone is letting me draw.' [lit. I am being made to draw] (Elijah 231; Allen 1996: 116)

Combinations of noun incorporation and passive are also found, as in (28). Since the patient argument has already been incorporated into the verb, the benefactive argument is the only one available to be passivized.

    ice-fetch-PASS-PAST-INT.1P mother who-group-ALL.PL
    'Who were we fetched icy by, mother?' (Elijah 239; Allen and Crago 1996: 146)

    hat-make-PASS-NEG-PAR.1S
    'I am not being made a hat for.' (Elijah 239; Allen and Crago 1996: 146)

In only two utterances in the Tarramut data does a child attempt to use all three of these valency-alternating operations within one word. The example is in (29a), with the target form in (29b).

(29) a. Anaana kinaajaran-tau-ti-niar-qunga ...
    mother money-PASS-CAUS-PART-PAR.1S this one-ALL.PL camera-ALL.PL
    'Mom, I cause to be monetized ... by this one ... by the camera (operator).'
    (Elijah 239; Allen 1996: 119)

b. ... kinaajaran-ta-ti-niar-qunga ...
    money-acquire-CAUS-PASS-PART-PAR.1S
    '... I will be given [= made to acquire] some money...'
    (target utterance; Allen 1996: 120)

Here Elijah is trying to passivize a noun directly, instead of first incorporating it into a verb. He also mixes up the order of the passive and causative morphemes relative to the meaning he is trying to achieve.

The utterances presented in this section show that children at a relatively young age not only master individual valency changing processes, but also can coordinate two different processes within one word. This level of complex morphosyntactic manipulations at this age is very striking in comparison with the relatively less complex productions of similar-aged children learning an analytic language.

### 22.11 Changing Word Class within the Word

Another feature of polysynthesis as realized in Inuit languages is that a word can change class two or more times within the word. In Section 22.7 we saw several examples of noun incorporation, where a word that begins as a noun changes into a verb. It is also very common for a verb to change to a noun, as in (30).

    taste-good-INTR.PART-MOD.PL
    'Things that taste good.'
    (K 34; Fortescue and Lennert Olson 1992: 166)

b. Togo-nikor-saag.
    die-one.that-big
    'Big one that has died.'
    (K 34; Fortescue and Lennert Olson 1992: 175)

Much more striking from the point of view of polysynthesis, however, is when the word class changes more than once. Although no focused research on this has yet been reported, several examples are found in the data. The examples in (31) show words that change from verb to noun to verb. The verbal stem in (31a) is changed to a noun using the habitual suffix -saag-, then back to a verb using the copula -u- (here in the allomorph -ngu-). The verbal stem in (31b) is changed to a noun using the nominalizing suffix -siag- (here in the allomorph -tu-), and then back to a verb using the copula -u-.

(31) a. Ajiiluruti-alu-ga
    photographer-EMPH-ABS.SG
    nita-ta-tu-i-nagor-ngi-suulik
    make.sound-RPT-CAUS-ATP-HAB-be-NEG-PAR.1S-EMPH
    'My photographer isn't one who puts the (TVs) volume on.'
    [lit. makes the TV make sound] (Elijah 239; Allen 1996: 120)
22.12 CONCLUDING REMARKS

Learning a polysynthetic language poses significant challenges, many of them different from those encountered with other language types that are more commonly studied. Children must extract individual morphemes including noun and verb roots from a stream of speech in which morphemes rarely appear as separate words. Indeed, most words contain at least two morphemes and may contain as many as ten morphemes. Children must use the surrounding syntactic information to identify the significance of the morphemes that are extracted, and manipulate word class changes and valency changes as many as three times within one word. And they must master hundreds of derivational and inflectional affixes along with their syntactic ramifications. This leads to a different trajectory of development than is the case for other language types, at least in the case of morphosyntax.

Children learning Inuit languages begin by producing one recognizable morpheme per utterance, usually somewhere between 15 and 16. From that point, their development is far more focused on morphology within words than on individual words. Inuit children between ages 2 and 6 years produce an average of 2.2 morphemes per word. Much of that complexity is focused on verbs, which start with two morphemes (root plus inflection), but gradually contain more derivational affixes between the root and inflection as the children's language abilities increase. These affixes very often have syntactic functions including changing valency and taking verbal complements. Children become competent with this complex morphosyntax at an early age, producing productive causatives, passives, and noun incorporation structures as early as age two. Further, although they produce some overgeneralizations of morphophonological forms and syntactic patterns, they do not produce anything like the characteristic overgeneralization patterns found in English (e.g., of past tense -ed as in good, or of plural -s as in foos). This presents a striking contrast to children learning English, who are still struggling with basic morphology at the same age. As Parkinson (1999: 108) notes, "there appears to be a principle whereby the more complex the morphological system of a language, the earlier it will be learned."

One of the main goals of the field of language acquisition is to determine which patterns and mechanisms in language acquisition are universal to all children, and which are specific to individual languages or language typologies. Our findings show that children learning Inuit languages, and likely all polysynthetic languages, are focused on rapidly acquiring complex morphosyntax in a way that is not universal across all language types. This underlines the importance of studying the acquisition of languages of very different structures.

ABBREVIATIONS

<table>
<thead>
<tr>
<th>Nominal case</th>
<th>LOC</th>
<th>locative</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS</td>
<td>absolutive</td>
<td>MOD</td>
</tr>
<tr>
<td>ALL</td>
<td>allative</td>
<td>VIA</td>
</tr>
<tr>
<td>ERG</td>
<td>ergative</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Verbal modality</th>
<th>IMP</th>
<th>imperative</th>
</tr>
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<tbody>
<tr>
<td>CND</td>
<td>conditional</td>
<td>IND</td>
</tr>
<tr>
<td>CTD</td>
<td>contingent</td>
<td>INT</td>
</tr>
<tr>
<td>CTM</td>
<td>contemporative</td>
<td></td>
</tr>
<tr>
<td>DS</td>
<td>different subject (for subordinate clauses)</td>
<td>PAR</td>
</tr>
<tr>
<td>ICM</td>
<td>incontemporary</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Word-internal morphology</th>
<th>PAST</th>
<th>past</th>
</tr>
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<tbody>
<tr>
<td>ATP</td>
<td>antipassive</td>
<td>PERF</td>
</tr>
<tr>
<td>CAUS</td>
<td>causative</td>
<td>POL</td>
</tr>
<tr>
<td>EMPH</td>
<td>emphatic</td>
<td>PRE</td>
</tr>
<tr>
<td>FUT</td>
<td>future</td>
<td>PRES</td>
</tr>
<tr>
<td>HAB</td>
<td>habitual</td>
<td>PRSP</td>
</tr>
<tr>
<td>INTENS</td>
<td>intensifier</td>
<td>RPT</td>
</tr>
<tr>
<td>INTR</td>
<td>intrasitive</td>
<td>TAGQ</td>
</tr>
<tr>
<td>NEG</td>
<td>negative</td>
<td>TR</td>
</tr>
<tr>
<td>NOM</td>
<td>nominalizer</td>
<td>PASS</td>
</tr>
<tr>
<td>PART</td>
<td>participle</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verbal inflection (e.g., PAR.3S)</th>
<th>d</th>
<th>dual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>first person</td>
<td>p</td>
</tr>
<tr>
<td>2</td>
<td>second person</td>
<td>x</td>
</tr>
<tr>
<td>3</td>
<td>third person</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>fourth person</td>
<td>S</td>
</tr>
<tr>
<td>X</td>
<td>any person (i.e., 1, 2, 3, or 4)</td>
<td>O</td>
</tr>
<tr>
<td>5</td>
<td>singular</td>
<td></td>
</tr>
</tbody>
</table>
Nominal inflection (e.g. ABS.SG)

<table>
<thead>
<tr>
<th>SG</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>singular</td>
<td>plural</td>
</tr>
<tr>
<td>dual</td>
<td></td>
</tr>
</tbody>
</table>

Possessed nominal inflection (e.g. ERG.3SG)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>first person possessor</td>
<td>second person possessor</td>
<td>third person possessor</td>
<td>fourth person possessor</td>
<td>singular possessor</td>
</tr>
<tr>
<td>P</td>
<td>X</td>
<td></td>
<td>sg</td>
<td>du</td>
</tr>
<tr>
<td>plural possessor</td>
<td>any number (i.e., singular, dual, or plural)</td>
<td>singular possessum</td>
<td>dual possessum</td>
<td>plural possessum</td>
</tr>
</tbody>
</table>

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