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ACQUISITION OF SOME MECHANISMS OF TRANSITIVITY ALTERNATION IN ARCTIC QUEBEC INUKTITUT

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ACQUISITION OF MECHANISMS OF TRANSITIVITY ALTERNATION IN INUKTITUT

ABSTRACT

This thesis discusses the first language acquisition of three morphosyntactic mechanisms of transitivity alternation in arctic Quebec Inuktitut. Data derive from naturalistic longitudinal spontaneous speech samples collected over a nine-month period from four Inuit children aged 2;0 through 2;10 at outset. Both basic and advanced forms of passive structures are shown to be used productively by Inuktitut-speaking children at an early age relative to English-speaking children, but consistent in age with speakers of non-Indo-European languages reported on in the literature; potential explanations of this difference include frequency of caregiver input and details of language structure. Morphological causatives appear slightly later in the acquisition sequence, and their first instances reflect use of unanalyzed routines. Lexical causatives are present from the earliest ages studied. Evidence of a period of overgeneralization of lexical causatives in one subject at the same time as the morphological causative shows signs of being productively acquired suggests that the seeming overgeneralization may reflect nothing more than as yet unstable use of the morphological causative. Noun incorporation structures are shown to be used productively by Inuktitut-speaking children at an early age relative to Mohawk-speaking children; potential explanations of this difference include details of language structure and relative language use in the environments of the learners. Findings are considered in light of current debates in the literature concerning continuity versus maturation of grammatical structure, and concerning the functional categories available to the child at early stages of acquisition. Data presented argue against maturation, and suggest that all functional categories can be accessed by the Inuktitut-speaking child early in the acquisition process.

RÉSUMÉ

Cette thèse a pour objet l'étude de l'acquisition en langue première de trois mécanismes morphosyntaxiques de l'alternance de la transitivité en Inuktitut arctique du Québec. Les données sont constituées d'occurrences spontanées issues d'études longitudinales en milieu naturel collectées sur une période de neuf mois auprès de quatre enfants inuit âgés de 2;0 à 2;10 au début. Il est montré que les formes de base et les formes avancées des structures passives sont toutes deux utilisées de manière productive par les enfants parlant l'Inuktitut à un âge plus précoce que les enfants anglophones, mais à un âge identique à celui de locuteurs mentionnés dans la littérature et ne parlant pas une langue indo-européenne; les explications potentielles de cette différence incluent la fréquence d'apparition dans la langue de l'adulte et les détails de la structure de la langue. Les causatifs morphologiques apparaissent un peu plus tard dans la période d'acquisition et les premiers exemples indiquent l'usage de routines non analysées. Les causatifs lexicaux sont présents dès les âges étudiés les plus précoces. L'évidence d'une période de surgénéralisation des causatifs lexicaux chez l'un des sujets, au même moment où le causatif morphologique semble être acquis de manière productive montre que cette apparente surgénéralisation pourrait ne refléter qu'un usage encore instable du causatif morphologique. Il est montré que les structures d'incorporation du nom sont utilisées de façon productive par les enfants parlant l'Inuktitut à un âge plus précoce que les enfants parlant le Mohawk; les explications potentielles de cette différence comprennent les détails de la structure de la langue et l'usage relatif de la langue dans l'entourage des apprenants. Les résultats de cette étude sont présentés à la lumière des actuels débats dans la littérature concernant la continuité opposée à la maturation de la structure grammaticale et les catégories fonctionnelles dont l'enfant dispose aux stades précoces de l'acquisition. Les données présentées réfutent la thèse de la maturation et suggèrent que l'enfant parlant l'Inuktitut disposent de toutes les catégories fonctionnelles à un stade précoce du processus d'acquisition.

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Any piece of work as large as a thesis cannot possibly be the effort of only one individual, and this thesis is no exception. Many thanks and acknowledgements are in order.

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This thesis is dedicated to my late grandmother, Marion Leucinda Verge, who always had faith in me and in my abilities, and who always knew (in spite of what the nurses believed) that I would write a "book" someday.

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LIST OF ABBREVIATIONS

Nominal case[1]

ABL	ablative
ABS	absolutive
ALL	allative
EQU	equalis
ERG	ergative
LOC	locative
MOD	modalis
VIA	vialis

Nominal inflection (e.g. ERG.SG)

SG	singular
DU	dual
PL	plural

Possessed nominal inflection (e.g. ERG.1Ssg)

1	1st person possessor
2	2nd person possessor
3	3rd person possessor (disjoint with referent in main clause)
4	4th person possessor (coreferent with referent in main clause)
S	singular possessor
D	dual possessor
P	plural possessor
X	possessor variable
sg	singular possessum
du	dual possessum
pl	plural possessum

Verbal modality

CND	conditional
CSV	causative
CTM	contemporative
DUB	dubitative
ICM	incontemporative
IMP	imperative (including optative)
IND	indicative
INT	interrogative
PAR	participial (functionally equivalent to indicative in *Tarramiut*)

[1] Terminology for case and verbal modality inflections varies considerably throughout the literature on Eskimo. Details concerning equivalent terms and specific uses of the inflections in *Tarramiut*, as well as examples of each inflection, are given in section 1.4.

Verbal inflection (e.g. CSV.3sS.2pO)

1	1st person
2	2nd person
3	3rd person (disjoint with referent in main clause)
4	4th person (coreferent with referent in main clause
X	person variable
s	singular
d	dual
p	plural
x	number variable
S	subject
O	object

Word-internal morphology[2]

AG	agentive
ANA	anaphoric
ANTP	antipassive
BW	baby word
C	consonant (where unknown or variable)
CAUS	causative affix
COP	copula
DU	dual
DY	dynamic (demonstrative)
EMPH	emphasis
ENDR	endearment
EXT	external reference
FUT	future
GER	gerund
HAB	habitually
NEG	negative
NOM	nominalizer
PASS	passive
PAST	past
PEJ	pejorative
PERF	perfective
PL	plural
POL	politeness affix
PRES	present
REP	reportative speech
RPT	repeated action
SG	singular
ST	static (demonstrative)

[2] Inuktitut often has several morphemes which correspond to (variations of) one meaning. For example, there are several past markers, each denoting a certain length of time preceding the utterance time. In such cases the same gloss is used for all morphemes unless the variation in meaning is relevant to the points discussed in the related text.

TR	transitivizer
V	vowel (where unknown or variable)
@e	English morpheme
@l	letter or syllabic of the alphabet
@u	not recognizable as a morpheme or word

Part of speech codes used in transcript

ADJ	adjectival
ADV	adverbial
ALPH	letter of the alphabet
ASP	aspectual
AUG	augmentative
CONJ	conjunction
DEM	demonstrative
DI	demonstrative inflection
DIM	diminutive
DR	demonstrative root
ENCL	enclitic
EXCL	exclamation
FIL	filler
FORM	formulaic expression (e.g. qanuippit)
IACT	interactional marker
IAEE	interactional expression (e.g. atiki)
IAEX	interactional expression (e.g. ai, hai)
IV	incorporating verb
LI	localizer inflection
LNR	localizer noun root
LR	localizer root
NR	noun root
NI	nominal inflection
NN	nominal affix
NZ	nominalizer
ONO	onomatapaeic word (e.g. woof)
PLEON	pleonastic
PRE	prefix
PRO	pronoun
PROP	proper noun
QUA	quantifier
TNS	tense affix
UNI	unidentified word or morpheme
VR	verb root
VA	valency alternator
VI	verbal inflection
VV	verbal affix
VZ	verbalizer
WH	WH question word

CHAPTER 1
BACKGROUND AND OVERVIEW

The study of child language acquisition in languages other than English has been increasing rapidly in recent years. Until the mid-seventies or so, the field of language acquisition was firmly rooted in research on English-speaking children under the assumption that research on acquisition in one language is valuable for documenting the development of that language. However, research on language acquisition across a variety of languages provides even deeper insights into the nature of the language-learning process by showing which aspects of acquisition are universal across children learning various languages and which are particular to certain languages or language typologies. Early diary studies in languages such as French (Gregoire, 1937, 1947), German (Stern & Stern, 1907), Polish (Zarebina, 1965) and Russian (Gvozdev, 1949) served to begin the field of crosslinguistic acquisition. More detailed longitudinal research within particular linguistic frameworks on acquisition in languages other than English began in the late 1960s, spurred by new developments in generative grammar (Chomsky, 1957, 1964, 1965), with a study of Finnish (Bowerman, 1973) and a series of studies in various languages resulting from an initiative concerning the "cross-cultural study of the acquisition of communicative competence" at the University of California at Berkeley (Slobin, 1967; see Slobin, 1985c and references therein). There is now a proliferation of studies of acquisition of languages other than English (e.g. Slobin, 1985b, 1992; Meisel, 1992; Hoekstra & Schwartz, 1994; Levy, 1994; and references cited therein), and crosslinguistic comparison has become accepted as standard methodology in the field. However, a vast amount of work remains to be done before acquisition of all languages is understood and the mysteries of language learning are fully uncovered. This thesis seeks to add to the field of crosslinguistic acquisition through an investigation of certain aspects of morphological and syntactic development in Inuktitut, the language of the Inuit of arctic Quebec, and a language in which relatively little acquisition research has been conducted to date.

The research which led to this thesis began as an extension of ethnographic research concerning the acquisition of communicative competence among the Inuit children of arctic Quebec (Crago, 1988). Crago's research provides an excellent overview of the transmission of knowledge and values relating to language use and social customs in Inuit society, and of the attitudes of Inuit adults to child language learning and use. Subsequent research by Crago and her colleagues has further refined the original ethnographic findings and extended them to the fields of education and language impairment (Crago, 1990, 1992a, 1992b; Crago, Annahatak, Doehring & Allen, 1991; Crago & Tremblay, 1990; Taylor, 1990; Crago, Annahatak, Aitchison & Taylor, 1992; Crago & Eriks-Brophy, 1993a, 1993b; Eriks-Brophy, 1992; Eriks-Brophy & Crago, 1993, in press; Crago, Annahatak & Ningiuruvik, 1993; Hough-Eyamie, 1993; Taylor, Crago & McAlpine, 1993; Crago, Allen & Hough-Eyamie, in press; Crago & Allen, in press a, in press b). In contrast, very little is known about the development of the syntactic or morphological properties of Inuktitut among Inuit children. Wilman (1988) reports on research concerning language use among 6-year-old Inuit children in Arctic Bay, Northwest Territories. Fortescue (1985) and Fortescue & Lennert Olsen (1992) both discuss language acquisition among children aged 2;2 through 5;2 in related West Greenlandic. However, only our own work discusses aspects of preschool language acquisition in arctic Quebec Inuktitut (Allen, 1989; Allen & Crago, 1989, 1992a, 1992b, 1993a, 1993b, 1994; Crago, Allen & Ningiuruvik, 1993; Crago, Allen & Hough-Eyamie, in press; Crago & Allen, in press a, in press b).

Several aspects of Inuktitut make it an ideal language in which to study acquisition. Primary among these are its polysynthetic structure, its ergative case-marking system, and its prolific nominal and verbal inflections. Each of these represents an area in which relatively little acquistion research has been conducted to date. This thesis focuses primarily on three mechanisms of transitivity alternation relevant in terms of the polysynthetic structure of Inuktitut: passive, causative and noun incorporation. Ergativity and inflections are addressed here only in terms of their effect on these latter structures. In

addition, all three of these mechanisms of transitivity alternation under the Principles and Parameters framework assumed here (see sections 1.2 and 1.3) involve head movement, and the passive structure involves NP movement, both processes currently at the forefront of advances in the theory of language acquisition within the Principles and Parameters framework.

Data for this research are taken from longitudinal spontaneous speech samples of four Inuit children aged 2;0 through 3;6. The methodology used is clearly delineated, and implications of the findings for current debates in the field of language acquisition are discussed.

Since very little research has been conducted or reported on in the area of Inuktitut language acqusition, the present thesis emphasizes description. No baseline measures of milestones in acquisition of Inuktitut exist to date, and thus attempts at exhaustive analysis would suffer from lack of a language-specific context within which to interpret the results. In addition, morphological and syntactic analyses of Inuktitut are not yet well-enough defined within the generative (or any) framework to serve as a stable base for interpreting acquisition data. Nevertheless, the data presented are analyzed and interpreted in light of current debates in acquisition theory assuming the structure of Inuktitut as outlined in Bok-Bennema (1991) and Bittner (1994a).

The remainder of this chapter presents background information relevant to understanding the thesis, and is organized as follows. Section 1.1 presents material concerning the Eskimo-Aleut language family. Section 1.2 describes relevant details of the Principles and Parameters theory of grammar assumed in later analyses. Section 1.3 outlines relevant aspects of the structure of Inuktitut as background to the more detailed facts presented in each of chapters 3 through 6. Section 1.4 discusses Inuit attitudes towards language and language development, under the assumption that the input received by the child is an important factor in the acquisition process. Finally, section 1.5 outlines the contents of the remainder of this thesis.

1.1 Eskimo-Aleut language family

Languages in the Eskimo-Aleut language family are spoken by some

80,000 Eskimos and Aleuts across the circumpolar regions of Europe, Asia and North America, from the Bering Sea area in the west to the Strait of Denmark in the east. This language family may be divided into two branches and several subbranches and languages, as shown in table 1.

TABLE 1: *Divisions in Eskimo-Aleut language family* (from Dorais, 1990)

FAMILY	BRANCH	SUBBRANCH	LANGUAGE
Eskimo-Aleut	Aleut	Aleut	Aleut
	Eskimo	Inuit	Inuit
		Yupik	Central Alaskan Yupik
			Alutiiq
			Central Siberian Yupik
			Naukanski
			Sirenikski

This thesis focuses on the Inuit language within the larger family, which is itself divided into several groups and subgroups, as shown in table 2.

TABLE 2: *Divisions in Inuit language* (from Dorais, 1990)

LANGUAGE	GROUP	SUBGROUP
Inuit	Alaskan Inupiaq	Seward
		North Alaskan Inupiaq
	Western Canadian Inuktun	
	Eastern Canadian Inuktitut	Keewatin
		Baffin
		Quebec-Labrador
	Greenlandic Kalaallisut	Polar
		Greenlandic

Finally, there are several dialects and subdialects within the Eastern Canadian Inuktitut language group, as shown in table 3.

TABLE 3: *Divisions in Eastern Canadian Inuktitut group* (from Dorais, 1990)

GROUP	SUBGROUP	DIALECT	SUBDIALECT
Eastern Canadian Inuktitut	Keewatin	Kivalliq	Qairnirmiut
			Hauniqturmiut
			Paallirmiut
			Ahiarmiut
		Aivilik	Southampton
			Rankin Inlet
	Baffin	North Baffin	Iglulingmiut
			Tununirmiut
		South Baffin	Southeast
			Southwest
	Quebec-Labrador	Arctic Quebec	Itivimiut
			Tarramiut
		Labrador	North Labrador
			Rigolet

This thesis focuses on *Tarramiut*, the subdialect of Inuktitut which is spoken by some 3000 to 4000 Inuit in the Hudson Strait portion of arctic Quebec in the communities of Kuujjuaq, Tasiujaq, Aupaluk, Kangirsuk, Quaqtaq, Kangirsujuaq, Salluit, Ivujivik, and Akulivik.

In order to distinguish between the various divisions within the Eskimo-Aleut language family, this thesis uses the terms *Eskimo*, *Inuit*, *Greenlandic*, *Inuktitut*, and *Tarramiut* as delineated above. *Inuktitut* is used as the generic term for the language being described since most structural details differ little across the closely related dialects in this group. More specific terms are used

only when emphasis is being placed on the either broad or narrow usage of a particular element of structure, and particularly relevant or confusing differences are highlighted as appropriate. Note, however, that use of this more exclusive term *Inuktitut* does not necessarily mean that the element of structure described is not more widely applicable, unless this is indicated in the text.

1.2 Theory of grammar assumed

Much of the research program of generative linguistics over the past 30 years has been spurred by the "logical problem of language acquisition" (Baker & McCarthy, 1981; Hornstein & Lightfoot, 1981)[3] - the idea that certain properties of language must be innately present within the child in order to account for the acquisition of complex grammatical knowledge which is underdetermined by the variable linguistic input available to the child. As stated in Chomsky (1965, p. 58),

> A consideration of the character of the grammar that is acquired, the degenerate quality and narrowly limited extent of the available data, the striking uniformity of the resulting grammars, and their independence of intelligence, motivation, and emotional state, over wide ranges of variation, leave little hope that much of the structure of the language can be learned by an organism initially uninformed as to its general character.

Thus every child is assumed to be innately endowed with Universal Grammar (UG), a linguistic component in the brain sufficient to inform the child as to the range and type of linguistic information available from the input and to restrict his or her analysis of this input to the range of possible human languages.

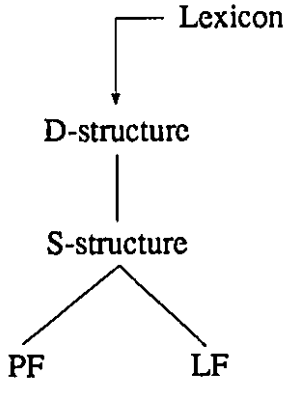
In accordance with this hypothesis, the present thesis assumes the

[3] Also known as the problem of "poverty of the stimulus" or "poverty of the evidence" (Chomsky, 1965, 1986b), the "projection problem" (Peters, 1972), and "Plato's problem" (Chomsky, 1986b). General discussions of the relationship between language acquisition and UG may be found in Lightfoot (1982), White (1982, 1989), and Goodluck (1991).

Principles and Parameters theory of grammar as outlined in Chomsky (1981a, 1981b, 1986a, 1986b; Chomsky & Lasnik, 1993) and other standard works within this framework[4,5]. While a brief overview of the relevant parts of this theory of grammar is presented here for sake of completeness, general familiarity with the goals and details of the theory on the part of the reader is assumed, though it will not be essential to understanding most of the discussion of empirical data in later chapters.

In the Principles and Parameters framework, the grammar is conceived of as a system of subtheories (bounding theory, government theory, theta theory, binding theory, case theory, and control theory) including various (usually binary) options called parameters on which values can be selected by individual languages. The principles of grammar together characterize four separate levels of representation (D-structure, S-structure, Phonetic Form (PF), and Logical Form (LF)), which have the lexicon as their point of origin and are organized as in (1).

(1)



The lexicon lists the idiosyncratic properties of each lexical item, including the thematic relations each item may enter into with other items. Lexical items are inserted into the syntax at the level of D-structure, at which pure thematic relations are represented in accordance with X-bar theory (Chomsky, 1986a).

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[4] Note that the minimalist program (Chomsky, 1993, 1994) is not assumed here.

[5] Useful overviews of this theory may be found in Sells (1985, chapter 2), Baker (1988, chapter 2), Cook (1988), and White (1989, chapter 1). Detailed technical introductions are contained in Radford (1981, 1988), van Riemsdijk & Williams (1986), Lasnik & Uriagereka (1988), Haegeman (1991), and Cowper (1992).

Each lexical item is generated at the X° level and constitutes a head. Each head is assumed to project the related X' or XP phrasal levels. Movement of either phrases or heads via the general process Move-α may occur between D-structure and S-structure, or between S-structure and LF, to produce derived structures. The derivational history of each sentence is preserved through co-indexed traces recorded in their entirety at LF, which serves as a link with meaning and the conceptual faculties in the brain. The final acoustic form of the sentence is visible at PF and coincides with the spoken utterance. The various subtheories of the grammar, the organization of the grammar diagrammed in (1), and the specification of the parameters and their potential values, together constitute the Universal Grammar which is assumed to be innately endowed to every child and to underlie all human languages. Variation between languages occurs as a result of language-specific settings of parameter values fixed by the child through his or her analysis of the input. The "core grammar" of the child, then, is comprised of UG together with language-specific variation determined by parameter setting.

Notions from two of the subtheories - theta theory and case theory - will play some role in the development of this thesis. Theta theory is concerned with how semantic and/or thematic relationships are represented in the grammar. It divides these possible relationships into linguistically significant classes called theta roles, and characterizes how each theta role is normally represented in linguistic structure. The theta roles available include agent, patient/theme, goal, instrument, benefactive, location, direction and possessor (Jackendoff, 1972); this thesis will be concerned primarily with the former two roles. Theta roles are assumed to be assigned by one specified position (usually verb or adposition) to another (usually subject or object argument positions).

Case theory is concerned with the assignment of case to categories and with the resulting distribution of NPs. Case is assumed to be assigned by certain lexical items (usually transitive verbs, prepositions and tensed inflections) to certain other categories (usually NPs) under specified conditions. It is usually necessary for every NP in a sentence to receive case from a case

assigner in order for the sentence to be grammatical.

In terms of the structure of polysynthesis, the mechanisms of incorporation presented in Baker (1988) are assumed here. Incorporation takes a syntactic approach to morphology in assuming that individual morphemes function as independent lexical items from the point of view of the syntax. Under incorporation, these independent morphemes undergo Move-α by means of adjunction of one head to another, such that "one semantically independent word comes to be 'inside' another" (Baker, 1988, p. 1). Elements which can incorporate include nouns, verbs and adpositions.

Incorporation theory captures the basic motivation of D-structure as given in the Uniformity of Theta Assignment Hypothesis (UTAH; Baker, 1988, p. 46) in (2).

(2) Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

The relationship between the UTAH and incorporation theory is made explicit by Baker (1988, p. 49):

> Generally, whenever a part of a word shows signs of assigning or receiving a thematic role in the same way that morphologically independent constituents do, the UTAH implies that that part of the word appears in an independent structural position at D-structure, so that the thematic relationship can be represented in the canonical way. Thus, the [UTAH] points away from a lexical analysis of causative, applicative, and noun incorporation structures and gives theoretical motivation for analyses in terms of syntactic X° movement.

The application of this theory to a polysynthetic language like Inuktitut is clear in that each morpheme exists independently at D-structure. The Projection Principle (Chomsky, 1981a) further states that processes such as Move-α may "neither create not destroy categorial structure that is relevant to the lexical properties of items, including the thematic relationships that they determine" (Baker, 1988, p. 49), and thus each independent component in the lexicon must

be individually represented at each of the levels of representation in the grammar. Technical details are too involved to present here; the interested reader may consult Baker (1988). Suffice it to say that morphology is treated as an additional subtheory within the general purview of the Principles and Parameters framework and adheres to all the principles thereby entailed.

1.3 Structure of Inuktitut[6]

Inuktitut, like other languages in the Eskimo-Aleut family, is polysynthetic in structure, morphologically ergative[7], and employs a vast array of nominal and verbal inflections. Typical word order is SOXV, though ellipsis of both subject and object is very common, due in part to the prolific verbal and nominal inflection available.

As background for the discussion of the acquisition of structures in chapters 3 through 6, the following sections present in more detail certain relevant aspects of the structure of Inuktitut. Section 1.3.1 outlines the clause structure of Inuktitut, and section 1.3.2 outlines the structure of polysynthesis. Section 1.3.3 discusses the verb types in Inuktitut according to their specification for transitivity, while section 1.3.4 discusses mechanisms of transitivity alternation. Sections 1.3.5 and 1.3.6 present the systems of verbal

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[6] While languages in the Eskimo-Aleut family have been studied by a number of researchers from a wide variety of theoretical perspectives, many of these fall within the purview of generative theories of grammar. Treatments of Eskimo morphosyntax within the Principles and Parameters framework include Bittner (1987, 1988, 1994a, 1994b), Johns (1987, 1992), Bok-Bennema & Groos (1988), Shaer (1990, 1991), Bok-Bennema (1991), Bobaljik (1992), Murasugi (1992), and Lipscomb (1993). Other treatments of Eskimo morphosyntax which are based within a syntactic analysis of polysynthesis include Woodbury (1975, 1985a, 1985b), Johnson (1980), Sadock (1980, 1985, 1986, 1991), Smith (1982), Woodbury & Sadock (1986), and Nowak (1993).

[7] Languages may be syntactically ergative in that the ergativity pervades the entire organization of the linguistic system of that language, or they may be morphologically ergative in that the nominal cases and verbal agreement are marked according to an ergative pattern but the underlying structure of the language is the same as that of an accusative language. It is also not uncommon for languages to display split ergativity in that they follow ergative marking in one (or more) mood, aspect or tense, but accusative marking in the rest of the language. Most researchers agree that Inuit is a morphologically ergative language which is not split (Bok-Bennema, 1991, chapter 4). At least one claim has been made that it is syntactically ergative (Marantz, 1984), though the data used to argue this claim are typically regarded as neither thorough nor correct. Ergativity is described in detail in Dixon (1979) and Levin (1983); a brief overview relevant to acquisition is contained in Van Valin (1992).

and nominal inflection respectively. Finally, section 1.3.7 touches briefly on the debate concerning the nominal vs. verbal nature of Inuktitut structure.

1.3.1 Clausal Structure

Inuktitut exhibits three basic clause types - ergative, antipassive, and intransitive - as illustrated in (3).

(3) a. *Jaaniup iqaluk nirijanga.*

Jaani-up iqaluk-Ø niri-janga

Johnny-ERG.SG fish-ABS.SG eat-PAR.3sS.3sO

'Johnny is eating the fish.'

b. *Jaani iqalummik nirijuq.*

Jaani-Ø iqaluk-mik niri-Ø-juq

Johnny-ABS.SG fish-MOD.SG eat-ANTP-PAR.3sS

'Johnny is eating the fish.'

c. *Jaani nirijuq.*

Jaani-Ø niri-juq

Johnny-ABS.SG eat-PAR.3sS

'Johnny is eating.'

The ergative clause in (3a) contains both a subject and a direct object, both reflected in verbal inflection. As is typical in ergative languages, the absolutive case on the direct object is the same as that on subjects of intransitive sentences, while the ergative case on the subject is unique to that position. This contrasts with an accusative case marking pattern in which subjects of both intransitive and transitive verbs reflect the same nominative case and the direct object in a transitive sentence is marked uniquely with accusative case.

The antipassive clause in (3b), often seen in ergative languages, also contains both subject and direct object, but the object is demoted to an oblique, marked with modalis case, instead of being treated syntactically as a direct object. Only the subject is marked in verbal inflection, and an antipassive morpheme appears immediately following the verbal stem, though it is often null in Inuktitut.

The intransitive clause in (3c) contains only a subject, which is marked in verbal inflection.

Though word order is fairly free in Inuktitut, deviations from the standard SOXV order typically indicate a pragmatic or stylistic effect.

1.3.2 Polysynthesis

Inuktitut, like all languages within the Eskimo-Aleut family, is well-known for its extremely high degree of polysynthesis - the ability to express in one word of several morphemes what would require a sentence of several individual words in an analytic, isolating, or agglutinative language. Thus, as hinted in section 1.2, much of the syntax of the language occurs within an individual word in terms of the relationships between morphemes, rather than across word boundaries. Word roots in Inuktitut fall into three main classes - verbals, nominals (including pronouns and demonstratives), and uninflected particles (including conjunctions, interjections, and some adverbials). Each verbal or nominal root may be followed by up to 8 or more morphemes from among the over 400 word-internal morphemes used productively in this language, including independent verbs, auxiliaries, adverbials, adjectivals, tense (or time) markers, and the like. Each verbal or nominal stem must then be followed by one of over 900 verbal or over 100 nominal inflections respectively[8]. Finally, one or more optional enclitics may be affixed. Examples such as those in (4) are common in terms of number, type and function of morphemes.

(4) a. *Illujuaraalummuulaursimannginamalittauq.*
illu-juaq-aluk-mut-uq-lauq-sima-nngit-nama-li-ttauq
house-big-EMPH-ALL.SG-go-PAST-PERF-NEG-CSV.1sS-but-also
'But also, because I never went to the really big house.'
(Dorais, 1988)

[8] These numbers are accurate for the Eastern Canadian Inuktitut dialects, which still maintain different inflections for dual and plural. The numbers are smaller for languages such as West Greenlandic which no longer maintain dual forms.

b. *Annuraarsimalukatsitipaujaaluumijuq.*

annuraaq-sima-lukat-siti-paujaaluk-u-mi-juq

clothe-PERF-unusually-well-EMPH-be-also-PAR.3sS

'She also dresses up very unusually.'

Note that the polysynthetic structure of Inuktitut allows the class of the word to change (from verbal to nominal, or *vice versa*) up to several times within one word through affixation of word-internal morphemes. The example in (4a) begins as a nominal and changes to a verbal with the morpheme *-uq-* 'go'. The example in (4b) begins as a verbal, changes to a nominal with the morpheme *-paujaaluk-* 'very', and then changes back to a verbal with the morpheme *-u-* 'be'. In order to disambiguate between the various stages of development of a word, the term 'root' will be used here to denote the initial morpheme in a word, while the term 'stem' will be used to denote a root plus its (non-inflectional) affixes. Thus the verb root in (4b) is *annuraaq-* while the verbal stem may comprise the root plus any number of subsequent affixes up to *annuraarsimapaujaaluumi-*.

1.3.3 Verbs

Verbs in Inuktitut may either be roots or affixes. Root verbs must appear at the beginning of a word and may stand alone in the sentence accompanied only by verbal inflection. Affixal verbs, on the other hand, may never appear at the beginning of a word and may not stand alone with or without verbal inflection (except in some instances of colloquial speech). Both root and affixal verbs vary in their transitivity requirements: they may be intransitive, transitive, or ditransitive (subcategorizing for one, two or three arguments respectively).

1.3.3.1 Root verbs

Intransitive root verbs take only one argument and are inflected only for this argument. Such verbs are typically stative and non-controlled, and may also be attributive. Examples include *sinik-* 'sleep', *ijukkaq-* 'fall', and *kavaq-* 'be sad'. In many languages there are assumed to be two types of

intransitive verbs - unergative and unaccusative - which can be divided on both semantic[9] and syntactic[10] grounds (e.g. Perlmutter, 1978; Burzio, 1981, 1986; Levin & Massam, 1984; Perlmutter & Postal, 1984; Rosen, 1984; Levin & Rappaport Hovav, 1992b). A large class of verbs in Inuktitut exhibit some of the characteristics of unaccusative verbs, including having theme subjects and permitting lexical causatives. However, there is as yet no syntactic evidence documented in the literature for a bipartition between unaccusative and unergative intransitive verbs in Inuit[11] (Bok-Bennema, 1991). It may well be the case that intransitive verbs are either all unaccusative or all unergative[12].

A second group comprises transitive root verbs which subcategorize for two arguments. Examples include *kunik-* 'kiss', *patik-* 'slap', and *tigumiaq-*

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[9] In terms of semantics, unergative verbs are typically those with agentive subjects, including verbs of willed or volitional acts (*eat, jump, talk*), motion (*walk, bicycle, fly*), emotional expression (*smile, cry, laugh*), and involuntary bodily processes (*sleep, cough, defecate*). Unaccusative verbs are typically those with theme subjects, including verbs of change of state (*open, break, burn*), manner of motion (*roll, bounce, shake*), inherently directed motion (*fall, arrive, come*), change of existence (*die, appear, disappear*), emission (*bleed, erupt, stink*), aspect (*begin, finish, continue*), and adjectival predicates (*dark, good, tasty*).

[10] In terms of syntax, unergative verbs have one argument assumed to be base-generated in subject position. Since it receives both case and theta role in that position, it does not have to move at all from its D-structure position. Unaccusative verbs also have one argument assumed to be base-generated in object rather than subject position. This argument receives a theta role in object position but cannot get case there and thus must move to subject position to get case from INFL. This NP-movement to get case is relevant here in terms of later discussion of the structure of lexical causatives and evidence for the Maturation Hypothesis (Borer & Wexler, 1987).

[11] Syntactic diagnostics to differentiate the two classes of verbs tend to vary across languages. Some of the most common are listed here.

(i) auxiliary choice (*be* for unaccusatives; *have* for unergatives) (Italian, French, Dutch)
(ii) formation of adjectival passives (English)
(iii) potential causative alternation (English, Brazilian Portuguese, K'iche')
(iv) *ne*-cliticization (Italian)
(v) agentive formation (English)
(vi) impersonal passive formation (Dutch, German)

Many of the traditional diagnostics are of no use in Inuktitut since the language does not offer the appropriate possibilities; for example, there are no auxiliaries or *ne*-clitics in Inuktitut.

[12] Johns (1987) claims that Inuktitut contains no unaccusative verbs, while Bok-Bennema (1991) claims that all intransitive verbs in Inuit may in fact be unaccusative. Woodbury (1975, pp. 47-48) offers a number of examples of transitive use of verbs which are typically assumed to be unergative in other languages (e.g. *pisuk-* 'walk'), which may support Bok-Bennema's argument. This is clearly an area of potentially fruitful future research.

'hold'. In addition, several of the root verbs traditionally considered intransitive in English may be transitive in Inuktitut, as illustrated in (5).

(5) a. *Jaani tikittuq.*

Jaani-Ø tikit-juq

Johnny-ABS.SG arrive-PAR.3sS

'Johnny arrived.'

b. *Jaaniup Quaqtaq tikittanga.*

Jaani-up Quaqtaq-Ø tikit-janga

Johnny-ERG.SG Quaqtaq-ABS.SG arrive-PAR.3sS.3sO

'Johnny arrived in Quaqtaq.'

As noted in section 1.3.1 above, all transitive verbs may be antipassivized such that they appear as intransitives which take a direct object in the modalis case.

As in other languages, many of these transitive root verbs may optionally appear with no overt object, retaining only an agentive subject, and thus may be classified as ambiguous verbs. Such root verbs as *niri-* 'eat', *mirsuq-* 'sew', and *atjiliuq-* 'film' may be used either transitively or intransitively. In their intransitive form they may still take a direct object, and in such cases it is assumed that they take a null antipassive morpheme to mediate the change in transitivity.

Another group of transitive verbs may optionally appear with no overt object, retaining only a theme subject which is equivalent to the object when that verb is used transitively. Root verbs such as *matuq-* 'cover', *sukkuq-* 'break, deteriorate', and *piiq-* 'take off' are included in this class. Such verbs are identified here as lexical causatives since the agent in the transitive form is typically an agent of causation. The intransitive variant is assumed to be an unaccusative verb.

Finally, Inuktitut also has a few ditransitive verbs which subcategorize for three arguments, including *aaC-* 'give', *aittuq-* 'give', and *tuni-* 'give'.

1.3.3.2 Affixal verbs

Affixal verbs in Inuktitut cannot serve as the root of a word but rather require either a verb or a noun to incorporate into them. In accordance with

incorporation theory, these affixal verbs are assumed in syntactic terms to be independent verbs which project their own VPs[13]. Affixal verbs which require the incorporation of other verbs do not have their own specifications for transitivity. Rather, they may maintain the transitivity of the verb which incorporates into them, such as *-guma-* 'want', *-gunnaq-* 'be able', and *-niraq-* 'say', or they may increase the valency of the relevant root verb by one, such as *-tit-* 'make' and *-qu-* 'want, tell, ask'. Verbs which require the incorporation of nouns do carry specification for transitivity, and may be either transitive, such as *-tuq-* 'consume', *-liaq-* 'go to', and *-qaq-* 'have', or ditransitive, such as *-gi-* 'have as'. However, the inflection on these verbal stems only reflects the non-incorporated arguments.

1.3.4 Mechanisms of transitivity alternation

Several morphemes in Inuktitut serve to alter the transitivity of a given verb root or stem. Those morphemes which increase valency include the causative affixal verbs *-tit-* 'make', *-kkaq-* 'make', and *-qu-* 'ask, tell, want'; and the transitivizing morpheme *-gi-*. Those morphemes which decrease valency include the passive morpheme *-jau-*; the antipassive morphemes *-i-*, *-si-*, *-tsi-*, *-ji-*, *-ni-*, and *-Ø-*; and the detransitivizing morpheme *-tsaq-*. In addition, some root verbs can serve as either transitive or intransitive without any mediating affixation as noted above, including ambiguous roots and lexical causatives. Finally, noun incorporation allows sentences which are semantically transitive to be expressed grammatically as intransitive since the object noun is incorporated into the affixal verb and therefore is not reflected in the verbal inflection.

This thesis focuses on the acquisition of three of these mechanisms - passive, causative (morphological and lexical), and noun incorporation. These structures are described in some detail in chapters 3, 4 and 5 respectively.

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[13] See Bok-Bennema (1991, pp. 162-165, 172-179) for clear argumentation in support of this position.

1.3.5 Verbal inflection

Verbal stems in Inuktitut obligatorily take portmanteau inflections which are marked for person (1,2,3,4[14]) and number (singular, dual, plural) of subject, and of object if relevant, and for one of four main clause or five subordinate clause modalities. A list of verbal modalities is given in (6). Terminology used here is followed in parentheses by alternative terminology where applicable since the literature on Eskimo-Aleut languages varies considerably in terminology employed. For clarity of reference, the third person singular subject form of the inflection is shown for each modality[15].

(6)

indicative	*-vuq*
participial (participative)	*-juq*
interrogative	*-va*
imperative (including optative)	*-li*
causative (perfective)	*-mmat*
conditional (imperfective)	*-ppat*
dubitative	*-mmangat*
contemporative (imperfective appositional)	*-luni*
incontemporative (perfective appositional)	*-tsuni*

The first four modalities are used in main clauses. Indicative and participial modalities have similar functions in Inuktitut and are used in basic declarative sentences[16]. The interrogative modality is used in questions; other modalities can be used in interrogative utterances as well with appropriate intonation. The imperative modality is used for commands and first person suggestions. The final five modalities are used in subordinate clauses. The causative modality expresses causation (*because...*) while the conditional modality

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[14] Inuktitut exhibits switch reference properties for subjects of subordinate clauses. In this sense, 3rd person refers to a subordinate subject which is disjoint from the matrix subject, and 4th person refers to a subordinate subject which is coreferent with the matrix subject.

[15] See Dorais (1988) for a complete listing of the verbal and nominal inflection paradigms in *Tarramiut.*

[16] In Western Canadian dialects of Inuit the participial form is much more common than the indicative (Johns, 1987). In West Greenlandic the indicative is used for declaratives while the participial is reserved for participles only (Fortescue, 1984).

expresses conditionality (*if...*). The dubitative modality marks uncertainty over whether the event denoted in fact occurred or will occur. The contemporative modality marks simultaneous occurrence of events (*is Xing while Ying*), and the incomtemporative modality marks the potential simultaneous occurrence of events (*will be Xing while Ying*).

Note that transitive verbal stems typically take inflection which reflects both subject and object. However, due to pervasive antipassivization which is often not accompanied by overt morphology in Inuktitut, transitive stems often appear to take inflection which reflects only the subject. In order to differentiate between these two situations of inflection for transitive verbal stems, and to disambiguate between the class of verb root and the type of inflection, the terms *two-argument inflection* and *one-argument inflection* are used here, rather than the terms *transitive inflection* and *intransitive inflection*, for situations in which the inflection reflects both subject and object, and subject alone, respectively.

1.3.6 Nominal inflection

Nominal stems in Inuktitut obligatorily take portmanteau inflections marked for number (singular, dual, plural), one of eight cases, and possessor (person and number) when applicable. A list of nominal cases is given in (7)[17]. Each case term is followed in parentheses by alternative terminology where applicable since the literature on Eskimo-Aleut languages varies considerably in terminology employed. Examples of singular and plural (non-possessed) case inflections are also given.

[17] There is some discrepancy in the literature concerning the status of semantic (allative, ablative, locative, vialis, equalis) as opposed to grammatical (ergative, absolutive, modalis) cases. It has been claimed that the semantic cases are in fact postpositions (see discussion in Allen, 1988; Baker & Hale, 1990; Bok-Bennema, 1991). Here it is maintained for sake of simplicity that all are case markers and not postpositions, as argued in Allen (1988).

(7)			
	ergative (relative, genitive)	*-up*	*-it*
	absolutive (nominative)	*-Ø*	*-it*
	modalis (comitative, instrumental)	*-mik*	*-nik*
	allative (dative, terminalis)	*-mut*	*-nut*
	ablative (distantialis)	*-mit*	*-nit*
	locative	*-mi*	*-ni*
	vialis (prosecutive, translative)	*-kkut*	*-tigut*
	equalis (equative, similaris)	*-titut*	*-titut*

Ergative case marks subjects of verbal stems with two-argument inflections, and is identical to the genitive marking on possessives. Absolutive case marks subjects of verbal stems with one-argument inflections as well as objects of verbal stems with two-argument inflections. Modalis case marks objects of transitive verbal stems with one-argument inflections (antipassives)[18]. Allative case serves the instrumental function (*with*), as well as typical dative and allative (*to*) functions, and also marks the agent of passives. The ablative case represents *from*[19], the locative case represents *in, at,* or *on*, the vialis case represents *through* or *by means of*, and the equalis case represents *like* or *similar to.*

Possession, if applicable, is also marked by the nominal inflection. Possessors are inflected in the ergative case, for both number (singular, dual, plural) and person if applicable (1,2,3,4). Possessiones (items possessed) are inflected in any of the remaining seven cases, again for both number and person.

1.3.7 Nominal vs. verbal nature of Inuktitut

Some controversy exists among Eskimologists as to whether verbs in Eskimo-Aleut languages are essentially verbal or nominal. The discussion centers around the similarity between certain verbal inflection paradigms and certain possessive nominal inflection paradigms. Essentially, the one-argument

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[18] Modalis case serves as an instrumental (*with*) in some other Inuit dialects.

[19] Ablative case marks agent of passive in some other Inuit dialects.

participial verb inflections have the same surface form as the subject nominalizer *-juq-* plus the nominal possessive inflections, while the two-argument participial verb inflections have the same surface form as the passive participle *-jaq-* plus the nominal possessive inflections. The two possible interpretations are illustrated in the example in (8):

(8) *Angutiup nanuq kapijanga.*
anguti-up nanuq-Ø [kapi-janga / kapi-jaq-nga]
man-ERG.SG bear-ABS.SG [stab-PAR.3sS.3sO / stab-PP-ABS.3Ssg]
VERBAL: 'The man stabbed the bear.'
NOMINAL: 'The bear is the man's stabbed one.'

As a result of these data, several scholars have taken the position that what seem like verbs in Eskimo are really nouns, and that clauses are sets of noun phrases with predicational force (Thalbitzer, 1911; Schultz-Lorenzen, 1945; Hammerich, 1951; Hofmann, 1978; Lowe, 1978; Johns, 1987, 1992). Other scholars see each of the above as separate constructions and do not lump all together as nominals (Bergsland, 1955; Woodbury, 1985b; Sadock, 1990; Bok-Bennema, 1991; Bittner, 1994a; Lipscomb, 1993). Sadock (1990) points out that the similarity of paradigms detailed above involves only 12% of the possible noun inflections and 3% of the possible verb inflections in Eskimo. The parallels cited do not extend beyond the participial verbal modality to other modalities or beyond the absolutive nominal case to other cases as one would expect if the verb-as-noun claim were true. The most likely explanation is that the forms are diachronically but not synchronically related (Fortescue, 1994). At any rate, there is sufficient evidence of the syntactic nature of Eskimo to proceed under the assumption that verbs are actually verbal until further data can be uncovered.

1.4 Inuit attitudes to language and language development

Current theories of language acquisition assume that acquisition is the result of an interaction between input data and internal knowledge (including Universal Grammar). The effect of different types of "motherese" or "caregiver speech" is not well understood. However, in this thesis it will be

suggested that at least certain aspects of development in Inuktitut are due to frequency of certain structures in the input. The attitudes of the child's community and culture towards language, language development, and transmission of language to children may well play a significant part in terms of their effect on both the nature and the details of the input. In this vein, the following sections discuss various aspects of arctic Quebec Inuit culture relevant to language acquisition including caregiving (1.4.1), attitudes to child use of language (1.4.2), child-directed speech (1.4.3), language "teaching" strategies (1.4.4), and literacy activities (1.4.5).

1.4.1 Caregiving

Caregiving in Inuit culture is shared among both nuclear and extended family members. Mothers have a primary role in caregiving, though teen-aged (and sometimes younger) girls are also predominant. In addition, grandmothers often babysit their grandchildren for extended periods. Men and boys will care for children if women or girls are not available. Formal babysitting arrangements usually last no more than a few months, and typically involve a teen-aged or early twenties female relative of the family, sometimes hired from outside the community as live-in caregivers. Though daycare centers sometimes exist, they are typically little used in small communities.

The traditional relationship of mothers to children is primarily one of meeting caregiving needs rather than one of play partner or conversational partner, the latter roles being filled by peers or slightly older-aged children. In fact, the extended family situation predominant in Inuit culture allows for more diversity of roles among different people (friend, disciplinarian, sister, playmate, etc.) than in a typical nuclear family in which the mother or father must fulfill several of these roles simultaneously. Note that this does not mean that Inuit parents never talk to their children, but rather that the typical nature of interaction is different than is typical in white middle class society. Input from sibling or older teen caregivers is also much more present in typical Inuit culture than in typical white middle class culture.

1.4.2 Attitudes to child use of language

Traditionally, Inuit children are socialized to be silent with adults rather than verbally expressive (Crago, 1988). Inuit adults consider children to be in a subordinate role; as such they are expected to spectate in silence rather than being active conversational partners of adults. Silence is seen as a way of showing respect to elders (Scollon & Scollon, 1981), and a lack of verbal response to someone's comment is not considered to demonstrate lack of comprehension, but rather respect and understanding. In fact, many of the older women interviewed in Crago (1988) stated that one could determine whether a child had learned language by whether the child understood what he or she was being asked to do.

Verbal curiousity is not encouraged in Inuit children (Freeman, 1978; Annahatak, 1985). Frequent questioning is seen as tedious and intrusive; Inuit children are rather expected to learn by watching and listening (Scollon & Scollon, 1981; Briggs, 1983; Annahatak, 1985). Children are expected to learn to think for themselves, and increasing silence with age is interpreted as increasing intelligence. This behaviour also carries over into school situations, which is often frustrating for second language teachers used to students who are socialized to learn through verbal performance (Crago, 1992a; Eriks-Brophy, 1992; Eriks-Brophy & Crago, 1993, in press).

The expectation of silence in the presence of adults is also linked to the idea that children should not participate in adult affairs before they are mature enough. Older Inuit mothers consistently communicate the philosophy that children should be prevented from premature involvement in adult affairs in order to allow them to enjoy uninterrupted the experience of childhood, and should not be expected or pushed to think or act beyond what is appropriate for their years (Briggs, 1970; Crago, 1988).

Among youger Inuit mothers, however, this pattern of socialization into silence shows trends towards change (Crago, Annahatak & Ningiuruvik, 1993). Most younger mothers interviewed for Crago (1988) linked language acquisition to production and to a child's ability to say something meaningful. In addition, younger mothers overall did not express sentiments about

protecting children from thinking or acting beyond their years, and did not seem to be bothered by children's involvement in their conversations. Quantitative analysis of videotape data from Crago's research confirms that children of young parents were more involved in conversations with their parents than were children of older parents (Hough-Eyamie, 1993).

1.4.3 Child-directed speech

Child-directed speech among Inuit caregivers is different in several key ways from the types of interaction with children cited in the "motherese" literature pertaining to white middle class situations. In particular, studies with Inuit children in the pre-speech and one-word stages show that Inuit mothers do not typically engage in vocal interaction or play with their children, do not typically try to interpret child vocalizations as speech, and in most cases do not even respond to these vocalizations as communication, since they are more concerned with the child's comprehension than with his or her production (Crago, 1988; Hough-Eyamie, 1993). In addition, the overall rate of communicative attempts per minute at 16 and 20 months is significantly lower for Inuit than for white middle class caregivers (Hough-Eyamie, 1993). Though caregivers from both cultures do engage in many of the same types of communicative activities, they often tend to use different speech acts to achieve their communication goals (Hough-Eyamie, 1993; Hough-Eyamie, Pan, Crago & Snow, in preparation).

Child-directed speech in Inuktitut is distinct from adult-directed speech in that language in at least two ways. First, many Inuit mothers use a register of talk called *nilliujuusiq* 'affectionate talk' for speaking to their very young children, as documented in Crago (1988). This includes both loving verses composed for and addressed to one particular child, and a way of speaking in a loud, raucous voice with a mixture of adult root words and inflections and word-internal nonsense syllables.

Second, certain accommodations and adjustments are made in normal speech to preschool Inuit children. A small vocabulary of *piaraujausiit* 'baby words', phonologically simple counterparts to adult words, is commonly used

with children up to the age of three or three-and-a-half (Crago, 1988). These baby words typically cut across part of speech categories, and can appear either alone or with appropriate morphology affixed. In addition, adults often attempt to simplify an utterance for a child when the child signals lack of comprehension. Strategies used include changing from an adult word to a baby word, repeating the root noun or root verb in the utterance by itself without other morphology, and placing the utterance in a clearer context (Crago, 1988).

Older mothers typically deem it appropriate to alter their language to a level more suitable for a child, and not to speak in too heavy or difficult language. Many younger mothers interviewed for Crago (1988) claimed not to use baby words or to alter their language to young children, but rather to speak to their children as if they were adults. In practise, however, many younger mothers did in fact employ these strategies of accommodation and adjustment of language with their children.

1.4.4 Language teaching strategies

Apart from normal daily input, certain strategies are often used to "teach" aspects of language to Inuit children, as documented by Crago (1988). While these are not necessarily particular to Inuit culture, knowledge of them does help to understand the process of language acquisition by Inuit children. Primary among these are two types of repetition routines. The first type focus on greeting routines, and include knowledge of kinship terminology and appropriate offering and acknowledgement of greeting, both extremely important aspects of Inuit society. The second type focus on words and phrases related to second language and school routines, including politeness conventions such as *please* and *thank you*, cute phrases such as *I love you* and *gimme five*, counting sequences in both Inuktitut and English, and the alphabet in Inuktitut. In both cases, caregivers elicit the routines from the children and rehearse them repeatedly in a variety of situations, though the latter type tends to predominate more among younger mothers.

1.4.5 Literacy activities

The literacy rate among the Inuit of northern Quebec is exceptionally high, around 95%, largely as a result of the interest in religious literature and Bible reading encouraged by missionaries as early as 1876 (Dorais, 1990). In fact, middle-aged Inuit even today attribute all their literacy skills to lessons accompanying and practise with religious literature (Crago, 1988). In many homes Bible reading occurs daily, and children are expected to listen to oral readings. Apart from religious activities, however, situations in the home encouraging literacy are not predominant. Few homes have books available, and even fewer have books for young children. Reading of bedtime stories to children is not a common activity; Crago (1988) reports only two cases, both involving parents who were experienced teachers and themselves avid readers translating English stories into Inuktitut for their children as they read. Crayons, pencil and paper are often not available for children, and it is often difficult to locate writing utensils for adult use as well.

1.5 Organization of the thesis

The remainder of this thesis is organized as follows. Chapter 2 outlines the methodology used in this research including selection of the research site and subjects; collection, transcription, coding and analysis of the data; and discussion of some quantitative and qualitative issues concerning data analysis.

Chapter 3 discusses the acquisition of passive structures by the subjects. It is claimed here that Inuktitut-speaking children use passive structures productively at an early age relative to English-speaking children, but consistent in age with speakers of non-Indo-European languages reported on in the literature. In addition, some more advanced forms of passives are used at this early age. Data argue against a maturation hypothesis of language acquisition.

Chapter 4 reviews the acquisition of causative structures by the subjects, including both morphological and lexical causatives. It is argued that Inuktitut-speaking children show early use of unanalyzed routines in their acquisition of morphological causatives. Lexical causatives are present from

the earliest ages studied, but show evidence of a period of overgeneralization in one subject at the same time as the morphological causative shows signs of being productively acquired. A seeming overgeneralization of the lexical causative in this subject may reflect nothing more than as yet unstable use of the morphological causative.

Chapter 5 overviews the acquisition of noun incorporation structures by the subjects. Data show productive use of noun incorporation in Inuktitut-speaking children at an early age relative to Mohawk-speaking children reported on in the literature. Several hypotheses concerning this difference are explored including details of language structure and relative language use in the environments of the learners.

Finally, chapter 6 summarizes the findings of the thesis and offers directions for further research. The findings of chapters 3 through 5 are considered in light of current debates in the literature concerning both the initial state of the grammar and the development of the child's language abilities from this initial state to an adult-like competence

CHAPTER 2
METHODOLOGY

This chapter discusses the methodology used in formulating and carrying out the present research. Sections 2.1 and 2.2 describe the selection of the location and subjects of the research. Section 2.3 presents the data collection methods. Section 2.4 outlines the transcription procedure used, while sections 2.5 and 2.6 elaborate the coding procedures and methods of data analysis respectively. Finally, section 2.7 concludes the chapter with a brief summary of the information presented and its potential uses.

2.1 Location

In order to build on previous and ongoing ethnographic and education-oriented research in arctic Quebec, the community of Quaqtaq was selected as the site for the present research. In addition to being the site of much of Crago's research (see chapter 1), this community is well-suited to the present purposes for several reasons as detailed below.

First, Quaqtaq is one of the few remaining Inuit communities outside Greenland in which the Inuit language is spoken fluently by all Inuit adults and is learned as a native language by all children from birth. Eskimo-Aleut languages throughout the circumpolar regions are in various states of current use ranging from few adult and no child native speakers in most commmunities in Siberia to almost 100% adult and child native speakers in most communities in Greenland (Dorais, 1990). While Inuit communities in Canada span every point on this continuum, the Inuit of arctic Quebec have experienced relatively little language loss overall, due in part to the relatively late contact with the outside world and in part to the relatively late creation of settlements and schools (Dorais, 1990), and are considered one of the native groups with the most chance globally for survival of their language into the next century (Foster, 1982; Priest, 1985). Quaqtaq, one of the smallest settlements in arctic Quebec with a population of approximately 200, has experienced less influence from English and French than the larger and more

southerly Inuit communities and is known as one of communities in this region with particularly strong language. All Inuit adults in the community speak Inuktitut fluently as a native language[20], and all Inuit children learn it from birth in their homes and extended families. Inuktitut is the language of daily life in business, community government, social interactions, and home life. Most Inuit between the ages of 8 and 40 are also bilingual to at least some degree in English and/or French since schooling in one of these languages is mandatory from grade three (about age 8) onward.

Second, Quaqtaq is reasonably accessible. It is on the west coast of Ungava Bay, some 1100 miles north of Montreal, and can be accessed relatively easily by plane from southern Canada (see map in Appendix A).

Third, an experienced Inuk research associate in Quaqtaq was available and willing to organize logistics of the research and to participate in related discussions and data analysis.

Finally, the community and its governing bodies were open to involvement in this research. On an administrative level, the Research Council of the Kativik School Board, the body which provides educational services to the Inuit of northern Quebec, was willing to support this research ethically, logistically, and financially. On a community level, the Education Committee of Quaqtaq approved the research and offered community support for participation in it. In addition, the Teacher Training department of the Kativik School Board offered opportunities for including research results in courses for Inuit teachers, thus providing a mechanism for discussing the research with teachers and parents in various communities and for returning the results of the research to the Inuit.

2.2 Subjects

Subjects were selected for participation in this research according to a number of criteria. It was decided that four subjects would be desirable in

[20] The population of Quaqtaq is approximately 95% Inuit. Some half-dozen non-Inuit men live permanently in Quaqtaq in addition to a seasonal population of less than a dozen non-Inuit teachers, nurses, and construction workers.

order that the research would be representative of general development rather than being a case study of only one child. The selection of two girls and two boys would avoid any potential gender bias since various acquisition studies have suggested that girls are more precocious language learners than boys (e.g. Terman & Tyler, 1954; Ramer, 1975; Hyde & Linn, 1988). Subjects had to be producing at least two-morpheme utterances by the beginning of the study in order to allow for analysis of the development of syntactic and morphological phenomena. They also had to be verbal enough to produce substantial data within a reasonable length of time and without excessive or unnatural intrusion on the part of caregivers. Finally, all subjects had to be free of any language or language-related problems including hearing impairment, mental retardation, specific language impairment, stuttering, neurological impairment, and exceptional family difficulties.

Since the number of children of the right age and linguistic ability within the community was not large, a process of statistically random selection seemed neither useful nor possible. Rather, the Inuit research associate selected four children aged 2;0 through 2;10 in the community. Visits were made to each home to explain the study and assess the willingness of the families to participate. One boy was dropped from participation in the research after the first taping session since he was extremely shy and silent during the taping and did not seem likely to produce enough language to benefit the research, and another boy was selected in his place. Thus the subjects comprised two boys - Alec and Juupi - and two girls - Mae and Suusi. In addition to meeting the necessary linguistic criteria outlined above, the selection of these four children resulted in a balance in representation from the various family groupings within the community, as well as a balance of younger versus older parents and of more traditional versus more modern lifestyles. All four children were followed throughout the entirety of the study. A short description of each family and child follows.

2.2.1 Alec

Alec was 2;6 at the inception of data collection, and the youngest of

two boys in a nuclear family. His brother, aged 3;8, provided almost constant companionship during the majority of their daily activities. Alec's parents were both around 30 at the time of data collection; his father worked as a police officer and his mother worked as a secretary. Both parents speak English fluently, and had both lived in southern Canada for extended periods before their marriage. The father has previously held jobs translating and interpreting between English and Inuktitut, and teaching Inuktitut to anglophones. The mother is also fluent in French. Interactions in the home occurred primarily in Inuktitut.

During the day when his parents were at work, Alec and his brother were cared for by their monolingual Inuktitut-speaking grandparents, or by other members of their extended family or hired babysitters, all bilingual to some extent. His parents typically returned home for lunch each day, and cared for their children during the evenings and weekends.

At the beginning of the period of data collection, Alec was not particularly talkative. He spent much of his time listening to his older brother and speaking in short and/or muffled phrases. Attempts to increase the amount of talk by varying taping situations did not seem to help. However, by midway through the data collection Alec's rate and clarity of speech increased considerably. He was taped primarily in interaction with his older brother, and sometimes with other peers as well. Occasionally taping was conducted over a family meal, or with one parent present.

2.2.2 Juupi

Juupi was 2;0 at the start of data collection, and the youngest child living in an extended family of grandparents, birthmother, and siblings. His primary caretaker was his grandmother, in her mid-forties, who had adopted him at birth[21]. This grandmother did not work outside the home during this

[21] The practice of custom adoption is extremely common among Inuit (Guemple, 1972, 1979; Saladin d'Anglure, 1986; Condon, 1987; Crago, 1988; Kishigami, 1988). It is especially common for grandmothers to adopt their grandchildren. In Juupi's case, his biological mother lived in the same house and assisted in caregiving, but the primary (and official) responsibility fell upon the grandmother.

period, and so was with Juupi through the majority of each day. The grandfather, about 50 years old, made his living by hunting and fishing. Both grandparents are unilingual in Inuktitut, though the grandfather knows several phrases in English. Juupi's birthmother was employed as an English-Inuktitut interpreter. Several of Juupi's siblings, by both birth and adoption, ranging from newborn through age 22, also lived in the same house. This family is one of the more traditional families in Quaqtaq in terms of lifestyle. They live primarily off the land and spend each summer camping on the land.

The majority of taping sessions with Juupi included a large proportion of conversation with his grandmother. Typically Juupi would be engaged in some form of play or watching television, and he and his grandmother would talk about relevant occurrences. Often other family members and sometimes visitors were included in these interactions. It has been reported that it is not typical for a woman of this age to engage a child as a conversational partner in such a manner (Crago, 1988), so it is possible that these interactions were somewhat artificial in that the grandmother was trying to make sure Juupi talked sufficiently. However, the interactions did not seem at all unnatural or forced. Children of this family have some reputation in the community for being precocious in terms of language abilities, and Juupi was no exception. Though he was the youngest child in the study, he talked the most and was the most advanced in terms of his linguistic performance.

2.2.3 Mae

Mae was 2;6 at the beginning of data collection, and the oldest of two girls in a nuclear family. Her sister, aged 1;5, was present during most of the taping sessions, though she was not particularly verbal until about half way through the research when her own language abilities began escalating. Mae's mother worked as a teacher; her father worked as a heavy machinery operator; both were in their twenties during the period of data collection. Both parents speak English as well as Inuktitut, though home interaction took place almost exclusively in Inuktitut.

During the work day, Mae and her sister were cared for by extended

family members or hired babysitters, usually bilingual to some degree though interacting with Mae almost exclusively in Inuktitut. The parents typically came home at lunch and during the evenings.

Mae's taping sessions occurred primarily with her sister and peers, though her parents were also present and involved in several sessions. Mae was reasonably talkative throughout the study. Her mother often engaged her in teaching-type interactions including reciting the alphabet, counting, repeating set phrases and songs, and naming parts of the body. This type of interaction has been reported not to be typical for Inuit mothers though it is becoming more common among younger mothers (Crago, Annahatak & Ningiuruvik, 1993), and was perhaps more visible with Mae's mother since she was teaching kindergarten at the time.

2.2.4 Suusi

Suusi, at 2;10, was the oldest child when the data collection began, and the youngest of 5 girls living in a nuclear family. Her siblings, aged 6, 10, 13, and 15, were often present during the taping sessions. Suusi's parents were both in their thirties during the period of data collection; her mother worked as a teacher and her father as a heavy equipment operator. Both parents speak English as well as Inuktitut, though the primary language of home interaction was Inuktitut.

Suusi was cared for during the day by a sibling, her grandmother, a member of her extended family, or by a hired babysitter. Her grandmother is monolingual Inuktitut-speaking while other caregivers are bilingual to some degree though they interacted with Suusi almost exclusively in Inuktitut. Suusi and Alec are cousins, and sometimes played together or were cared for together at the home of their mutual grandmother. During her taping sessions Suusi was often interacting with peers, and occasionally with her siblings or mother.

Suusi was reasonably silent during the first half of the data collection period, though like Alec her rate of speaking increased considerably about the midway point. Her best friend, a girl slightly older than Suusi, was a frequent

playmate. However, this girl was extremely talkative and Suusi often said little of linguistic interest in her company. As a result, Suusi was alone with me during several portions of her taping sessions. Though this meant she had to talk more, it was not the ideal situation either since my lower level of proficiency in Inuktitut possibly did not challenge her to produce structures to the full extent of her grammatical capability.

2.3 Data collection

Data for this research were collected longitudinally in the form of spontaneous speech production in naturalistic situations. Since virtually no previous systematic research has been done on language acquisition in Inuktitut during the preschool years, it seemed most reasonable at this stage to take an inductive rather than deductive approach, plotting a general pattern of development across the structures of interest. Potential areas for future experimental research with a larger number of children could then also be identified.

Naturalistic spontaneous speech studies, as opposed to elicited production or experimental studies, have the advantage of allowing the collection of a broad range of utterances considered to be indicative of the child's general performance abilities. However, they have the disadvantage of not testing the full range of the child's competence with particular structures, and also may not elicit many examples of the structure of interest if that structure is not frequent in spontaneous speech. Production studies, as opposed to comprehension studies, offer access to the child's performance capabilities, but cannot accurately assess what the child can understand but may not yet be able to produce. In addition, they do not provide information about the child's knowledge of the ungrammaticality of various structures.

Longitudinal studies make it possible to follow the development of a particular structure over a period of time. However, they have the disadvantage of usually following only a few children in detail rather than assessing patterns across a large number of children, and therefore risk compromise in the area of general applicability across children. The ideal

research program would balance information from various types of studies to present a complete and well-rounded picture of the subjects' linguistic abilities. Given limited time and resources, however, such an ideal program is almost never possible and priorities must be selected. For the present research, as noted above, experimental research in either production or comprehension seemed premature, and elicited production seemed too intrusive. In addition, many morphological and syntactic structures, including those which are the focus of this research, do appear frequently enough in spontaneous speech to enable adequate study based on these data alone. Thus a methodology of longitudinal spontaneous speech data collection was pursued. Collecting data from four subjects rather than one or two attempted to address the issue of generalizability across subjects.

Approximately four hours of data from each child were collected every month for nine months. Data collected each month were amassed over no more than a one-week period with a typical taping session lasting between one-half hour and two hours; if enough data were not collected on the first day of taping, subsequent sessions took place until four hours of tape had been collected. All data were collected in the homes of the children and their friends, and sometimes outdoors, during the children's normal daily activities. During the taping sessions the subjects were engaged in a variety of activities which typically included free play, watching television (without sound), eating, and conversation with caregivers and peers; further details for individual children are discussed above. Little attempt was made to structure these times beyond occasionally requesting that a playmate be available for the child to stimulate his or her conversation.

Subjects were videotaped with a hand-held videocamera equipped with an external microphone. During the taping sessions I was always present, operating the videocamera. I tended to sit unobtrusively in a corner of the room and remain quiet, though on occasion the movement of the children around the room or to another room necessitated my following them. In addition, I was sometimes called upon to act in the role of either babysitter or playmate, entailing some, though minimal, interaction with the children.

Several times I was included in the play - as a target of pretend harpoons, as a pretend daughter, or as the white person with the camera. It did not appear that my presence altered the interaction in any significant way. All of the children were rather shy or acted up in some way during their first taping, but the effect did not last even to the end of that session. The presence of the camera and the act of videotaping sometimes provided the topic of conversation for the child and his or her conversational partners. However, perhaps because Inuit are used to living with many people in the same room and because they are used to learning by observation, it did not seem that I was intruding or that my presence was resented.

2.4 Transcription

Approximately half the data (2 hours per month) were selected for transcription on the basis of representativeness of typical talk and of potential ease of transcription. Sections of tape with excessive background noise, or excessive crying or silence of subjects, were omitted.

The selected data were transcribed by a team of native speakers of Inuktitut. Data were transcribed orthographically, following the dual orthography standard conventions established by the Inuit Cultural Institute Language Commission in 1976 (Petersen, 1980; Mallon, 1985) as much as possible. Transcribers had the choice to work in either syllabic or Roman script depending on which they felt more comfortable with, and also to transcribe either on paper or directly into the computer. All data transcribed on paper were later entered in Roman script into a computer database by a team of both Inuit and non-Inuit assistants.

All utterances spoken by the subject, to the subject and about the subject were transcribed; extraneous conversation was omitted. For each utterance the information listed in (9) was included.

(9) a. utterance (Inuktitut transcription)

b. translation (colloquial English translation)

c. errors (any errors, unusual features, or "childlikeness" in the utterance)

d. time (time on the tape)

e. addressee (addressee of the speaker)

f. situation (relevant situational comments to disambiguate reference of demonstratives or illuminate discourse context)

The transcription process did not specifically address any phonological issues or pay systematic attention to phonological deviation from adult pronunciation. However, such phonological deviation was noted when significant to relevant morphophonological processes concerning the structures of focus in the research.

Data were formatted following the CHAT transcription conventions from the CHILDES project (MacWhinney & Snow, 1990; MacWhinney, 1991)[22]. Data transcribed are summarized for each child in the tables below[23].

[22] Complete details of transcription conventions, coding format, and codes used in this research are documented in Allen (1994).

[23] AGE (ROUNDED) provides the age rounded to the nearest month for simplicity of later reference. AGE (ACTUAL) provides the age of the child on each day data was collected. Ages are given in years;months.days. HOURS refers to the number of hours of tape transcribed.

TABLE 4: *Data transcribed for Alec*

AGE (ROUNDED)	AGE (ACTUAL)	HOURS
2;6	2;6.6 / 2;6.9 / 2;6.10 / 2;6.11	1.93
2;7	2;7.2 / 2;7.3	2.05
2;8	2;8.8 / 2;8.9 / 2;8.13	1.73
2;9	2;9.7	1.35
2;11	2;10.18	0.95
3;0	3;0.7 / 3;0.10	1.97
3;1	3;1.3 / 3;1.4 / 3;1.5	2.05
3;2	3;2.6	1.38
3;3	3;3.2 / 3;3.5	2.30

TABLE 5: *Data transcribed for Juupi*

AGE (ROUNDED)	AGE (ACTUAL)	HOURS
2;0	2;0.11	2.05
2;1	2;1.3 / 2;1.4	2.05
2;2	2;2.12	1.82
2;3	2;3.8	1.92
2;5	2;4.19 / 2;4.20	1.87
2;6	2;6.5	2.05
2;7	2;7.6	2.03
2;8	2;8.4	1.83
2;9	2;9.5	1.95

TABLE 6: *Data transcribed for Mae*

AGE (ROUNDED)	AGE (ACTUAL)	HOURS
2;6	2;6.2 / 2;6.3	2.05
2;7	2;6.26	2.20
2;8	2;8.0 / 2;8.3 / 2;8.5	2.67
2;9	2;8.27 / 2;9.5	2.28
2;10	2;10.3 / 2;10.4	2.43
3;0	2;11.27 / 2;11.29 / 3;0.0	2.18
3;1	3;0.26	1.80
3;2	3;1.24 / 3;1.27	1.88
3;3	3;2.26	1.00

TABLE 7: *Data transcribed for Suusi*

AGE (ROUNDED)	AGE (ACTUAL)	HOURS
2;10	2;9.16 / 2;9.17 / 2;9.18	2.02
2;11	2;10.13 / 2;10.14	1.28
3;0	2;11.16 / 2;11.17 / 2;11.19	2.17
3;1	3;0.12 / 3;0.14 / 3;0.15	2.02
3;2	3;1.15 / 3;1.16	2.05
3;3	3;3.13 / 3;3.14	1.80
3;4	3;4.12 / 3;4.13 / 3;4.15	2.37
3;5	3;5.13 / 3;5.15	2.02
3;6	3;6.10 / 3;6.12 / 3;6.15	2.35

2.5 Coding

For purposes of coding and analysis, it was decided to focus on the first, middle and last sessions for each child, a total of 12 taping sessions, leaving other data available for consultation as necessary but not included in quantitative analyses. All data in these twelve sessions were checked for accuracy of transcription by the researcher in conjunction with native speakers. At this time a variety of metatranscription notations were added to the transcripts, including marking such features as intelligibility of utterances, imitation and self-repetition. A list of these notations is in Appendix B.

Once checking and metatranscription notation were completed, all the data were coded for parts of speech and morphological status using a system adapted for Inuktitut from the CHILDES manual (MacWhinney, 1991). The code format included information about part of speech (noun, verb, inflection, denominal, demonstrative, locative, etc.), the morpheme itself in its basic form, and an English gloss. Codes were entered using an interactive morphological tagger system to ensure consistency for later analysis[24].

Certain difficulties were encountered in dividing Inuktitut words into morphemes. The morphophonology of Inuktitut is rather complex in terms of assimilation of morpheme-initial and -final, and deletion of morpheme-final, consonants, making it sometimes difficult to correctly identify morphemes. In addition, several morphemes consist of only one vowel, or one CV or VC sequence, and several of these are homophonous. These morphemes are particularly difficult to identify when appearing adjacent to a morpheme beginning or ending with the same phoneme. A final difficulty is that word-final consonants are often dropped in spoken Inuktitut, making it hard to differentiate between possible word-final morphemes. For example, the word-final sequence /mi/ could represent the locative inflection *-mi*, the modalis inflection *-mik*, or the ablative inflection *-mit*. Similarly, the word-final sequence /vu/ could represent the third person singular indicative *-vuq*, the dual *-vuuk*, or the plural *-vut*. In general, the most likely morpheme was attributed

[24] Many thanks to Dirk Vermeulen of Kativik School Board and Vermeulen Studios for the programming and maintenance of this system.

to the child unless it was clear from surrounding context or utterances that another target was being attempted. Utterances in which the coding was clearly guesswork were omitted from analyses.

A second round of coding focused on the verbal utterances in the data. The structures of interest in this research - passives, causatives, and noun incorporation - all occur only within verbal utterances. In order to facilitate comparison across children, ages, MLU, and languages, figures of frequency of use of certain structures were calculated, and it seemed most revealing to calculate such figures on the basis of percentage use per verbal utterance.

A verbal utterance was defined for purposes of this research as any utterance containing at least one verb root, bound verb root, verbal inflection, or verbal modifier (e.g. tense, negation). Since colloquial Inuktitut occasionally omits either verb roots or verbal inflections or both, no one of the above by itself serves as sufficient for delineating a verbal utterance. Utterances like those in (10) were included as verbal utterances, while utterances like those in (11) were not included.

(10) a. *Ngimmat.*
nngit-mmat
NEG-CSV.3sS
'It isn't.' (Alec 2;6)

b. *Una aarqitara.*
u-na aarqiC-jara
this.one-ABS.SG fix-PAR.1sS.3sO
'I'll fix this.' (Alec 2;6)

c. *Maaniilangavunga.*
ma-ani-it-langa-vunga
here-LOC-be-FUT-IND.1sS
'I'll be here.' (Alec 2;6)

d. *Naniiqattalaujuvita uuminga atursunga?*
nani-it-qattaq-lauju-vita u-minga atuq-tsunga
whereat-be-HAB-PAST-IND.1pS this.one-MOD.SG use-CTM.1sS
'Where were we when I was using that?' (Juupi 2;9)

(11) a. *Aaa.*

aaa

yes

'Yes.' (Alec 2;6)

b. *Una uvanga.*

u-na uvanga.

this.one-ABS.SG me

'This one (is) mine.' (Alec 2;6)

c. *Nunakkuujuuraalumut.*

nunakkuujuuq-aluk-mut

truck-big-ALL.SG

'To the big truck.' (Juupi 2;9)

d. *Ataata kinaup sikituuvininga?*

ataata-Ø kina-up sikituuq-viniq-nga

father-ABS.SG who-ERG.SG skidoo-former-ABS.3Ssg

'Dad, whose broken skidoo (is that)?' (Juupi 2;9)

Utterances like (10d) introduced the further complication that some verbal utterances in fact contain more than one verbal clause and thus contain more than one context for use of passive, causative, and/or noun incorporation. To accommodate this possibility, verbal utterances were further divided into verbal clauses. A verbal clause was defined as one verbal complex and its arguments. The utterances in (12) contain one verbal clause each, whereas the utterances in (13) contain two verbal clauses each.

(12) a. *Qimmiunnguakainnaravit.*

[qimmiq-u-nnguaq-kainnaq-gavit]

dog-be-pretend-PAST-CSV.2sS

'You were pretending to be a dog.' (Mac 3;3)

b. *Malisivunga.*

[malik-si-vunga]

follow-PRES-IND.1sS

'I'm going to follow.' (Mac 3;3)

c. *Paniga am qukiutimut am tuqutaugiaqanngituq.*
[panik-ga qukiuti-mut tuquC-jau-giaqaq-nngit-juq]
daughter-ABS.1Ssg gun-ALL.SG kill-PASS-must-NEG-PAR.3sS
'My daughter um by gun um is not to be killed.' (Mac 3;3)

(13) a. *Takugit, ijukkangitunga.*
[taku-git] [ijukkaq-nngit-junga]
see-IMP.2sS fall-NEG-PAR.1sS
'Look, I didn't fall.' (Suusi 3;2)

b. *Naammajuuvit anaanautsutit.*
[Naammajuq-u-vit] [anaana-u-tsutit]
Naammajuq-be-INT.2sS mother-be-CTM.2sS
'You are Naammajuq while you are mother?' (Juupi 2;0)

c. *Haakirutialuk silamiittuq qaigumajara.*
[[haakiruti-aluk-Ø sila-mi-it-juq] qai-guma-jara]
hockey.stick-EMPH-ABS.SG outside-LOC-be-PAR.3sS come-want-PAR.1sS.3sO
'I want to get the hockey stick that is outside.' (Juupi 2;0)

d. *una aullalaartualuummat siaru atjiliurtaulaukalanga?*
[u-na aullaq-laaq-juq-aluk-u-mmat][siaru atjiliuq-jau-laukat-langa]
this.one-ABS.SG leave-FUT-NOM-EMPH-be-CSV.3sS later film-PASS-for.a.while-IMP.1sS
'Since this one is going away, I'll be filmed later?' (Juupi 2;5)

Once the verbal clauses were identified, each was coded for occurrence of the structures listed in (14) which were relevant for later analysis but could not be easily retrieved automatically from the previous morphological coding. A list of codes used is in Appendix C.

(14) a. verbal inflection (no inflection, one-argument inflection, two-argument inflection)
b. incorporation (noun incorporation, adverbial incorporation, locative incorporation)
c. arguments (subject, object, second object, agent of passive)
d. valency alternation (passive, antipassive)

These two levels of coding - morphological and verbal - served to facilitate later retrieval of structures of interest as well as later calculation of percentage use of the relevant structures.

Data coded and used in subsequent analyses are summarized in table 8. Appendix D provides a sample of a fully coded transcript.

TABLE 8: *Data coded for use in subsequent analyses*[25,26]

CHILD	HOURS	UTTS	VC	VC/HR	VC/UTT(%)
A2;6	1.93	310	103	53.37	33.23
A2;11	0.95	220	97	102.12	44.09
A3;3	2.30	460	225	97.83	48.91
J2.0	2.05	805	220	107.32	27.33
J2.5	1.87	621	308	164.71	49.60
J2.9	1.95	731	321	164.62	43.91
M2;6	2.05	654	161	78.54	24.62
M2;10	2.43	693	343	141.15	49.50
M3;3	1.00	248	121	121.00	48.79
S2;10	2.02	288	71	35.15	24.65
S3;2	2.38	643	332	139.50	51.63
S3;6	2.35	632	282	120.00	44.62
TOTAL	23.28	6305	2584	111.00	40.98

[25] HOURS = hours of tape; UTTS = number of utterances; VC = number of verbal clauses; VC/HR = number of verbal clauses per hour; VC/UTT(%) = percentage of verbal clauses per utterance.

[26] Figures in this table reflect all and only utterances which are complete and fully intelligible, and are not exact imitations, exclamations, routines, or self-repetitions for emphasis or comprehension.

2.6 Data analysis

Analysis of the data was conducted using the CLAN programs provided by the CHILDES project (MacWhinney & Snow, 1990). Transcripts were analyzed for developmental trends both within and across the four children in terms of passive, causative, and noun incorporation structures. Focus was placed on characteristics of the structures used by each child at each age, on error typology, and on development of grammatical complexity in use of these structures. Both quantitative and qualitative approaches were used. Results and discussion of these analyses form the content of the following three chapters.

The following sections present particular issues of concern in the data analysis. Section 2.6.1 addresses quantitative analyses, while section 2.6.2 addresses qualitative analyses. Section 2.6.3 gives information concerning comparison of the results for Inuktitut with acquisition data from West Greenlandic.

2.6.1 Quantitative analysis

Quantitative analyses of the data focus on actual numbers of occurrence, and frequency of occurrence per hour and per utterance, of the structures in question. These figures are presented for each child at each age for each structure, and are also grouped by both age and mean length of utterance to provide a developmental perspective. The following sections discuss the calculation of mean length of utterance and the groupings of the data respectively.

2.6.1.1 Mean length of utterance

In order to facilitate quantitative analyses, mean length of utterance (MLU) figures were calculated for both general utterances and verbal utterances. The notion of mean length of utterance was devised by Roger Brown and his colleagues as a method of comparing relative grammatical ability across children in a longitudinal study of three English-speaking children (Brown, 1973). It is based on the premise that the mean length of a

child's utterance, counting by productive morphemes, will increase as his or her grammatical abilities increase since the latter is typically reflected by the use of new grammatical morphemes.

Several problems with MLU are well-known. First, it is notoriously variable depending on the number of utterances used in the calculation; 100 utterances are recommended as a minimum, but reliability increases as the number of utterances increases. Second, it is not always clear what criteria should be used to define either an utterance or a morpheme; while the basics are relatively clear, details vary substantially across researchers though the literature suggests that the resulting MLUs may not be strongly affected by these differences (see, e.g., Bloom, Hood & Lightbown, 1974, for effects of including vs. excluding exact imitations). Third, MLU is considered not to be a reliable indicator of grammatical development beyond an MLU of 4.0 (Bloom, 1978). Finally, MLU cannot be used straightforwardly to compare grammatical abilities of children across languages due to crosslinguistic differences in syntax and morphology (see, e.g., Fortescue, 1985, on calculation of MLU in West Greenlandic). Regardless of the difficulties, however, MLU still remains a more reliable indicator of stage of language development than does chronological age, and thus is still widely used.

For purposes of this research, MLUs were calculated for both total and verbal utterances. In both cases only utterances which were fully intelligible and complete from the point of view of the child's intonation were included in the calculations. Utterances otherwise meeting these criteria but comprising exact self-repetitions, exact imitations of another speaker, exclamations (hey, wow) or routines (counting, alphabet, songs) were excluded[27]. The MLU for total utterances included all remaining utterances of each child as listed in table 8; the MLU for verbal utterances included all verbal utterances of each

[27] This decision follows a combination of guidelines for MLU calculation presented in the literature (Bloom, 1970, p. 16; Bowerman, 1973, p. 21; Brown, 1973, p. 54; Pye, 1980a; Miller, 1981, pp. 24-25; Dromi & Berman, 1982; Lahey, 1988, pp. 427-428; Lund & Duchan, 1988, pp. 190-191; Radford, 1990, pp. 16-19; MacWhinney, 1991). Complete details are documented in Allen (1994).

child as defined above[28]. While calculation of a verbal MLU is not typical in the literature, it seemed well-motivated in the context of this research since all the structures considered occur only in verbal utterances.

In each case, MLU calculation was based on the number of productive morphemes in each of the candidate utterances. For these purposes a morpheme was considered productive unless there was clear evidence that it was used in a formulaic or unanalyzed sense. Thus words such as *qanuippit* 'how are you' and *qatsinguppat* 'what time is it', though they are decomposable into separate morphemes, showed no evidence of being analyzed by the child and thus were treated for MLU calculations as only one morpheme. Case and inflectional endings are also arguably decomposable into separate morphemes. The indicative first person inflection *-vunga*, for example, has been separated into three morphemes in some analyses (e.g. Kalmar, 1979): *-v-* 'indicative', *-uq-* 'one argument', and *-nga* 'first person singular'. While this is plausible from the analytical and diachronic points of view, there is no evidence that the children in this research separate these component parts productively. Thus all case and verbal inflections were treated as representing unified portmanteau morphemes for the children.

A further difficulty here arises in the form of the diachronic process of lexicalization. A large proportion of nominals in Inuktitut, while serving as independent units in the language, are formed from several morphemes. In many cases these have in fact become lexicalized units in the language and are no longer considered to be formed productively with each use, though usually the component parts are transparent and recoverable. This is frequently the case for words for items introduced into Inuit culture during and after the contact period (Dorais, 1983), as shown in the items in (15).

[28] Note that verbal MLU is calculated on the basis of verbal *utterances*, not verbal *clauses*.

(15) a. *panirtitaq*

paniq-tit-jaq

dry-CAUS-PP

'bannock' [= that which is caused to be dry]

b. *supuurutiviniqauti*

supuuq-ruti-viniq-qauti

blow-item.used.for-former-item.containing

'ashtray' [= that which contains the remains of that which is used to blow]

While many words are clearly lexicalized, it is often difficult to decide in the less clear cases which words are lexicalized in this way for the child (and even the adult) and which words are still productively formed from their component parts by the child. In general a relatively conservative approach was used here; candidate items were considered to be lexicalized unless it was clear from surrounding material that this was not the case.

Note that both general and verbal MLU calculations were assessed on the basis of the total number of utterances available for each child at each age. While an ideal situation would permit calculation of MLU based on the same number of utterances for each child at each age, the relatively small number of utterances available for certain children at certain ages (e.g. S2;10) would have reduced the reliability of these figures to an undesirable level.

The figures for general and verbal MLU are given in table 9.

TABLE 9: *General and verbal MLU figures*

CHILD	TOTAL		VERBAL	
	UTTS	MLU	UTTS	MLU
A2;6	310	2.513	99	3.893
A2;11	220	2.910	95	4.175
A3;3	460	3.186	219	4.495
J2;0	805	2.511	218	4.129
J2;5	621	3.557	292	5.112
J2;9	731	3.385	295	5.320
M2;6	654	2.811	157	4.289
M2;10	693	3.236	324	4.479
M3;3	248	3.391	119	4.958
S2;10	288	1.997	71	3.282
S3;2	643	2.890	323	3.848
S3;6	632	2.896	271	4.374

Note that the MLU for each child increases as he or she gets older, though it increases in different increments both within and across children. This is consistent with the prediction that grammatical ability increases with age though not at a constant rate. Note also that the verbal MLU is considerable higher than the general MLU for each child at each age. This is also consistent with reports in the literature of correlation between MLU and presence of verbs (e.g. Valian, 1991; Powers, 1994).

2.6.1.2 Grouping of data

In addition to analysis of development within individual children, some analysis of development across the entire data set was undertaken. In order to

define a general developmental pattern, and in order to facilitate crosslinguistic comparison, three potential groupings within the data set were devised accoring to age, general MLU, and verbal MLU. Tables 10 through 12 list the groupings and the data considered within each group.

TABLE 10: *Data grouped by age*

GROUP	DEFINITION	DATA INCLUDED	VC
1	2;0-2;6	A2;6, J2;0, J2;5, M2;6	792
2	2;7-3;2	A2;11, J2;9, M2;10, S2;10, S3;2	1164
3	3;3-3;6	A3;3, M3;3, S3;6	628

TABLE 11: *Data grouped by general MLU*

GROUP	DEFINITION	DATA INCLUDED	VC
1	2.00-2.49	S2;10	71
2	2.50-2.99	A2;6, A2;11, J2;0, M2;6, S3;2, S3;6	1195
3	3.00-3.49	A3;3, J2;5, J2;9, M2;10, M3;3	1318

TABLE 12: *Data grouped by verbal MLU*

GROUP	DEFINITION	DATA INCLUDED	VC
1	3.25-3.99	A2;6, S2;10, S3;2	506
2	4.00-4.74	A2;11, A3;3, J2;0, M2;6, M2;10, S3;6	1328
3	4.75-5.49	J2;5, J2;9, M3;3	750

For each structure considered in the following three chapters, quantitative data are given for frequency of use of the structure across each child and age, and

across these three overall groupings. Where data are available, these figures are compared crosslinguistically.

2.6.2 Qualitative analysis

Qualitative analyses focus on the characteristics demonstrated in use of the structures in question across the four subjects. For each structure a pattern of development is indicated if apparent in the data. Examples of typical adult-like use are given, as well as evidence of productive use of the structures among the subjects. Each of these areas is discussed in turn.

2.6.2.*i* Pattern of development

In terms of patterns of development of the structures addressed herein, the subjects typically pass through periods of non-use, incorrect use, and relatively restricted use of any given structure, though not all of these for each structure, before they reach full adult-like use of the structure in later years.

Periods of non-use are, obviously, periods during which the structure in question is not used at all. In English, children pass through an early stage of non-use of auxiliaries and agreement marking (Radford, 1990). More complex structures such as relative clauses and embeddings do not appear in their speech until well into the acquisition process (Bowerman, 1979). In the Inuktitut data discussed here, most of the structures are used from the earliest samples available for most of the subjects. However, the causative morpheme *-qu-* is not present in the earliest data samples.

Periods of incorrect use constitute either use of unanalyzed routines or use of the structure in a productively creative but not adult-like way. Unanalyzed routines are forms which the child has either memorized from the input or improperly or not fully segmented in his or her own language. The child then reproduces the form verbatim in pragmatically appropriate contexts. Typical examples from English include WH-question routines such as *what's this?* used at a time before finite tense/agreement inflection is acquired and before WH words are being used in other non-formulaic contexts (Radford, 1990). The Inuktitut data show a similar pattern for early use of the causative

morpheme *-tit-*. Productively creative errors are discussed below.

Periods of relatively restricted use include correct adult-like use of the structure in question, but in only a subset of its possible contexts. Evidence from English shows passive structures are initially restricted to action verbs used without agentive phrases; only later in development does the passive extend to experiencer verbs and agentive phrases (see references in chapter 3). Evidence from Inuktitut passives only partly supports these conclusions in that several complex forms are used relatively early.

In each chapter, these issues are addressed for the structure in question as they are relevant.

2.6.2.2 Productivity

One of the most difficult issues in research with spontaneous speech data is deciding whether or not a certain structure or morpheme is productive for the child in question. This is particularly an issue for those utterances which are frequent in either parental input or child speech. For a child to use a form productively, he or she must have some understanding of the structure and use of the form and/or of the components which comprise it. Without productivity, the form is simply a memorized unit for the child. Several criteria for discerning productivity have been developed during the history of child language research; seven of these used in the present research are mentioned below.

Perhaps the clearest indication of productivity derives from children's novel utterances using the form in question in a way that is incorrect by adult standards but demonstrates knowledge on the part of the child of the rules of its use. The standard example of this in acquisition literature is overgeneralization of plural *-s* and past tense *-ed* (Berko, 1958). The child uses the rules of regular word formation and applies them in ways that could but do not exist in the adult language, such as *foots* and *breaked* or even *feets* and *broked*. This overgeneralization shows that the child has learned the relevant structural rule and is not just reproducing forms by rote. Examples of this phenomenon are given for each of the structures in Inuktitut under

consideration here.

A second indication of productivity is that the child is able to use the component parts of the given structure independently, termed here *diversity of attachment*. This is particularly important in terms of forms which are very frequent in either input or child speech. Forms like *qai-guk* (come-IMP.2sS.3sO) 'give it (to me)' and *tii-tuq-* (tea-consume) '(let me) drink tea' are both very common in early child speech and are among the first two-morpheme combinations used (Crago, Allen & Hough-Eyamie, in press). However, it is uncertain whether each of the four individual morphemes involved are actually productive for the child at the earliest stage, or whether the child treats these two words as indivisible lexical units. Use of the component parts on their own, in phrases like *qai-vunga* (come-IND.1sS) 'I'm coming', *aarqi-ruk* (fix-IMP.2sS.3sO) 'fix it', *tii-mik* (tea-MOD.SG) 'the tea', and *qajur-tuq* (soup-consume)' (let me) eat soup', would serve as evidence that the child had productive control over the morphemes in question. In general, the more contexts in which a given morpheme is found, the more likely that it is productive for the child. Fortescue (1985) and Fortescue & Lennert Olsen (1992) use this criterion as their primary basis for assessing productivity of morphemes in acquisition studies in West Greenlandic.

Errors of attachment are a third criterion for determining productivity. In Inuktitut, most morphemes exhibit different allomorphs depending on whether they are preceded by a morpheme ending in a vowel or a consonant. The passive morpheme *-jau-* maintains the form /jau/ when preceded by a morpheme ending in a vowel, but switches to /tau/ when preceded by a morpheme ending in a consonant. Use of the incorrect allomorph betrays the fact that a child is not parrotting forms heard in the input but rather is producing them productively.

A fourth criterion for productivity is self-correction. If a child produces an incorrect form missing one element and then corrects himself or herself in a subsequent utterance, it shows that the child understands that exactly that morpheme is separable as a single unit from the utterance, but that it is not correct to leave it out in the particular utterance at hand.

Alternation between use and (uncorrected) lack of use of a morpheme can also demonstrate productivity. If a child produces an utterance which requires a certain morpheme, sometimes with the morpheme and sometimes without it, it can show either that the child has not yet realized that the morpheme in question is obligatory, or that the child has understood the function and structure of the morpheme but is in the process of working out the exact circumstances in which it is obligatory. The former possibility has been claimed as an explanation for children's use of copular *-'s* in such forms as *what's that* appearing in free distribution with *what that* (Radford, 1990). The latter position is argued here to be valid in cases in which the child shows knowledge of the cognitive and structural properties of the form and uses other similar forms at the same time, as is the case for certain instances of causative *-tit-*.

A sixth criterion for productivity comes from alternation on the part of the child of forms using a basic structure and a (seemingly) derived one. A child who utters both *the plate fell* and *I made the plate fall*, or *he hit me* and *I got hit by him*, shows productive knowledge of both the function and structure of the causative or passive, respectively. Similar data are presented to illustrate productivity of these structures in Inuktitut.

Control of scope effects constitutes a seventh potential criterion demonstrating productivity. The passive and causative morphemes together in a verbal stem in Inuktitut could potentially appear in either order. The passive outside the causative, as in *piirtitaujuq* (come.off-CAUS-PASS-PAR.3sS) 'it was caused to come off', produces a different meaning than the causative outside the passive, as in *piirtautitanga* (come.off-PASS-CAUS-PAR.3sS.3sO) 'he made it be taken off'. If a child shows knowledge of the appropriate conditions for the two potential orderings of these morphemes within the verbal stem, it shows that he or she understands the function of the morphemes at hand.

The strongest evidence for productivity is one of creative errors showing knowledge of rule use since productivity is the only adequate explanation for these types of errors. The other types of evidence presented

here are more or less convincing depending on various related factors present in the data. In general, no one type of evidence is sufficient by itself to argue for unquestionable productivity; the likelihood of productivity of the structure in question typically increases as a function of the diversity of types of evidence available. One should keep in mind, however, that the polysynthetic structure of Inuktitut would not make use of memorized forms a very realistic method for the language learner. As Fortescue & Lennert Olsen (1992, p. 139) note, "the sheer combinatorial magnitude of possible combinations among stems, affixes, and endings in [Inuit] makes it highly unlikely that the rote learning of particular combinations is going to be a useful strategy in the long run."

2.6.3 Comparison with data from West Greenlandic

As discussed in chapter 1, West Greenlandic is another member of the Eskimo-Aleut language family, and quite similar in structure to Inuktitut. Since some acquisition research has been carried out in this language, it would seem illuminating to compare observations from Inuktitut child language with those from West Greenlandic in order to assess the validity of patterns of development across the language family in general.

Two studies of acquisition of West Greenlandic have been published to date. The first study is based on a half-hour data sample taken from a boy of 2;3 in a naturalistic setting (Fortescue, 1985)[29]. Data are analyzed for presence of productive morphemes in the child's speech, as well as for MLU and semantic relations present at this stage. The second study is based on between 10 and 17 pages of spontaneous speech data collected in naturalistic settings from each of five children, aged 2;2, 3;1, 3;4, 4;7, and 5;2 respectively (Fortescue & Lennert Olsen, 1992)[30]. These data are also analyzed for

[29] This sample contains 166 turns, many of these consisting of two and sometimes more short utterances (M. Fortescue, personal communication).

[30] The ten pages of transcript for the child aged 2;2 contain 156 turns (M. Fortescue, personal communication). One might assume that transcripts for the other four children contain a similar number of turns.

productivity of morphology. Though neither of these studies specifically focuses on any of the structures central in the present research, relevant data are nevertheless presented and serve to indicate similarities and differences across the two languages.

2.7 Conclusion

This chapter has discussed various aspects of the methodology of the research undertaken as part of this thesis. Information concerning the location and subjects of the research, as well as the methods of data collection, transcription, coding and analysis, have been presented. This information serves to provide a greater understanding of the strengths and limitations of the data used and the conclusions reached in the subsequent chapters, as well as to provide some indication of issues of concern to be considered in future research of this type.

CHAPTER 3
ACQUISITION OF PASSIVES[31]

The passive structure has been central in studies of both linguistic theory and language acquisition over the past few decades. In linguistic theory it has been crucial in establishing the existence of underlying subject and object and in developing the notion of constituent movement. In language acquisition it has played a major part in developing our understanding of how children comprehend language and handle linguistic structure.

A wide variety of studies in these two areas have led to the claim that the passive is a complex structure for which the basic pattern, using an action verb and without an overt agent, is acquired reasonably late (by about 4;0 in English, 5;0 in German, and 8;0 in Hebrew (Berman, 1985; de Villiers & de Villiers, 1985; Mills, 1985)). Evidence from elicited production tasks, imitation tasks, and comprehension tasks with English-speaking children show productive use of passives and above chance performance on assessment tasks by about 4;0 (Fraser, Bellugi & Brown, 1963; Lovell & Dixon, 1965; Turner & Rommetveit, 1968; Bever, 1970; de Villiers & de Villiers, 1973; Maratsos, 1974; Baldie, 1976; Horgan, 1978; Lempert, 1978). The more complex patterns, including full passive and passive with experiencer and perception verbs, are not held to be in place until well into the school-aged years (Sinclair, Sinclair & deMarcellus, 1971; Horgan, 1978; Lempert, 1978; Maratsos, Kuczaj, Fox & Chalkley, 1979; Maratsos, Fox, Becker & Chalkley, 1985; Sudhalter & Braine, 1985; Gordon & Chafetz, 1990).

This late acquisition of passive structures forms the backbone of

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[31] Earlier versions of some of the material in this chapter reporting on a different configuration of data from the same project have been presented at the Child Language Institute Proseminar, University of Kansas (September, 1991); the Third National Student Conference on Northern Studies, Ottawa, ON (October, 1991); the Department of Linguistics, McGill University (December, 1991 and May, 1993); the Stanford Child Language Research Forum (April, 1992); the Linguistics Colloquium, University of Manitoba (March, 1993); the Max Planck Institute for Psycholinguistics (June, 1993), and the International Conference on Infant Studies, Paris, France (June, 1994). Published versions of portions of the material in this chapter, again reporting on a different configuration of data, are found in Allen & Crago (1993a, 1993b).

support for the Maturation Hypothesis of language acquisition (Borer & Wexler, 1987) which claims that certain principles of the grammar mature in the same fashion as certain biological functions. It is claimed on the basis of evidence from English and Hebrew that the principle governing the process of A-chain formation underlying NP-movement matures at around age 4;0.

However, the data outlined above have not gone unchallenged in the literature. The methodology of some studies have been questioned (Pinker, Lebeaux & Frost, 1987; Weinberg, 1987), and much earlier correct interpretation and production of the passive has been documented in diary data from English-speaking children (Bowerman, 1990; Budwig, 1990) and in experiments with German-speaking children (Eisenbeiss, 1993). In addition, at least three studies have shown that English-speaking children's production of passive increases when frequency of passive input is increased over normal levels as part of experimental conditions (Baker & Nelson, 1984; Crain, Thornton & Murasugi, 1987; Pinker, Lebeaux & Frost, 1987). Finally, recent cross-linguistic work in non-Indo-European languages such as Sesotho, Zulu and K'iche' Mayan has shown that verbal passives appear productively in spontaneous speech in these languages at least as early as 2;8 (Suzman, 1985, 1987; Pye & Quixtan Poz, 1988; Demuth, 1989, 1990). As a result of these conflicting data, the validity of maturation as a mechanism of grammatical development has been thrown into question.

This chapter discusses the acquisition of passive structures in Inuktitut. Naturalistic spontaneous speech data show that passive structures are used productively in Inuktitut as early as 2;0, in both basic and complex patterns. Section 3.1 outlines the structure of the passive in Inuktitut. Section 3.2 discusses data from the Inuit children in this research concerning the pattern of acquisition of passive structures in Inuktitut, including age and frequency of use of passive, productivity of passive, basic passive, full passive, passive with experiential verbs, "habitual" passive, passive with non-patient subject, and passive of internally complex transitive verb phrases. Section 3.3 briefly compares the acquisition of passive in Inuktitut and West Greenlandic. Section 3.4 discusses implications of the data from Inuktitut for the Maturation

Hypothesis, and offers some potential reasons for the precociousness of passive in Inuktitut. Finally, section 3.5 summarizes the discussion in this chapter.

3.1 Structure of passive in Inuktitut

Two types of passives are normally differentiated in the literature: verbal and adjectival. Verbal passives typically represent an ongoing action and imply agency, while adjectival passives represent the resulting state of that action and do not include expressions of agency. In English these two have homophonous forms, as seen in (16) and (17) respectively.

(16) *The food was eaten by Mary.*

(17) *The food was uneaten (*by Mary).*

However their structural derivation is typically seen as different. While verbal passives are formed syntactically through movement of elements between D-structure and S-structure, adjectival passives are formed lexically through simple affixation in the lexicon. Discussions concerning the structures of these two types of passive in English, including tests to distinguish between them, are found in Wasow (1977), Horgan (1978), Levin & Rappaport (1986), Roeper (1987), and Gordon & Chafetz (1990), among others. Inuktitut exhibits both these types of passives. However, the two forms are not homophonous, and both are formed syntactically. They are discussed in turn below.

3.1.1 Verbal passive

A typical active transitive sentence is shown in (18), and the related verbal passive construction in (19).

(18) *Jaaniup iqaluk nirijanga.*

Jaani-up iqaluk-Ø niri-janga

Johnny-ERG.SG fish-ABS.SG eat-PAR.3sS.3sO

'Johnny is eating / ate the fish.'

(19) *Iqaluk Jaanimut nirijaujuq.*

iqaluk-Ø Jaani-mut niri-jau-juq

fish-ABS.SG Johnny-ALL.SG eat-PASS-PAR.3sS

'The fish was eaten by Johnny.'

Under a syntactic analysis, the verbal passive construction in Inuktitut exhibits essentially the same characteristics as does the verbal passive in English[32]. Consider the S-structure tree in (20), following the analysis given in Baker, Johnson & Roberts (1989)[33].

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[32] The question of whether to analyze the passive in Eskimo-Aleut languages as syntactic or lexical is not uncontroversial among Eskimologists. Discussion arises primarily over the supposed lexical nature of the passive participle *-jaq-*. As noted below, the *-jau-* passive morpheme is analyzed as a composite of the passive participle *-jaq-* and the denominal copula *-u-*. The passive participle *-jaq-* by itself serves as a nominalizer, forming constructions as in (i):

(i) niri-jaq kapi-jaq
eat-PP stab-PP
'that which is eaten' 'that which is stabbed'

The denominal copula by itself typically verbalizes nouns, as in (ii):

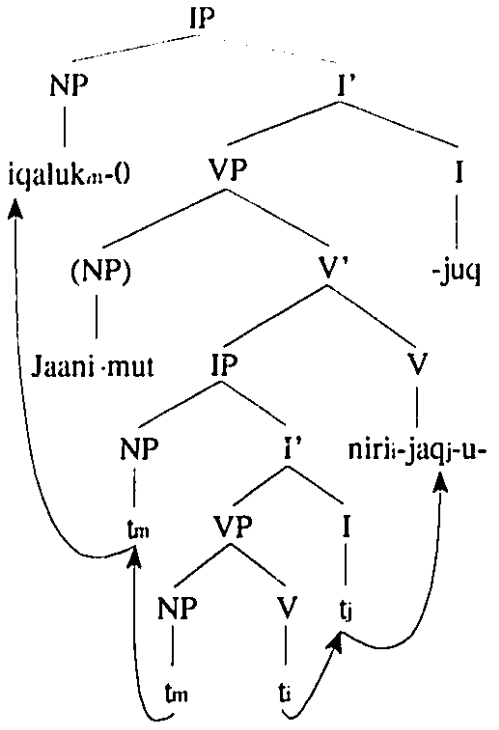
(ii) Lisi arna-u-juq
Lizzie woman-be-PAR.3sS
'Lizzie is a woman.'

These facts have led some linguists to believe that the *-jau-* construction is actually the verbalizing of a nominal formed with *-jaq-* in the lexicon, rather than a true verbal passive. This interpretation is illustrated in the alternative glosses for (iii):

(iii) iqaluk Jaani-mut [niri-jau-juq / niri-jaq-u-juq]
fish Johnny-ALL.SG [eat-PASS-PAR.3sS / eat-PP-be-PAR.3sS]
SYNTACTIC: 'The fish was eaten by Johnny.'
LEXICAL: 'The fish is [the eaten by Johnny thing].'

[33] In this tree and those following , only the structural features necessary for the argument being made are represented, for reasons of clarity of diagramming. Thus at least two features are consistently omitted from the trees. First, subjects are shown in NP,IP though it is assumed here that they are base-generated internal to the VP in Inuit following Bok-Bennema (1991) and Bittner (1994a). Second, the verbal complex is represented as not having yet moved into INFL, though it may well be that this movement in fact takes place at S-structure at the same time as the other movement operations indicated.

(20)



The case assigned to object position and the theta-role assigned to subject position are absorbed by the passive morpheme *-jau-*[34], forcing the logical object to move via NP-movement into subject position in order to receive case. An argument chain, or A-chain, is formed between the moved object and its trace, which facilitates transmission of the object's theta-role to subject position. The main verb affixes to the passive morpheme *-jau-* via head movement, and this verbal complex eventually moves into INFL to receive verbal inflection. Note that the *-jau-* passive construction is similar to the passive construction in English in that the morpheme *-jau-* is complex, being composed of both the passive participle *-jaq-* and the denominal copula *-u-*, analagous to the English past participial verb form with *-en* and copula *be*

[34] Though the passive morpheme *-jau-* is clearly a composite of two morphemes *-jaq-* and *-u-*, it will be referred to here as one morpheme since it is commonly referred to as one morpheme in the literature.

(Kalmar, 1979; Smith, 1981)[35]. Finally, the logical subject optionally appears in a surface oblique phrase inflected with allative case (ablative case in some other dialects).

3.1.2 "Habitual" passive

The verbal passive in Inuktitut can be used to refer either to a certain event in time or to the normal procedure for doing something. This latter is labelled here the "habitual" passive, as illustrated in (21).

(21) *Saimurtausuunguvuq.*
saimuq-jau-suuq-u-vuq
shake.hands-PASS-HAB-be-IND.3sS
'He/she is normally shaken hands with (by people).'

The agent is not a specific referent, but rather a class of referents which would normally engage in the process described. This passive has the same essential structure as the verbal passive illustrated in (20) above.

3.1.3 Adjectival passive equivalent

The semantic equivalent of the English adjectival passive is formed for a subset of verbs in Inuktitut (typically unaccusatives) with the perfective affix *-sima-*, as in (22).

(22) a. *Igalaaq salummasarsimajuq (*Jaanimut).*
igalaaq-Ø salummasaq-sima-juq
window-ABS.SG clean-PERF-PAR.3sS
'The window is cleaned (*by Johnny).'

[35] Kalmar (1979) claims the passive participle itself may also be broken down into two parts: the participial affix *-j-* and the verbal two-place marker *-aq-* which is present in both indicative and participial two-place verbal inflections, followed by a person affix. This may well be true, but reflects a level of analysis that is somewhat controversial in the literature, in more depth than necessary for the present discussion, and almost certainly not fully analyzed by the child.

b. *Itsivik tatasimajuq (*Jaanimut).*

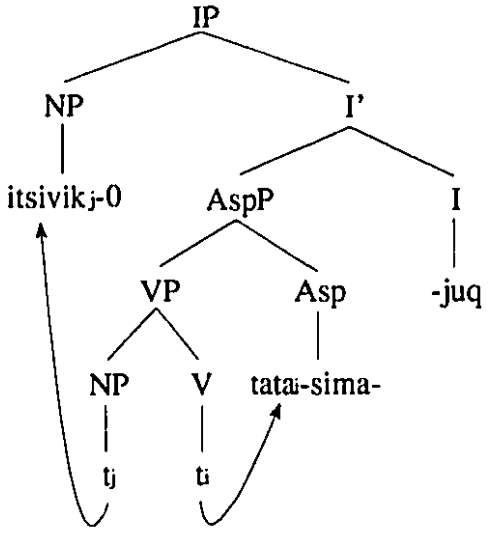
itsivik-Ø tata-sima-juq

box-ABS.SG fill-PERF-PAR.3sS

'The box is filled (*by Johnny).'

Following standard Principles and Parameters analyses concerning word formation in polysynthetic languages, it is assumed here that the adjectival passive is formed syntactically via head movement rather than lexically as in English (Baker, 1988), as illustrated in the tree in (23).

(23)



Since the adjectival passive is not relevant to the discussion of the verbal passive due to its different form, it will not be discussed further in this chapter.

3.2 Acquisition data

This section discusses acquisition data concerning the verbal passive in Inuktitut. Data are taken from the transcripts analyzed for this thesis as discussed in chapter 2. Some additional data from the same project are used where appropriate, and are noted as such. This section begins with a discussion of the age and frequency of use of passive structures in Inuktitut in order to establish that they exist in the data, and to compare these figures crosslinguistically. In the subsequent sections the forms that these passive structures take are examined in order both to demonstrate their productivity and to show developmental patterns of some of the more complex forms of passive structure.

3.2.1 Age and frequency of use

In order to establish the existence of passive structures in the Inuktitut data, this section begins with figures concerning age and frequency of use of passive as summarized in table 13[36].

[36] Figures in this table reflect all and only utterances containing passive structures which are complete and fully intelligible, and are not exact imitations, exclamations, routines, or self-repetitions for emphasis or comprehension.

Utterances which otherwise meet these criteria but are identical to a previous utterance in the same taping session are also excluded. The examples in (i) through (iii) illustrate the reasons for and effect of this procedure. Juupi, at 2;0, says the utterance in (i) 9 times during the course of this taping session; in this table it is counted only once. Alec, at 2;6, says the utterances in (ii) and (iii) consecutively; while they are not completely identical, the relevant verbal item is identical so they are counted as only one occurrence of the passive.

(i) *atjiliurtaugumangi.*
atjiliuq-jau-guma-nngit
film-PASS-want-NEG
'(I) don't want to be filmed.'

(ii) *ataata atjiliurtaujugut.*
ataata atjiliuq-jau-jugut
father film-PASS-PAR.1pS
'Dad, we are being filmed.'

(iii) *atjiliurtaujugut.*
'We are being filmed.'

Were the latter types of utterances to be included, the following numbers of passives should be added to table 13: A2;6 - 1; J2;0 - 8; J2;5 - 4; J2;9 - 3; M3;3 - 1.

TABLE 13: *Summary of passive data from Inuktitut*[37]

CHILD	HRS	VC	PASS	P/HR	P/VC(%)
A2;6	1.93	103	3	1.55	3.00
A2;11	0.95	97	2	2.11	2.06
A3;3	2.30	225	6	2.61	2.67
J2.0	2.05	220	7	3.41	3.18
J2.5	1.87	308	13	6.95	4.22
J2.9	1.95	321	16	8.21	4.98
M2;6	2.05	161	0	0.00	0.00
M2;10	2.43	343	1	0.41	0.29
M3;3	1.00	121	8	8.00	6.61
S2;10	2.02	71	3	1.49	4.23
S3;2	2.38	332	2	0.84	0.60
S3;6	2.35	282	5	2.13	1.77
TOTAL	23.28	2584	66	2.84	2.55

It is clear from Table 13 that Inuit children use passives at a very early age with relatively high frequency. These figures can be compared crosslinguistically, on both per hour and per verbal utterance bases, with figures presented in the literature.

3.2.1.1 Passives per hour

Table 14 summarizes data on use of passives per hour in several languages.

[37] HRS = hours of tape; VC = number of verbal clauses; PASS = number of tokens of passive structures; P/HR = number of passives per hour; P/VC(%) = percentage of passives per verbal clause

TABLE 14: *Age and frequency of use of passives per hour crosslinguistically*

LANGUAGE	AGE	HRS	PASS	P/HR
English[38] (Pinker *et al*, 1987)	1;5 - 5;1	293	116	0.4
K'iche' (Pye & Quixtan Poz, 1988)	2;1 - 3;10	60	186	3.0
Sesotho (Demuth, 1990)	2;1 - 4;1	84	139	1.7
Inuktitut	2;0 - 3;6	23	66	2.6

The age of the Inuit subjects in Table 14 ranges between 2;0 and 3;6 - well below the 4;0 acquisition level cited for English - yet 66 passives are evidenced. If passive production is broken down by age in English (data from Pinker *et al*, 1987) and Inuktitut, only 12 of the passives in English occur in the 113 hours of tape taken before age 3;1 (Demuth, 1990, p. 70 - calculation based on Brown, 1973), whereas in 15.3 hours of tape in Inuktitut before age 3;1 there are 45 passives. In addition, Inuit children use passives at least as frequently on a per hour basis as do children learning other non-Indo-European languages in which passive acquisition has been reported on so far.

3.2.1.2 Passives per verbal clause

Although figures for passives per hour are easier to calculate and easier to find reported in the literature, figures for passives per verbal clause are more revealing since they factor out any effect of difference in verbosity both across children and across languages. Crosslinguistic data for passives per verbal utterance are only available for Sesotho, as given in table 15.

[38] Data are from Adam, Eve, Sarah, and Allison.

TABLE 15: *Frequency of use of passives per verbal utterance in Sesotho*[39] (adapted from Demuth, 1989)

	2;1 - 2;6	2;7 - 3;2	3;9 - 4;1
No. of utterances	4629	6466	3123
No./% of passives	17/0.4	60/0.9	62/2.0

Figures for Sesotho-speaking children in the same age range as the Inuktitut-speaking children shows a percentage use of passive of between 0.4% and 1.0% of verbal utterances.

Grouping the figures for Inuktitut from table 14 into 3 age categories consistent with Demuth's (1989) categories, the distribution noted in table 16 emerges.

TABLE 16: *Frequency of use of passives per verbal clause in Inuktitut, by age*

	2;0-2;6	2;7-3;2	3;3-3;6
No. of utterances	792	1164	628
No./% of passives	23/2.9	24/2.1	19/3.0

The figures for the youngest group of Inuit children are somewhat skewed because the youngest child in the study, the first two of whose sessions appear here in the youngest group, is rather precocious in comparison with the other children in the study. However, the figures in the latter two groups show a developmental trend of increase in use of passive structures.

Grouping by MLU reveals a similar developmental trend as shown in table 17 for general MLU and table 18 for verbal MLU.

[39] Sesotho figures are for passives per verbal utterance (utterance containing a verb) rather than per verbal clause. However, it is unlikely that the difference between these two is large enough to significantly affect the calculations for comparative purposes.

TABLE 17: *Frequency of use of passives per verbal clause in Inuktitut, by general MLU*

	2.00-2.49	2.50-2.99	3.00-3.49
No. of utterances	71	1195	1318
No./% of passives	3/4.2	19/1.8	44/3.3

TABLE 18: *Frequency of use of passives per verbal clause in Inuktitut, by verbal MLU*

	3.25-3.99	4.00-4.74	4.75-5.49
No. of utterances	506	1328	750
No./% of passives	8/1.6	21/1.6	37/4.9

Developmental trends are clear in both tables. In table 17 the rise from 1.8% to 3.3% passive use from the middle to last group is increasing as one would predict. The data from the first group does not follow this trend, likely because it represents a small number of utterances from only one child. In table 18, the percentage use of passives for the first two groups remains steady at 1.6%, but increases for the final group to 4.9%.

3.2.1.3 Summary of age and frequency of use

The trend to relatively frequent and early usage of passive structures in Inuktitut is clearly indicated in these data. Inuktitut-speaking children use passives at least as frequently on a per hour basis as do children leaning other non-Indo-European languages reported in the literature, and more frequently than children learning English, at similar ages. In addition, Inuktitut-speaking children use passives slightly more frequently on a per utterance basis than do Sesotho-speaking children at similar ages.

It has been established in this section that structures which look like adult passive structures do in fact exist in early child Inuktitut. The following

sections proceed to establish that these structures are productive for the children, and to examine the actual form that these passive structures take.

3.2.2 Basic passives

The literature on English passive acquisition consistently reports that short passives, those without agentive phrases, are typically acquired earlier than full passives, those with agentive phrases, and that passives are used earlier with action verbs than experiential verbs. Information on language universals also shows short passives of action verbs to be the most basic, while more complex forms include passives with agentive phrases, passives of experiential verbs, passives of intransitive verbs, passives with non-patient subjects, and passives of internally complex transitive verb phrases (Keenan, 1985). For these reasons, the short passive of an action verb with a patient subject is taken to be the most basic form of passive. Indeed, the majority of passives in the Inuktitut data are of this basic form. Some typical examples are shown in (24) (a complete list of verb roots used with passive morphology is in section 3.2.5). Note here that the surface subject is often missing, probably due to the pervasiveness of prodrop in Inuktitut.

(24) a. *Ilai tuttualuit aijaujuit.*
ilai tuttu-aluk-it ai-jau-juq-it
right caribou-EMPH-ABS.PL get-PASS-NOM-ABS.PL
'The caribou are being gotten, right ?' (Alec 2;11)

b. *Kiijautsaruarama.*
kii-jau-tsaq-ruaq-gama
bite-PASS-really-might-CSV.1sS
'I might really be bitten.' (Juupi 2;0)

c. *Tuqutaulangasivungaa!*

tuquC-jau-langa-si-vunga

die-PASS-FUT-PRES-IND.1sS

'I'm going to get killed!'[40] (Suusi 3;6)

d. *Tigujaunngituq Taamu?*

tigu-jau-nngit-juq Taamu-Ø

take.away-PASS-NEG-PAR.3sS Taamu-ABS.SG

'Taamu won't be taken away?' (Mac 3;3)

However, the data do not consist solely of these basic passives. The following sections show that the passives evidenced in these data are productive, and that they occur in more complex forms, some of which show developmental trends in the present data sample.

3.2.3 Productivity

In studies which focus solely on production data, it is always possible that a form attributed to a child is a memorized and reproduced form rather than a productively analyzed form, as discussed in section 2.6.2.2. In light of the large sample of data available in this study, it is unlikely that all the forms evidenced could have been memorized. However, several examples from the data of obvious productivity add credence to this intuition.

3.2.3.1 Incorrect allomorph

One usual evidence of productivity of a form is an error in choosing the appropriate allomorph of a given morpheme. Since the inappropriate allomorph would never be heard in adult input, its use may be taken as evidence for productivity on the part of the child. In Inuktitut, the passive morpheme has two allomorphs: *-jau-* after vowels and *-tau-* after consonants, thus providing a ripe situation for such errors to occur. However, no errors of

[40] In Inuktitut, there is no observable *get* passive as opposed to *be* passive as in English. The use of *get* vs. *be* in translation is due only to naturalness of these constructions in English, and is not meant to reflect a difference in structure in Inuktitut.

this type seem to occur in the data[41]. This lack of examples could be explained by two possible hypotheses. First, the subjects in question could be in the final stages of mastering the rules for allomorphic variation of the passive morpheme, and therefore not be producing many errors. Second, the variability in allomorph selection which does occur in these data can be explained by a change underway in the phonological rules of (at least) *Tarramiut*. In some instances in which the *-tau-* allomorph would normally be required, the *-jau-* allomorph is consistently being used by younger speakers. Thus child utterances which would have formerly been considered as using an inappropriate allomorph must now be considered correct. Such is the case in (25):

(25) *Kalijaugumajunga.*
kalik-jau-guma-junga
pull-PASS-want-PAR.1sS
'I want to be pulled.' (Juupi 2;9)

Since the verb root *kalik-* ends in a consonant, the allomorph *-tau-* should be used. However, use of the allomorph *-jau-* with this verb root is increasingly common among younger adult speakers, so cannot be deemed inappropriate in this case[42].

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[41] Previous work (Allen & Crago, 1993a, 1993b) cited the utterance in (i) as an error.

(i) *Tikijauniarqu aluuraalu.* (should be *tikittauniarquq*)
tikit-jau-niaq-quq aluu-aluk
arrive-PASS-FUT-IND.3sS white.person-EMPH
'The white person will be brought (something).' (Juupi 2;9)

It was argued that the verb used in this utterance was *tikit-* 'arrive', which ends in a consonant so should take the *-tau-* allomorph. Further attention to this utterance with more sophisticated audio equipment reveals that the utterance may instead have the verbal base *tigu-* 'take away', which ends in a vowel and thus would require the *-jau-* allomorph. Since this is the only example found of incorrect use of an allomorph and since it must now be considered ambiguous, it no longer seems appropriate to cite this utterance as an example of the phenomenon under consideration.

[42] This phenomenon seems to represent an historical period of phonological shift in *Tarramiut*. This shift could be attributed to a variety of factors including a natural process of diachronic change, "language loss" on the part of the younger generation of speakers such that they are less careful in correctly applying phonological rules, or infiltration of phonological rules from other dialects of Inuktitut due to increased contact with other Inuit groups in recent years. In current use of *Tarramiut*, some verb roots ending in consonants, such as *kalik-* 'tow', are often heard with the *-jau-* allomorph, though other verb roots ending in consonants, such

3.2.3.2 Innovative forms

A second piece of evidence concerning productivity is use of the passive with clearly innovative forms. Three examples of this type found in Inuktitut data from these children are discussed below.

In (26), Juupi says *taartaulirtunga* 'something is in my way', when in fact there is nothing in his way.

(26) *Taartaulirtunga.*
taaq-jau-liq-junga
darken-PASS-PRES-PAR.1sS
'Something is in my way.' (Juupi 2;6)[43]

In this situation he is trying to watch television, but the screen is blank because the plug has been pulled out. The verb root *taaq-* means 'darken' or 'put in shadow', so it seems here that Juupi is trying to say something like 'it is being darkened on me' or 'I got darkened on', presumably by the television. However, it is clear that this is not the adult way to express what he is trying to say.

Example (27) shows a grammatical error on Juupi's part.

---

as *tikit-* 'arrive', never are. The fact that some verb roots ending in consonants permit either *-jau-* or *-tau-* while and others are restricted solely to *-tau-* suggests the phonological shift may in fact be in the underlying representation of the verb roots rather than in the phonological rules themselves. A similar pattern occurs with other morphemes offering the same *-j-/-t-* alternation. The participial inflection marking 1sS.3sO, for example, should appear as *-jara* following a morpheme ending in a vowel, and as *-tara* following a morpheme ending in a consonant. Since the causative morpheme *-tit-* ends in a consonant, it should be followed by the allomorph *-tara*. However in the example below the allomorph *-jara-* is used (the ungrammaticality of this utterance is discussed in section 4.2.1.4.2).

(i) **imiq pijariirtijara.*
imiq pi-jariiq-tit-jara
drink PLEON-finish-CAUS-PAR.1sS.3sO
'I made the drink finish.' (Alec 2;6)

Similar cases of this combination are found in older speakers.

[43] The examples in (26a), (29), and (30b) are taken from data not specifically analyzed for this thesis, but collected as part of the same project and reported in Allen & Crago (1993a, 1993b).

(27) a. **Anaanaa, kiinaujartautiniarqunga ... uumunga ... atjiliurutimut.*
anaana kiinaujaq-jau-tit-niaq-vunga uumunga atjiliuruti-mut
mother money-PASS-CAUS-FUT-IND.1sS this.one-ALL.SG
camera-ALL.SG
target: 'Mom, I'll be given some money ... by this one ... by the camera.' (Juupi, 2;9)

b. *... kiinaujartaatitauniarqunga ...*
kiinaujaq-taaq-tit-jau-niaq-vunga
money-acquire-CAUS-PASS-FUT-IND.1sS
'... I'll be given some money ...'

The passive morpheme in Inuktitut will only incorporate into verb stems. In (27a), however, Juupi is trying to passivize a noun without having first incorporated it into a verb. He also has switched the ordering between the causative and passive morphemes. The utterance in (27b) illustrates his target.

Example (28) illustrates an overgeneralization by Mae. She is standing in her sock feet on a bed frame with a polished wooden base which is quite slippery. She has just slipped on the base such that her legs slide apart when she utters (28a).

(28) a. **Siaqritauvuq.*
siaqriC-jau-vuq
slide-PASS-IND.3sS
'It was slidden.' (Mae 3;3)

b. *Siarritaanguvuq.*
siaqri-jaaq-u-vuq
slide-RPT-be-IND.3sS
'It's slippery.'

c. *Siarritaarnatuq.*
siaqri-jaaq-naq-juq
slide-RPT-CAUS-PAR.3sS
'It's slippery.'

This utterance, however, is ungrammatical. Mae should instead use one of the utterances in (28b) or (28c). The passive is inappropriate here since there is

no agent of the action of sliding; rather the sliding occurred unintentionally. It is possible that Mae has not yet completely understood that verbal passive utterances require at least an implicit agent.

3.2.3.3 Self-correction

Self-correction is a third proof illustrating productivity. In (29a), Suusi omits the passive morpheme in a word, rendering it meaningless, then corrects herself by inserting it in the next utterance, as in (29b).

(29) a. **Aanniasiursigavi.*
aanniasiuq-si-gavit
check.up-PRES-CND.2sS
'You are going to check medically.' (Suusi 3;4)

b. *Aanniasiurtausigavit.*
aanniasiuq-jau-si-gavit
check.up-PASS-PRES-CND.2sS
'You are going to be checked medically.' (Suusi 3;4)

3.2.3.4 Control of scope effects

Additional evidence for productivity would be demonstrated if subjects control scope effects of the passive in interaction with other verb internal morphemes such as causative and desiderative. Were the passive to appear closest to the verb root, that verb would be passivized. However, were the passive to appear further from the verb root than the causative or desiderative, the latter would be passivized rather than the verb root. Since either morpheme order is equally likely on any transitive verb root given the appropriate context, adult-like ordering shows the child's knowledge of the relationship between semantics and morpheme ordering.

There is no clear evidence in any one session of the data sample to support the idea that children have such knowledge at this stage. However, at least one subject shows control of scope effects with the passive in interaction with the causative across two subsequent sessions. In (30a) Juupi has produced a word with the causative morpheme outside the passive, whereas in

(30b) he places the passive morpheme outside the causative.

(30) a. *Nasanga piirtautillugu.*

nasaq-nga piir-jau-tit-lugu

hat-ABS.his remove-PASS-CAUS-ICM.XxS.3sO

'(Someone/thing) caused his hat to be removed.' (Juupi 2;0)

b. *Allanguartitaujunga.*[44]

allanguaq-tit-jau-junga

draw-CAUS-PASS-PAR.1sS

'Someone is letting me draw a picture.' [= I am being made to draw a picture] (Juupi 2;1)

3.2.3.5 Passive-active alternation

Final evidence for productivity of the passive comes from alternation between passive and active utterances referring to the same event. Three examples of this occur in the data sample. In the example in (31) Juupi is discussing with his mother the fact of his being videotaped. He first asserts that he will be taped (31a), then changes his mind and decides he does not want to be taped because he is going to eat (31b). Finally in (31c) he changes his mind again and tells the researcher to tape him because she will be leaving the camp tomorrow and so there isn't much time left for him to be taped. In the first 2 utterances Juupi uses the passive, but switches to the active in (31c).

(31) a. *Anaana atjiliurtausigama.*

anaana atjiliuq-jau-si-gama

mother film-PASS-PRES-CSV.1sS

'Mom, I'm going to be filmed.'

---

[44] In section 4.2.1.2.2 it is argued that at an early stage in Inuktitut child language the morpheme group of causative followed by passive is used as an unanalyzed unit. Since all the data from Juupi 2;1 has not yet been analyzed, it is not possible to assert that the structure in (30b) represents a productive use of these two morphemes. The fact that Juupi uses the reverse combination at an earlier session, however, suggests that both utterances represent productive use of both morphemes.

b. *Auka atjiliurtaugumanngi.*
auka atjiliuq-jau-guma-nngit
no film-PASS-want-NEG
'No, (I) don't want to be filmed.'

c. *Aullalaaravit atjiliulaunnga.*
aullaq-laaq-gavit atjiliuq-lauq-nnga
leave-FUT-CSV.2sS film-POL-IMP.2sS.1sO
'Film me since you will leave.' (Juupi 2;5)

In a second example, Juupi is showing a family friend a mini-organ that he has. He is spinning it on the floor, and then picks it up and inspects it while uttering (32a) in the passive. The friend responds with (32b). Juupi proceeds to open the organ by prying off the back, looks up innocently at the friend, and utters (32c) in the active.

(32) a. *Mauna matuirtausuunguvuq.*
mauna matuiq-jau-suuq-u-vuq
here-VIA open-PASS-HAB-be-IND.3sS
'Here is where it (mini organ) gets opened.' (Juupi 2;9)

b. *Taanna matuisuungunngituq; matuirtaugiaqanngituq.*
ta-u-na matuiq-suuq-u-nngit-juq matuiq-jau-giaqaq-nngit-juq
PRE-this.one-ABS.SG open-HAB-be-NEG-PAR.3sS open-PASS-must-NEG-PAR.3sS
'That one doesn't open; it mustn't be opened.'

c. *Takuguk, matuisuuq.*
taku-guk matuiq-suuq
see-IMP.2sS.3sO open-HAB
'Look, it opens.' (Juupi 2;9)

These examples suggest that Juupi has mastery of the alternation between passive and active, and can use the appropriate voice to meet his needs.

3.2.4 Full passive

As noted above, passive structures with agentive phrases are typically quite rare in English child language, and almost completely absent before at

least 5;0 (Brown, 1973; Horgan, 1978; though see Bowerman, 1990). This has been cited as evidence that English-speaking children are in fact using adjectival passives at the earlier stages since short passives do not force a verbal passive interpretation in the same way that full passives do. However, in the data from Inuktitut, some 18.2% of the passives used (12/66) are produced with agentive phrases, as shown in table 19.

TABLE 19: *Summary of use of full passives in Inuktitut*[45]

CHILD	PASS	FULL	F/P(%)
A2;6	3	0	0.0
A2;11	2	0	0.0
A3;3	6	0	0.0
J2.0	7	2	28.6
J2.5	13	2	15.4
J2.9	16	5	31.3
M2;6	0	0	0.0
M2;10	1	0	0.0
M3;3	8	1	12.5
S2;10	3	1	33.3
S3;2	2	0	0.0
S3;6	5	1	20.0
TOTAL	66	12	18.2

As evident in the table, the majority of full passives are produced by Juupi. This is not surprising since Juupi's final two sessions are both in the highest

[45] PASS = number of passives; FULL = number of full passives; F/P(%) = percentage of full passives per total passives.

MLU group and show the most advanced grammatical development across the four subjects. The table shows a slight trend within subjects towards increase in use of full passive with age, and a tendency across subjects towards increase in use of full passive with MLU, as shown in tables 20 and 21. Adult input data are taken from 7 sessions with Juupi and 7 sessions with Mac[46].

TABLE 20: *Frequency of use of full passives in Inuktitut, by general MLU*

	2.00-2.49	2.50-2.99	3.00-3.49	INPUT
No. of passives	3	19	44	208
No./% of full passives	1/33.3	3/15.8	8/18.2	35/16.8

TABLE 21: *Frequency of use of full passives in Inuktitut, by verbal MLU*

	3.25-3.99	4.00-4.74	4.75-5.49	INPUT
No. of passives	8	21	37	208
No./% of full passives	1/12.5	3/14.3	8/21.6	35/16.8

Figures for the lowest MLU group in table 20 are again skewed by the small data sample contained in this group, but otherwise the tendency proceeds in the expected direction.

The sentences in (33) represent examples of use of full passive.

[46] This includes the following sessions: J2;0, J2;1, J2;2, J2;3, J2;6, J2;7, J2;9, M2;6, M2;7, M2;8, M2;9, M2;10, M3;2, M3;3.

(33) a. *Piirtaulangama aluumut.*[47]

piiq-jau-langa-gama aluu-mut

remove-PASS-FUT-CSV.1sS white.person-ALL.SG

'I will be removed by the white person.' (Juupi 2;0)

b. *Itsumunga aijaugavit.*

itsu-munga ai-jau-gavit

that.one-ALL.SG get-PASS-CSV.2sS

'You will be brought by that one.' (Suusi 2;10)

c. *Paniga am qukiutimut am tuqutaugiaqanngituq.*

panik-ga am qukiuti-mut am tuqut-jau-giaqaq-nngit-juq

daughter-ABS.1Ssg um gun-ALL.SG um kill-PASS-must-NEG-PAR.3sS

'My daughter um by gun um is not to be killed.' (Mac 3;3)

d. *Kinamut kunittaugumajurulu?*

kina-mut kunik-jau-guma-juq-guluk

who-ALL.SG kiss-PASS-want-PAR.3sS-DIM

'Who is the little one wanting to be kissed by?' (Juupi 2;9)

3.2.5 Passive with experiential verbal stem

Several comprehension and elicited production studies show that English-speaking children tend to learn passive structures using action verbs such as *hit* or *kick* (performance above chance by about 5;0) earlier than those using experiential verbs such as *see* and *understand* (performance above chance by about 9;0), and that children aged 3;0 to 11;0 perform significantly better on action than on experiential passive sentences (Maratsos, Fox, Becker & Chalkley, 1985; Sudhalter & Braine, 1985; Gordon & Chafetz, 1990). Although it is certainly clear that most of the verbs used in passive by the

[47] The correct pronunciation of this utterance is *piirtaulangagama*. It is quite common for children of this age to blur the pronunciation of *-langa-* and *-gama-* into *-langama*. This seems to represent pronunciation difficulties rather than an incorrect parsing of the morphemes since both *-langa-* and *-gama-* are used productively in combination with several other morphemes at the same stage as this "mush-mouthed" pronunciation occurs. At any rate, it does not affect the arguments here concerning passive acquisition.

Inuktitut-speaking subjects tend more towards the "action" range of the scale, there are several examples in the data of passive sentences with experiential verbs that make it clear that these are not foreign to the children, as illustrated in tables 22 and 23.

TABLE 22: *Verb roots used with passive morphology: Alec & Juupi*

CHILD	VC	SHORT PASSIVES	FULL PASSIVES
A2;6	103	*atjiliuq-* 'photograph' *taku-* 'see' *itiq-* 'enter'	
A2;11	97	*ai-* 'get' *-qu-* 'want'	
A3;3	225	*alla-* 'draw' *apuq-* 'bump into' *-qu-* 'want' *tuquC-* 'die' (3)[48]	
J2;0	220	*atjiliuq-* 'photograph' (2) *kii-* 'bite' *piiq-* 'remove' *-qu-* 'want'	*piiq-* 'remove' *taku-* 'see'
J2;5	308	*atjiliuq-* 'photograph' (7) *-liuq-* 'make' *-niraq-* 'say' *qukiq-* 'shoot' *taku-* 'see'	*ili-* 'put away' *taku-* 'see'
J2;9	321	*igit-* 'throw away' *kalik-* 'pull' *matuiq-* 'open' *namunnga-* 'to where' *paa-* 'beat up' (4) *piiq-* 'remove' *tikit-* 'arrive'	*atuq-* 'use' *kalik-* 'pull' **kiinaujaq-* 'money' *kunik-* 'kiss' *-qu-* 'want' *-taq-* 'fetch'

[48] Numbers in parentheses indicate the number of times during this session that the child produced an utterance with the verb indicated. Exact imitations, self-repetitions, and non-consecutive identical utterances are not included in these counts.

TABLE 23: *Verb roots used with passive morphology: Mae & Suusi*

CHILD	VC	SHORT PASSIVES	FULL PASSIVES
M2;10	343	*tigu-* 'take'	
M3;3	121	*atjiliuq-* 'photograph'	*tuquC-* 'kill'
		-qu- 'want'	
		siaqri- 'slide'	
		tigu- 'take'	
		-tit- 'CAUS' (3)	
S2;10	71	*-tit-* 'CAUS' (2)	*ai-* 'get'
S3;2	332	*kii-* 'bite'	
		qai- 'come'	
S3;6	282	bare root	
		atjiliuq- 'photograph'	
		pattita- 'spank'	
		tuquC- 'kill' (2)	

No clear tendency is evident within the data analyzed for use of passives with experiential verbs to increase proportionally with age or MLU relative to use of passives with action verbs. Some examples of passive with experiential verbs are given in (34):

(34) a. *Takujauqqaummat?*
taku-jau-qqau-mmat
see-PASS-PAST-CSV.3sS
'Was it because he was seen?' (Alec 2;6)

b. *Atjiliurtautuinnalirama.*
atjiliuq-jau-tuinnaq-liq-gama
film-PASS-just-PRES-CSV.1sS
'I'm just being filmed.' (Mae 3;3)

c. *Ittumut qaiqujaugavit.*

Ittuq-mut qai-qu-jau-gavit

Ittuq-ALL.SG come-want-PASS-CSV.2sS

'You were called for by Ittuq.' (Juupi 2;9)

d. *Napaunirartaujuviniujutit Taamisamut.*

Napa-u-niraq-jau-juq-viniq-u-jutit Taamisa-mut

Napa-be-say-PASS-NOM-former-be-PAR.2sS Taamisa-ALL.SG

'You were called "Napa" by Taamisa.' (Juupi 2;5)

As shown in tables 22 and 23, the verb root *atjiliuq-* 'film' is passivized by all the children, and *taku-* 'see' is passivized by both Alec and Juupi. Other roots are passivized by only one child during the sessions analyzed.

3.2.6 "Habitual" passive

The "habitual" passive is another more complex form of the passive in that it refers to an habitual process rather than to a specific event in time, and in that the agent is typically implicit and has no individuated referent. There are only two examples of this "habitual" passive in the data analyzed here, one in the final session of Suusi (35a) and the other in the final session of Juupi (35b).

(35) a. *Una piilaukallugu, jausuuq.*

u-na piiq-laukat-lugu jau-suuq

this.one-ABS.SG remove-for.a.while-ICM.XxS.3sO PASS-HAB

'Taking this off first is how it's done.' (Suusi 3;6)

b. *Mauna matuirtausuunguvuq.*

ma-una matuiq-jau-suuq-u-vuq

here-VIA open-PASS-HAB-be-IND.3sS

'Here is where it (mini organ) gets opened.' (Juupi, 2;9)

3.2.7 Passive with non-patient subject

The majority of passives in the data sample reflect passivization of the patient argument of a verbal stem such that this patient moves to subject position at S-structure. However, there are two examples in the data of

passivization of a goal or benefactive argument of a ditransitive verb - a structure considered more complex in terms of language universals. Note that both examples come from the final two sessions of Juupi, the most advanced data in the sample in terms of MLU and grammatical development. The data are given in (36).

(36) a. *Nasaliurtaunngitunga.*
nasaq-liuq-jau-nngit-junga
hat-make-PASS-NEG-PAR.1sS
'I am not being made a hat for.' (Juupi 2;5)

b. *Nilattataukainnaqita anaana kinakkunut?*
nilak-taq-jau-kainnaq-vita anaana kina-kkut-nut
ice-fetch-PASS-PAST-IND.1pS mother who-group-ALL.PL
'Who were we fetched ice by, mother?' (Juupi 2;9)

In both (36a) and (36b), the patient argument has been incorporated into the verb, and thus the benefactive argument is passivized.

3.2.8 Passive of internally complex transitive verb phrases

On several occasions in the data, internally complex transitive verb phrases are passivized. This type of structure is deemed to be a more advanced form of passive use, as shown in evidence from language universals (Keenan, 1985). Examples below illustrate use of passivization with noun incorporation structures (37), morphological causative structures (38) and (39), and reportative structures (40).

3.2.8.1 Noun incorporation

Noun incorporation structures are internally complex in that the patient argument has incorporated into the verb. Thus it is only possible for passivization of the benefactive argument to take place, as in the examples in (37), discussed above in section 3.2.7 and repeated here for convenience.

(37) a. *Nasaliurtaunngitunga.*

nasaq-liuq-jau-nngit-junga

hat-make-PASS-NEG-PAR.1sS

'I am not being made a hat for.' (Juupi 2;5)

b. *Nilattataukainnaqita anaana kinakkunut?*

nilak-taq-jau-kainnaq-vita anaana kina-kkut-nut

ice-fetch-PASS-PAST-IND.1pS mother who-group-ALL.PL

'Who were we fetched ice by, mother?' (Juupi 2;9)

3.2.8.2 Morphological causative

In the examples in (38) the subjects passivize *-tit-* causative structures. In section 4.2.1.2.2 it is argued that structures such as those in (38b) likely represent use of the causative and passive morphemes together as one unanalyzed unit. However, the utterance in (38a) seems to be productive.

(38) a. *Aah, nasanga piirtautillugu.*

aah nasaq-nga piiq-jau-tit-lugu

um hat-ABS.3Ssg remove-PASS-CAUS-ICM.XxS.3sO

'Um, his hat was caused to be removed.' (Juupi 2;0)

b. *Jinilu titaulaujugu, ilai?*

Jini-Ø-lu tit-jau-lauq-juguk ilai

Jeannie-ABS.SG-and CAUS-PASS-PAST-PAR.1dS right

'Jeannie and I were made to, right? (Mac 3;3)

In the examples in (39) the subjects passivize *-qu-* causative structures.

(39) a. *Imailuuqujautsunga.*

imaak-it-luuq-qu-jau-tsunga

like.this-be-do-want-PASS-CTM.1sS

'I was asked to do like this.' (Alec 2;10)

b. *Ittumut qaiqujaugavit.*

Ittuq-mut qai-qu-jau-gavit

Ittuq-ALL.SG come-want-PASS-CSV.2sS

'You were called for by Ittuq.' (Juupi 2;9)

c. *Qujaunngimat.*

qu-jau-nngit-mmat

want-PASS-NEG-CSV.3sS

'He is not wanted to.' (Mac 3;3)

It is possible that some of these represent again an unanalyzed union of the transitive desiderative plus passive as argued in section 4.2.1.2.3. However, utterances from Juupi at 2;5 and 2;9 discussed in that section show *-qu-* followed by both the passive morpheme and by other morphemes, indicating productivity of *-qu-* apart from *-jau-* during at least these two sessions.

3.2.8.3 Verbs of saying

Finally, there is one example of passivization of a verb of saying which takes a clausal complement and includes two instances of noun incorporation, as shown in (40).

(40) a. *Napaunirartaujuviniujutit Taamisamut.*

Napa-u-niraq-jau-juq-viniq-u-jutit Taamisa-mut

Napa-be-say-PASS-NOM-former-be-PAR.2sS Taamisa-ALL.SG

'You were called "Napa" by Taamisa.' (Juupi 2;5)

3.2.9 Summary of acquisition data

The above data all converge to support the conclusion that passive structures cover a wide range of options at a young age among Inuit children. Examples of passive occur as early as 2;0, they appear in both short and full forms, and with both action and experiential verb roots. In addition, children in the highest MLU group in the data sample use "habitual" passives, passivize non-patient arguments, and passivize internally complex transitive verb phrases Thus, they clearly do not conform to the standard conclusions about passive acquisition in Indo-European languages, but rather group with recent findings reported for Sesotho, K'iche', and Zulu as cited earlier.

3.3 Comparison with data from West Greenlandic

Acquisition data from West Greenlandic seem to show a different

pattern in acquisition of the *-jau-* passive. An analysis of spontaneous speech samples from six West Greenlandic speaking children aged 2;2 to 5;2 revealed not a single example of the *-jau-* passive structure in the entire data set (Fortescue, 1985; Fortescue & Lennert Olsen, 1992). At least two explanations for this difference are plausible. First, the *-jau-* passive, *-saa-* in West Greenlandic, serves as a stative passive in this language, so the time of acquisition may be affected by this semantic difference. The dynamic passive role equivalent to that of *-jau-* in Inuktitut is served by the morpheme *-neqar-* (Fortescue, 1984). However, there are also no examples of *neqar-* in the West Greenlandic data. Second, as noted by Fortescue & Lennert Olsen (1992, p. 156), the patterns of representing the passive in West Greenlandic are currently undergoing some change. The "pseudo-passive" construction, formed with the causative morpheme *-tit-* used reflexively, is increasingly replacing the traditional passive constructions, especially among young West Greenlandic speakers. This "pseudo-passive" construction does in fact appear relatively early in the West Greenlandic data; an example is given in (41).

(41) *igit-sil-luni*
throw-CAUS-CTM.4sS
'By being thrown out.'
(age 3;1; Fortescue & Lennert Olsen, 1992, p. 155)

Note that this use of *-tit-* may not be productive, however, since the *-silluni* portion of the utterance is identical to that in this child's brother's immediately preceding utterance in (42), though a different verb root is used.

(42) *biili-nut apor-til-luni*
car-ALL run.over-CAUS-CTM.4sS
'By being run over by a car.'
(age 5;2; Fortescue & Lennert Olsen, 1992, p. 155)

Data are also presented for children aged 2;1 and 3;4 (Fortescue & Lenner Olsen, 1992) and one child aged 2;3 (Fortescue, 1985). The morpheme *-tit-* is not listed among the productive morphemes for the child aged 2;1. It is listed for the children aged 2;3 and 3;4, but only clearly causative examples of its use are given in the text. The passive use of this morpheme, then, is

only addressed for the one subject aged 3;1. Thus it seems that a structure equivalent to the Inuktitut passive may be acquired at a similar stage in West Greenlandic, but there is not enough evidence reported to make this claim conclusively.

3.4 Discussion of theoretical and empirical issues

Many attempts have been made in the literature to explain the timing of acquisition of passive structures. This section considers several hypotheses in light of Inuktitut data. Section 3.4.1 discusses the possibility that the ability to form passives matures at a certain age. Section 3.4.2 considers the effect of caregiver input on the time of passive acquisition. Section 3.4.3 presents three aspects of the structure of Inuktitut that may have a significant effect on the precociousness of Inuktitut-speaking children's learning of the passive.

3.4.1 Maturation hypothesis

One of the most often cited hypotheses to explain the timing of passive acquisition is the Maturation Hypothesis discussed in Borer & Wexler (1987). This hypothesis attempts to explain ordering in acquisition by claiming that certain grammatical principles mature in the same fashion as biological functions such as secondary sexual characteristics. According to this theory, particular linguistic structures which do not occur at an early stage will suddenly fall into place once the relevant linguistic principle matures within the child, and neither learning nor triggering need to be invoked in the explanation of ordering of acquisition. The key example supporting this theory is the apparently late maturation of the principle governing A-chain formation implicated in the NP-movement used in passives and unaccusatives. Data from English and Hebrew showing late acquisition of verbal passive serve well to support the Maturation Hypothesis, although various questions have been raised as noted in the introduction to this chapter. Recent data from non-Indo-European languages, however, show relatively early acquisition of verbal passive and thus do not provide support for this theory.

The early production of verbal passives in Inuktitut discussed in this

chapter also casts considerable doubt on the integrity of the Maturation Hypothesis. It is most unlikely that the principle governing A-chain formation matures at age 4;0 if Inuit children seem to have no difficulty producing structures requiring A-chain formation as early as age 2;0. The variability in age of passive acquisition crosslinguistically suggests that if acquisition of the passive is determined by maturation of the principle governing A-chain formation, this principle must either mature at different ages for speakers of different languages, or mature at an early age across all children but only become available for use at different times as determined by idiosyncracies of the language in question. The former option is clearly untenable biologically, while the latter removes the need for positing maturation in the first place since it would essentially mean that the principle governing A-chain formation is present virtually from the beginning of the acquisition process. The relevance of maturation to language acquisition, then, cannot be based on an argument requiring late acquisition of verbal passives, since this does not hold crosslinguistically. This argument has been articulated in greater detail in Demuth (1989) and in Allen & Crago (1993a, 1993b).

In place of the Maturation Hypothesis, many researchers subscribe to a position more consistent with the Continuity Hypothesis (Pinker, 1984) in which all grammatical principles are available to the child from birth and remain constant throughout development. The timing of the acquisition of various structures including the verbal passive, then, is influenced by language-specific factors. In Sesotho, for example, early acquisition of verbal passive cooccurs with greater predominancy of passive than in English, in both adult language and adult input to children, due to a particularly wide range of passivizable objects in Sesotho (both accusative and dative) and to the topic orientation of Sesotho subjects. Some possibilities for similar language-specific influences for early passive acquisition in Inuktitut include the effect of adult input, avoidance of complicated two-argument verbal inflections, and prevalence of head movement and NP-movement in the polysynthetic language structure of Inuktitut. These possibilities are discussed in the following sections.

3.4.2 Caregiver input

As in Sesotho, passive structures are relatively frequent in adult caregiver input in Inuktitut. This contrasts with English. A summary of input data from two studies concerning English and the present study concerning Inuktitut is given in table 24. Inuktitut figures are likely on the low side in terms of expressing general input patterns since, especially in the sessions for Mac, most of the interaction is with peers rather than with adult caregivers and thus there are relatively few input utterances per minute. Note also that the figures for English include both adjectival and verbal passives, while the figures for Inuktitut include *-jau-* passives only.

TABLE 24: *Summary of caregiver use of passives per hour crosslinguistically*[49]

LANGUAGE	HRS	PASS	FULL	P/HR
English[50] (Gordon & Chafetz, 1990)	293	313	4	1.1
English (Maratsos, 1985)	37.5	101	1	2.7
Inuktitut	26.7	208	35	8.9

The Inuit adult caregivers, then, use passives, at even the most conservative estimate, at least 2.8 times more frequently per hour than do English-speaking adult caregivers in these studies. In addition, numbers for full passive use are far higher in Inuktitut input than in English. Higher frequency of passive use in input in Inuktitut, then, cooccurs with higher frequency and earlier acquisition of passive in Inuit children. While it is not necessarily true that this represents a causal link (Brown, 1973; Demuth, 1992a), it is likely that passive figures are high for both Inuit children and Inuit adult caregivers as the common result of some other phenomenon.

[49] HRS = hours of tape; PASS = number of passives; FULL = number of full passives; P/HR = number of passives per hour.

[50] Data are from adult caregivers interacting with Adam, Eve and Sarah.

3.4.3 Language structure

Several aspects of the structure of Inuktitut could be affecting the early acquisition of passive, and its frequent use across both child and adult language. The following sections present some of these. Those in 3.4.3.2 and 3.4.3.3 are discussed in more detail in chapter 6, where they will tie together these issues of language structure across the acquisition of passive, causative and noun incorporation.

3.4.3.1 Avoidance of two-argument inflection

One possible reason that both adults and children are using the passive is because it offers an avoidance strategy in terms of the complex inflectional system of Inuktitut. Two-argument verbal inflection must agree with both subject and object, which, given 9 possible verbal modalities, 4 persons, and 3 numbers, yields in the vicinity of 900 possible choices of inflection. Since the one-argument verbal inflection on a passive need only agree with subject and not object, the number of inflections to be mastered decreases from approximately 900 to approximately 100. It is evident in both spontaneous speech and language consultation situations that even Inuit adults in this dialect area tend to avoid transitive inflections as much as possible by either passivizing or antipassivizing the sentence. Thus, the child may be following the example of his or her elders[51].

3.4.3.2 Pervasiveness of head movement

Another potential influencing factor lies in the word-building strategies of Inuktitut, according to current Principles and Parameters analyses. Since

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[51] Preliminary analysis of data concerning use of verbal inflection shows that one-argument inflections are used on 54% to 83% of verbal stems, while two-argument inflections are used on only 12% to 36% of verbal stems across the 12 data samples. In addition, use of one-argument inflections increases across children in terms of both age and MLU, while use of two-argument inflection decreases. This suggests that children are able to (productively) produce at least some two-argument inflections at the earliest stages of these data, but are gradually learning to use transitivity-decreasing mechanisms such as passive, antipassive and noun incorporation which force/allow decrease in use of two-argument inflections. These observations do not necessarily argue for avoidance of two-argument inflections. However, they do suggest that something is occurring in this domain that merits further research.

Inuktitut is a highly polysynthetic language, it uses the syntactic process of head movement, required for the formation of the past participle used in passives in both Inuktitut and English, in a large number of other structures including causative, desiderative, antipassive, noun incorporation, verb incorporation, and verbal inflection (Baker, 1988), and possibly postposition incorporation (Allen, 1988). Note here that there are no alternative analytic ways of producing an utterance of the same meaning for at least causative, desiderative, verbal inflection, verb incorporation, and often noun incorporation. Also, the information conveyed by the verbal inflection in Inuktitut is essential due to pervasive ellipsis of arguments, and to the fact that verbal inflections in Inuktitut carry information about verbal modality in addition to person and number.

Structures involving head movement are already being used correctly, at least in simple forms, by children at this age in Inuktitut, as argued in Allen & Crago (1989), and in chapters 4 and 5 of this thesis (on acquisition of morphological causatives and noun incorporation respectively). Several examples in the Inuktitut data illustrate these abilities, including use of the passive in conjunction with various internally complex transitive verb phrases as discussed in section 3.2.8.

English, an isolating language, does not use the process of head movement in word-building other than for verbal inflection, which begins appearing after 2;0 (MLU 2.0 to 2.5) (Brown, 1973; Radford, 1990). In terms of sentence-building, it is used in I to C movement for raising of auxiliaries and modals in questions, which begins appearing later at about MLU 3.5 (Klima & Bellugi, 1966), and in passive structures as noted above. Thus, the ability to produce head movement structures seems to begin at a relatively similar stage, though it seems to take longer to be used productively in the range of situations required. Note here that neither of the former uses of head movement are essential to English. The verbal inflection is relatively impoverished in English, and the same meaning can be gained from the context through use of (obligatory) NP arguments and adverbials. Raising of auxiliaries and modals in questions also serves little purpose; the same

semantic effect can be achieved through adjustment of voice intonation. Perhaps Inuit children can produce these seemingly complex structures at such a young age, then, because they are essential for expressing a wide range of basic concepts in Inuktitut since no simpler alternative mechanisms to express the same semantic concept are available.

3.4.3.3 Pervasiveness of NP-movement

A final possible reason that both adults and children use the passive so frequently derives from the ergative nature of Inuktitut. Many current analyses of ergativity within the Principles and Parameters framework (e.g. Bok-Bennema, 1991; Campana, 1992; Johns, 1992; Murasugi, 1992; Bittner, 1994a) posit that the ergative case assignment system is forced by the fact that the verb is defective and is unable to assign case to its object, and at least one analysis involves NP-movement of the object to subject position as a mechanism for case assignment (Bittner, 1994a). In a transitive structure under this analysis, then, and assuming a VP-internal subject (Kitagawa, 1986; Kuroda, 1988; Koopman & Sportiche, 1991), the object must move to subject position (= NP,INFL) to get case while the subject remains in its base-generated position as subject of the VP and gets assigned (genitive) case by a special mechanism. If this is true, the NP-movement found in passives is a very commonplace and essential phenomenon within the structure of Inuktitut. All arguments base-generated in object position, whether in transitive, passive, or unaccusative constructions, must raise to subject position to get case.

This is drastically different from English, an accusative language, in which such movement is rare, being restricted to passives, unaccusatives, and raising constructions. The only situation in which NP movement is frequent is raising the subject from its VP-internal base-generated position. However, evidence of children acquiring subject raising is linked to acquisition of inflection and disappearance of null subjects which both come into play between 2;0 and 3;0 (Pierce, 1989, 1992), later than in languages like Inuktitut in which verbal inflection is more complex and predominant. Also, virtually all instances of postverbal subjects in early English child language are with

unaccusative verbs, again illustrating later acquisition of NP-movement in English than in Inuktitut (Pierce, 1989, 1992).

3.4.4 Summary

In this section several hypotheses concerning the early acquisition of verbal passives by Inuktitut-speaking children have been addressed. Data argue clearly against a maturation hypothesis, and for a hypothesis that takes into account the unique structural aspects of Inuktitut.

3.5 Conclusion

In this chapter data has been presented that shows relatively early acquisition of both simple and complex passive structures by Inuit children. Consistent with data from other non-Indo-European languages, the Inuktitut data show productive use of a wide range of passives as early as 2;0. Some possible reasons for early passive acquisition in this language include relatively high frequency of passive structures in adult input and certain idiosyncracies of Inuktitut language structure including prolific verbal inflections, commonality of head movement as a word-building strategy, and an ergative case system.

CHAPTER 4
ACQUISITION OF CAUSATIVES[52]

The notion of causation may be expressed linguistically in several different forms (Comrie, 1976, 1985, 1989; Shibatani, 1976). Three of these forms are usually distinguished within the literature: periphrastic, using a unique lexical item to encode causation, as in (43), morphological, using a unique morpheme within the verbal complex to encode causation, as in (44), and lexical, in which a verb inherently contains causative meaning without having this separately encoded in a phonetically overt fashion, as in (45).

(43) *The trainer made the elephant jump.*

(44) *Hanako ga Taro o nak-ase-ru.*
Hanako NOM Taro ACC cry-CAUS-NONPAST
'Hanako made Taro cry.' (Japanese; Morikawa, 1991)

(45) *John dropped the box.*

Lexical causatives typically pair with non-causative intransitives of similar semantic content, a relationship often termed a causative alternation. The two members of the pair may either be suppletives[53] (46) or be related morphologically, often being identical in form (47).

(46) a. *The patient ate the pudding.*
b. *The nurse fed the patient the pudding.*

(47) a. *The vase broke.*
b. *John broke the vase.*

Not all these options occur in every language, though at least one option and

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[52] An earlier version of some of the material in this chapter concerning morphological causatives was presented at the International Conference on Infant Studies, Paris, France (June, 1994). Earlier versions of portions of the material concerning lexical causatives, reporting on a different configuration of data from the same project, were presented at the Department of Linguistics, McGill University (May, 1993) and the Max Planck Institute for Psycholinguistics (June, 1993), and published as Allen & Crago (1993a).

[53] There is a large literature on legitimacy of treating suppletive pairs as such, based primarily on the questionable degree of semantic correspondance between the two members of the pair (e.g. Fodor, 1970; Shibatani, 1976; and references cited therein). The paradigm example here is 'kill' vs. 'die', and many discussions center around whether 'cause to die' sufficiently encodes all the possible meanings connoted by 'kill' and vice versa.

usually more are available in every language.

Several studies, facts and theories concerning the acquisition of causatives in spontaneous speech have been reported in the literature, including those on Brazilian Portuguese (Figueira, 1984, 1987), English (Baron, 1972, 1977; Bowerman, 1974, 1982a, 1982b; Lord, 1979; Pinker, 1984, 1989; Borer & Wexler, 1987; Maratsos, Gudeman, Gerard-Ngo & DeHart, 1987), Georgian (Imedadze & Tuite, 1992), Hebrew (Berman, 1980, 1982, 1985), Inuktitut (Allen & Crago, 1993a), Japanese (Morikawa, 1990, 1991), K'iche' (Pye, 1992, 1994), Mandarin (Erbaugh, 1992), Russian (Kuz'mina, 1990; Ceytlin, 1993), Sesotho (Demuth, 1992b), Turkish (Aksu-Koc & Slobin, 1985), and West Greenlandic (Fortescue, 1985; Fortescue & Lennert Olsen, 1992). In addition, at least one set of comprehension experiments has looked at the relative time of acquisition of overtly derived (= periphrastic and morphological) causatives crosslinguistically, comparing English, Italian, Serbo-Croatian and Turkish (Ammon & Slobin, 1979; Ammon, 1980), while a few production experiments and one picture-matching experiment have addressed the issue of overgeneralization of lexical causatives, including those on English (Hochberg, 1986; Maratsos, Gudeman, Gerard-Ngo & DeHart, 1987; Braine, Brody, Fisch, Weisberger & Blum, 1990) and K'iche' (Pye, 1994). This body of research shows that causatives generally appear crosslinguistically in spontaneous speech between 2;0 and 3;0. Lexical causatives typically appear prior to overtly derived causatives where both possibilities exist within the same language, though evidence from the concurrent appearance of the paraphrastic causative and instances of overgeneralization of the lexical causative in English suggests that lexical causatives may not be being used productively until the onset of overtly derived forms of the causative (Bowerman, 1974, 1982b). In addition, experimental evidence suggests that, crosslinguistically, children may learn morphological causatives earlier than periphrastic causatives since the morphological causative is closer to the verb, thus providing a more "local" cue (Ammon & Slobin, 1979).

Much of the theoretical discussion concerning the acquisition of

causatives in the literature centers around the overgeneralization of the causative alternation with verbs (and other lexical items) which do not normally permit it. Incorrect uses of intransitive (48a-b) and transitive non-causative (48c) verbs in transitive causative contexts, as well as (a usually lesser number of) incorrect uses of transitive lexical causative verbs in intransitive (49a-b) or transitive non-causative (49c) contexts, are found in most of the languages noted above[54].

(48) a. *I come it closer so it won't fall.*
[= make it come closer; bring it closer]
(Christy 2;3; Bowerman, 1974)

b. *I'm singing him.*
[= making (musical cow toy) sing]
(Christy 3;1; Bowerman, 1974)

c. *You can drink me the milk.*
[= make me drink the milk] (Jennifer 3;8; Lord, 1979)

(49) a. *I think I better put it down there so it won't lose.*
[= so I won't make it be lost] (Benjy 3;7; Lord, 1979)

b. *It can hear now.*
[= I can hear (the clock) ticking now] (Jennifer 2;9; Lord, 1979)

c. *I want to take it out so it can't put on my nose.*
[= so (the cone) won't make (ice cream) go on my nose]
(Jennifer 2;10; Lord, 1979)

There is considerable debate as to the source of such errors; hypotheses range from overgeneralization of the causative feature (Bowerman, 1974, 1982a, 1982b; Pinker, 1984, 1989; Braine *et al*, 1990), to overgeneralization of the alternation in both directions (Lord, 1979), to general errors of transitivity definition (Berman, 1985; Morikawa, 1990), to overgeneralization of the relationship between agency and syntactic frame (Figueira, 1984), to errors in

[54] Many of the examples of causatives used erroneously as intransitives or ditransitive non-causatives presented in Lord (1979), and including at least (49b), do not seem to involve causation at all except by a considerably watered down definition of causation. This point is addressed by Lord (1979, p. 86), and is discussed in section 4.4 below.

lexical access (Braine, 1988; Pye, 1994), to lack of acquisition of the principle governing A-chain formation (Borer & Wexler, 1987). In addition, a great deal of individual difference in appearance of this phenomenon seems apparent across children (Maratsos *et al*, 1987; Pye, 1994).

This chapter will discuss the acquisition of both morphological and lexical causatives in Inuktitut. Both types of causatives are observed in the data, and use of lexical causatives precedes use of morphological causatives. Morphological causatives first appear as part of one or more unanalyzed routines, though the causative notion is clearly productive within this. Only later does the morpheme itself become productive. Errors in overgeneralization of the causative alternation paradigm do occur, though infrequently. They can be most easily explained in Inuktitut either as a result of incomplete knowledge of the need for a morphological causative, since all errors are ones of omission of this morpheme, or as a result of more general errors in transitivity definition.

In section 4.1, the structure of the two types of causatives in Inuktitut is outlined. In section 4.2, data from the Inuit children in this study bearing on the pattern of acquisition of causative structures in Inuktitut are discussed. In section 4.3, the acquisition of causatives in Inuktitut and in West Greenlandic are compared briefly. In section 4.4, the theoretical issues outlined above are discussed in more detail and addressed in terms of the facts from Inuktitut. Finally in section 4.5, the data and implications thereof addressed in this chapter are summarized.

4.1 Structure of causatives in Inuktitut

As noted above, languages typically have at least one of three types of causatives: periphrastic, morphological and/or lexical. These forms have in common the syntactic effect of increasing the valency of a sentence by one due to the addition of an agent of causation. In addition, they alter the linguistic encoding associated with the causee, typically through a change in case marking or position within the sentence. Some languages restrict causative formation to intransitive verbs only, prohibiting causativization of

transitive verbs in any of these manners[55] (Comrie, 1976, 1989). Finally, verbs exhibiting the causative alternation are typically considered to be unaccusative in their intransitive form. Semantically, the form of causative used tends to differ with respect to the degree of directness of causation, the degree of control maintained by the causee, whether the structure implies causation or permission, and whether the causation is manipulative or directive (Shibatani, 1976; Talmy, 1976; Comrie, 1985, 1989; Pederson, 1991).

Inuktitut has both morphological and lexical causatives; it does not have a periphrastic causative. Each of these are discussed in turn below. Since the acquisition data presented in the following sections deals only with the form of the causatives and not with their semantic content, this section will present only the form of the various causatives in Inuktitut.

4.1.1 Morphological causative

Morphological causatives discussed in the literature on Inuit include *-tit-* 'make, cause, let' and *-qu-* 'tell, ask, want'[56]. Both of these add a valency of one to the verb root with which they are associated by addition of an

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[55] This has been explained by Baker (1988) as a restriction caused by the fact that the causative, in whatever form, constitutes an independent verb and cannot therefore take more arguments than a non-causativizing verb in the given language. Thus English can causitivize transitives since it permits double object constructions, but K'iche' cannot since it does not permit double object constructions (Pye, 1990b).

[56] The morphemes *-kkaq-* 'make, cause, force' and *-naq-* 'cause' are also morphological causatives, but are not typically discussed in the literature as such. The morpheme *-kkaq-* is more or less synonymous with *-tit-*, but is used relatively infrequently in *Tarramiut*. It appears in such constructions as (i).

(i) *Qiakkalagit.*
qia-kkaq-lagit
cry-CAUS-IMP.1sS.2sO
'Shall I make you cry?'

The morpheme *-naq-* is an impersonal causative which maintains or decreases valency rather than increasing it. It yields a construction with an impersonal causee, as in (ii).

(ii) *Una aanninartuq.*
u-na aanniq-naq-juq
this.one-ABS.SG hurt-CAUS-PAR.3sS
'This is such as to cause one to hurt.'

Since *-kkaq-* is not used at all by the children in the present data sample and *-naq-* only 16 times, and since neither morpheme is discussed as a canonical causative in the literature, they are not addressed further here.

external agent of causation. The position is taken here that these morphemes are verb-incorporating affixes with independent syntactic projections, a position which has been defended by a number of researchers studying Inuit (e.g. Johnson, 1980; Smith, 1982; Woodbury & Sadock, 1986; Bok-Bennema & Groos, 1988; Bok-Bennema, 1991; though see Grimshaw & Mester, 1985 and Jensen & Johns, 1989 for arguments against this position[57]).

Some examples of causative sentences are shown below. In each of these sentence pairs, an external agent of causation is added to the non-causative sentence in the (a) examples, increasing the valency of these sentences by one, yielding the (b) examples. Note that the causee becomes absolutive in all cases. The non-causative sentences in (50) through (53) are intransitive.

(50) a. *Piaraq qiajuq.*
piaraq-Ø qia-juq
child-ABS.SG cry-PAR.3sS
'The child is crying.'

b. *Jaaniup piaraq qiatitanga.*
Jaani-up piaraq-Ø qia-tit-janga
Johnny-ERG.SG child-ABS.SG cry-CAUS-PAR.3sS.3sO
'Johnny is making the child cry.'

(51) a. *Miaji ullatuq.*
Miaji-Ø ullaC-juq
Mary-ABS.SG run-PAR.3sS
'Mary is running.'

b. *Ilinniatitsijiup Miaji ullatitanga.*
ilinniatitsiji-up Miaji-Ø ullaC-tit-janga
teacher-ERG.SG Mary-ABS.SG run-CAUS-PAR.3sS.3sO
'The teacher is making Mary run.'

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[57] The reader is referred to Bok-Bennema (1991) for a discussion of the details of this debate and clear argumentation of the position adopted here, and to Baker (1988) for presentation of the theoretical background supporting this position.

(52) a. *Miaji anijuq.*

Miaji-Ø ani-juq

Mary-ABS.SG go.out-PAR.3sS

'Mary went out.'

b. *Jaaniup Miaji aniqujanga.*

Jaani-up Miaji-Ø ani-qu-janga

Johnny-ERG.SG Mary-ABS.SG go.out-want-PAR.3sS.3sO

'Johnny asked/wanted/told Mary to go out.'

(53) a. *Jaani ijurpuq.*

Jaani-Ø ijuq-vuq

Johnny-ABS.SG laugh-IND.3sS

'Johnny laughed.'

b. *Miajiup Jaani ijuqujanga.*

Miaji-up Jaani-Ø ijuq-qu-janga

Mary-ERG.SG Johnny-ABS.SG laugh-want-PAR.3sS.3sO

'Mary asked/wanted/told Johnny to laugh.'

Causativization of transitive and ditransitive verb roots requires either antipassivizing (or passivizing) the verb root before the causative is affixed; thus the direct object of the initial verb root becomes a second object in modalis case. The non-causative sentences in (54) through (57) are transitive.

(54) a. *Jaaniup piarait pairivait.*

Jaani-up piaraq-it pairi-vait

Johnny-ERG.SG child-ABS.PL look.after-IND.3sS.3pO

'Johnny is looking after the children.'

b. *Miajiup piararnik Jaani pairitsitippaa.*

Miaji-up piaraq-nik Jaani-Ø pairi-tsi-tit-vaa

Mary-ERG.SG child-MOD.PL Johnny-ABS.SG look.after-ANTP-CAUS-IND.3sS.3sO

'Mary made Johnny look after the children.'

(55) a. *Miajiup iqaluk nirimmauk.*

Miaji-up iqaluk-Ø niri-mmauk

Mary-ERG.SG fish-ABS.SG eat-CSV.3sS.3sO

'Mary is eating the fish.'

b. *Jaaniup Miaji iqalummik niritimmauk.*

Jaani-up Miaji-Ø iqaluk-mik niri-tit-mmauk

Johnny-ERG.SG Mary-ABS.SG fish-MOD.SG eat-CAUS-CSV.3sS.3sO

'Johnny made Mary eat the fish.'

(56) a. *Jaaniup ujarait igitangit.*

Jaani-up ujaraq-it igiq-jangit

Johnny-ERG.SG rock-ABS.PL throw-PAR.3sS.3pO

'Johnny threw the rocks.'

b. *Miajiup Jaani ujararnik igitsiqujanga.*

Miaji-up Jaani-Ø ujaraq-nik igiq-tsi-qu-janga

Mary-ERG.SG Johnny-ABS.SG rock-MOD.PL throw-ANTP-want-PAR.3sS.3sO

'Mary asked/wanted/told Johnny to throw the rocks.'

(57) a. *Miajiup tuttu qukirtanga.*

Miaji-up tuttu-Ø qukiq-janga

Mary-ERG.SG caribou-ABS.SG shoot-PAR.3sS.3sO

'Mary shot the caribou.

b. *Jaaniup Miaji tuttumik qukirniqujanga.*

Jaani-up Miaji-Ø tuttu-mik qukiq-ni-qu-janga

Johnny-ERG.SG Mary-ABS.SG caribou-MOD.SG shoot-ANTP-want-PAR.3sS.3sO

'Johnny asked/wanted/told Mary to shoot the caribou.'

Finally, the non-causative sentences in (58) and (59) are ditransitive.

(58) a. *Jaaniup iqaluk Miajimut tunijanga.*

Jaani-up iqaluk-Ø Miaji-mut tuni-janga

Johnny-ERG.SG fish-ABS.SG Mary-ALL.SG give-PAR.3sS.3sO

'Johnny gave the fish to Mary.'

b. *Lisiup Jaani iqalummik Miajimik tunijititanga.*

Lisi-up Jaani-Ø iqaluk-mik Miaji-mik tuni-ji-tit-janga

Lizzie-ERG.SG Johnny-ABS.SG fish-MOD.SG Mary-MOD.SG

give-ANTP-CAUS-PAR.3sS.3sO

'Lizzie made Johnny give the fish to Mary.'

(59) a. *Jaaniup iqaluk Miajimut aattanga.*

Jaani-up iqaluk-Ø Miaji-mut aaC-janga

Johnny-ERG.SG fish-ABS.SG Mary-ALL.SG give-PAR.3sS.3sO

'Johnny gave the fish to Mary.'

b. *Lisiup Jaani iqalummik Miajimik aittuiqujanga.*

Lisi-up Jaani-Ø iqaluk-mik Miaji-mik aittuq-i-qu-janga

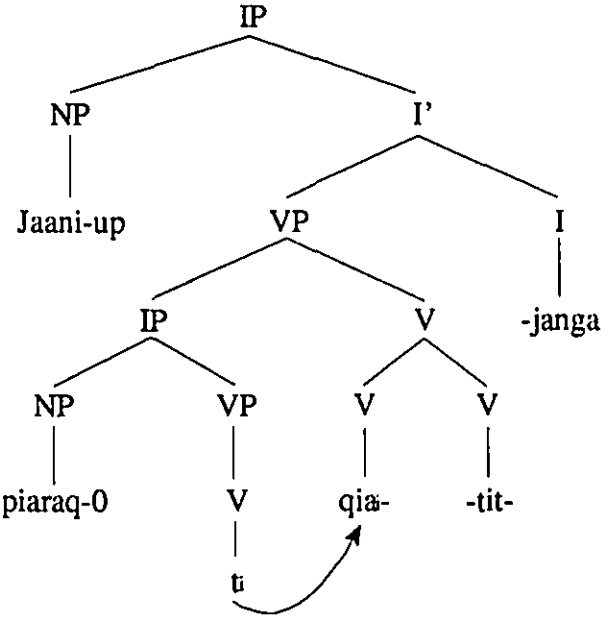
Lizzie-ERG.SG Johnny-ABS.SG fish-MOD.SG Mary-MOD.SG

give-ANTP-want-PAR.3sS.3sO

'Lizzie asked/wanted/told Johnny give the fish to Mary.'

Morphological causatives are considered verb incorporation structures here, following the analysis in Baker (1988). The S-structure of (50b) is shown in the tree in (60).

(60)



4.1.2 Lexical causative

A large class of verbs in Inuktitut exhibit the lexical causative

alternation. Some typical examples include those represented in (61) through (64), with the intransitive version of the sentence in the (a) examples and the transitive causative version in the (b) examples.

(61) a. *Puvirtajuuq qaartuq.*
puvirtajuuq-Ø qaaq-juq
balloon-ABS.SG burst-PAR.3sS
'The balloon burst.'

b. *Jaaniup puvirtajuuq qaartanga.*
Jaani-up puvirtajuuq-Ø qaaq-janga.
Johnny-ERG.SG balloon-ABS.SG burst-PAR.3sS.3sO
'Johnny burst the balloon.'

(62) a. *Jaani tuqujuq.*
Jaani-Ø tuqu-juq
Johnny-ABS.SG die-PAR.3sS
'Johnny died.'

b. *Aaniup Jaani tuqutanga.*
Aani-up Jaani-Ø tuquC-janga[58]
Annie-ERG.SG Johnny-ABS.SG die-PAR.3sS.3sO
'Annie killed Johnny.'

(63) a. *Inuujara qainnguartuq.*
inuujaq-ga qai-nnguaq-juq
doll-ABS.1Ssg come-pretend-PAR.3sS
'My doll is pretending to come.'

b. *Jaaniup inuujara qainnguatanga.*
Jaani-up inuujaq-ga qai-nnguaq-janga
Johnny-ERG.SG doll-ABS.1Ssg come-pretend-PAR.3sS.3sO
'Johnny pretended to bring my doll.'

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[58] Fortescue (1984) and Johns (1987), among others, note that the transitive causative version of this verb contains a fossilized transitivizing morpheme *-t-*. Since this morpheme is no longer productive, it is assumed here that *tuquC-* serves as the causative alternant of the intransitive *tuqu-*. This same pattern also holds for other intransitive/transitive verb pairs in Inuit.

(64) a. *Sikituuq siqumimmat.*

sikituuq-Ø siqumi-mmat

skidoo-ABS.SG break-CSV.3sS

'The skidoo is broken.'

b. *Sikituuq siqumigakku.*

sikituuq-Ø siqumi-gakku

skidoo-ABS.SG break-CSV.1sS.3sO

'I broke the skidoo.'

Verbs exhibiting this property have been discussed in the Inuit literature as causatives or anticausatives[59] (Woodbury, 1975; Fortescue, 1984; Bok-Bennema, 1991), result predicates (Johns, 1987), and hidden or middle passives (Bourquin, 1891); in fact, such variable classification is typical of this construction crosslinguistically (Comrie, 1989). For sake of simplicity, the verb class will be referred to herein as *causative alternation verbs*, and the transitive variants of this class as *lexical causatives*.

Researchers who provide a syntactic analysis of verbs exhibiting the causative alternation in Inuit within the Government-Binding framework typically group the intransitive variant of these verbs as a subset of the larger class of unaccusative verbs in the language (Bok-Bennema, 1991; Bittner, 1994a)[60], as is common within the generative literature crosslinguistically (e.g. Burzio, 1986; Rappaport Hovav & Levin, 1991; Levin & Rappaport Hovav, 1992b; though see Keyser & Roeper, 1984 and Borer, 1991 for alternative views). However, very little if any work has been done to establish either semantic or syntactic diagnoses of unaccusativity in Inuktitut. In terms of

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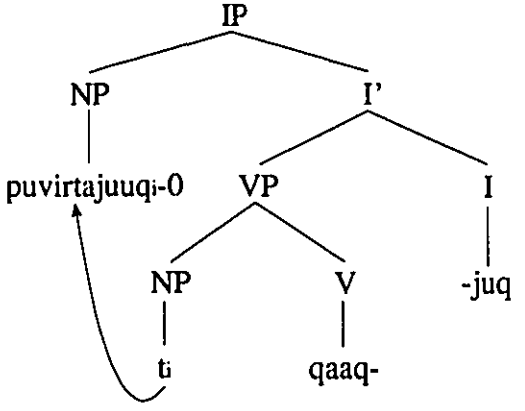
[59] Bok-Bennema (1991) refers to these verbs as anticausative on the grounds that in some languages (e.g. French (Levin & Rappaport Hovav, 1992a); Spanish (Zubizarreta, 1987); Russian (Comrie, 1989)) an additional morpheme is required on the intransitive variant. She admits that the analysis of this verb class on the basis of evidence from Inuit alone is not conclusive. Levin & Rappaport Hovav (1992a, p. 16) claim that "internally controlled verbs are inherently monadic predicates, and externally controlled verbs are inherently dyadic predicates", thus supporting the idea that in some verb pairs the intransitive form is basic while in others the transitive causative form is basic. They claim that the latter is more productive in English for semantic reasons related to control.

[60] Woodbury (1975) offers a similar analysis, referring to this class as "absolutive" verbs, though his work is explicitly theory-neutral.

semantics, Johns (1987) claims that intransitive verbs which permit causative alternation are verbs of change of state which have theme arguments. Though her analysis is far from exhaustive, this characterization certainly fits within the typical crosslinguistic classification of unaccusative verbs (see footnotes 9 through 11). In terms of syntax, no evidence can be presented since there is as yet no syntactic evidence documented in the literature for a bipartition between unaccusative and unergative verbs in Inuit (Bok-Bennema, 1991, p. 44).

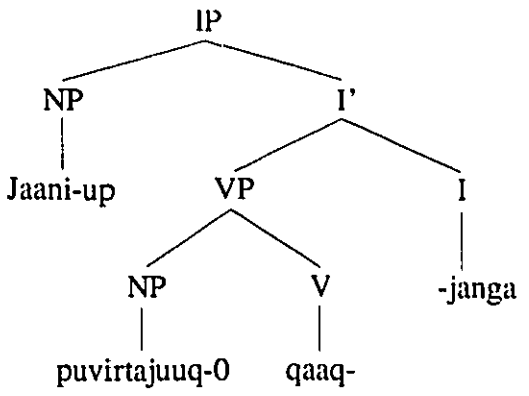
For purposes here, it will be assumed that the intransitive members of causative alternation pairs are unaccusative, and that unaccusatives have the same syntactic form in Inuktitut as in English and other languages discussed in the literature. Thus, the syntactic tree in (65) represents the S-structure of this intransitive mamber. Crucially, the subject of the verb is base-generated in object position, and subsequently moves at S-structure to subject position in order to get case.

(65)



In the transitive lexical causative variant, the D-structure object remains in its base-generated position while an agent NP occupies the subject position, as in (66).

(66)



4.2 Acquisition data

In this section the acquisition data concerning the morphological and lexical causatives in Inuktitut are discussed in turn. Data are taken from the transcripts analyzed for this thesis as discussed in chapter 2. Some additional data from the same project are used where appropriate, and are noted as such.

4.2.1 Morphological causative

This section begins with a discussion of the age at which the two morphological causative morphemes appear in the data sample, as well as the frequency of their use. The forms that each of these causative structures take are then examined. The earliest appearances of morphological causatives in the data constitute unanalyzed routines; these are discussed in section 4.2.1.2. In section 4.2.1.3, examples of correct adult-like use of morphological causatives are presented. Section 4.2.1.4 offers evidence that morphological causatives are being used productively during this period. In section 4.2.1.5, examples of morphological causatives used with internally complex verb phrases are given. Finally, the data are summarized in section 4.2.1.6.

4.2.1.1 Age and frequency of use

In order to establish the existence of morphological causative structures in the Inuktitut data, figures are presented here concerning age and frequency of use. Data for *-tit-* are in tables 25 through 28, while data for *-qu-* are in tables 29 through 32.

TABLE 25: *Summary of* -tit- *causative data*[61,62]

CHILD	HRS	VC	*-TIT-*	T/HR	T/VC(%)
A2;6	1.93	103	3	1.55	2.91
A2;11	0.95	97	0	0.00	0.00
A3;3	2.30	225	6	2.61	2.67
J2.0	2.05	220	10	4.88	4.55
J2.5	1.87	308	14	7.48	4.55
J2.9	1.95	321	3	1.54	0.93
M2;6	2.05	161	4	1.95	2.48
M2;10	2.43	343	2	0.82	0.58
M3;3	1.00	121	4	4.00	3.31
S2;10	2.02	71	2	0.99	2.82
S3;2	2.38	332	3	1.26	0.90
S3;6	2.35	282	2	0.85	0.71
TOTAL	23.28	2584	53	2.28	2.05

In tables 26 through 28, the data are grouped to show potential developmental trends in use of the *-tit-* causative structure by age (table 26), general MLU (table 27), and verbal MLU (table 28).

[61] HRS = hours of tape; VC = number of verbal clauses; *-TIT-* = number of *-tit-* causatives; T/HR = number of *-tit-* causatives per hour; T/VC(%) = percentage of *-tit-* causatives per verbal clause.

[62] Figures in this table reflect all and only utterances containing *-tit-* causatives which are complete and fully intelligible, and are not exact imitations, exclamations, routines, or self-repetitions for emphasis or comprehension. Utterances which otherwise meet these criteria but are identical to a previous utterance in the same taping session are also excluded for reasons given in footnote 36. Were the latter to be included, the following numbers of *-tit-* causatives should be added to table 25: A2;6 - 1, A3;3 - 1, J2;0 - 4, J2;5 - 1, M2;6 - 10, S3;6 - 1.

TABLE 26: *Frequency of use of* -tit- *causatives per verbal clause by age*

	2;0-2;6	2;7-3;2	3;3-3;6
No. of verbal clauses	792	1164	628
No./% of *-tit-* causatives	31/3.9	10/0.9	12/1.9

TABLE 27: *Frequency of use of* -tit- *causatives per verbal clause by general MLU*

	2.00-2.49	2.50-2.99	3.00-3.49
No. of verbal clauses	71	1195	1318
No./% of *-tit-* causatives	2/2.8	22/1.8	29/2.2

TABLE 28: *Frequency of use of* -tit- *causatives per verbal clause by verbal MLU*

	3.25-3.99	4.00-4.74	4.75-5.49
No. of verbal clauses	506	1328	750
No./% of *-tit-* causatives	8/1.6	24/1.8	21/2.8

The figures for the youngest group in table 26 are somewhat skewed because the youngest child in the study, the first two of whose sessions appear here in the youngest group, is rather precocious in comparison with the other children in the study. The figures for the lowest MLU group in table 27 are skewed becuase they reflect only a small number of utterances from one child. Figures for the remaining groups across tables 26 through 28 show a slight developmental trend towards increase in use of *-tit-* causative structures in accordance with increase in both age and MLU.

Data in table 29 summarize the use of *-qu-* causative structures across

the four subjects.

TABLE 29: *Summary of* -qu- *causative data*[63,64]

CHILD	HRS	VC	*-QU-*	Q/HR	Q/VC(%)
A2;6	1.93	103	0	0.00	0.00
A2;11	0.95	97	1	1.05	1.03
A3;3	2.30	225	1	0.43	0.44
J2.0	2.05	220	1	0.49	0.45
J2.5	1.87	308	4	2.14	1.30
J2.9	1.95	321	4	2.05	1.25
M2;6	2.05	161	0	0.00	0.00
M2;10	2.43	343	0	0.00	0.00
M3;3	1.00	121	1	1.00	0.83
S2;10	2.02	71	0	0.00	0.00
S3;2	2.38	332	1	0.42	0.30
S3;6	2.35	282	0	0.00	0.00
TOTAL	23.28	2584	13	0.56	0.50

In tables 30 through 32, the data are grouped to show potential developmental trends in use of the *-qu-* causative structure by age (table 30), general MLU (table 31), and verbal MLU (table 32).

[63] HRS = hours of tape; VC = number of verbal clauses; *-QU-* = number of *-qu-* causatives; Q/HR = number of *-qu-* causatives per hour; Q/VC(%) = percentage of *-qu-* causatives per verbal clause.

[64] Figures in this table reflect all and only utterances containing *-qu-* causatives which are complete and fully intelligible, and are not exact imitations, exclamations, routines, or self-repetitions for emphasis or comprehension. There are no utterances containing *-qu-* causatives which are identical to a previous utterance in the same taping session.

TABLE 30: *Frequency of use of* -qu- *causatives per verbal clause by age*

	2;0-2;6	2;7-3;2	3;3-3;6
No. of verbal clauses	792	1164	628
No./% of *-qu-* causatives	5/0.6	6/0.5	2/0.3

TABLE 31: *Frequency of use of* -qu- *causatives per verbal clause by general MLU*

	2.00-2.49	2.50-2.99	3.00-3.49
No. of verbal clauses	71	1195	1318
No./% of *-qu-* causatives	0/0.0	3/0.3	10/0.8

TABLE 32: *Frequency of use of* -qu- *causatives per verbal clause by verbal MLU*

	3.25-3.99	4.00-4.74	4.75-5.49
No. of verbal clauses	506	1328	750
No./% of *-qu-* causatives	1/0.2	3/0.2	9/1.2

The figures in table 30 show a slight developmental decrease in use of causative *-qu-* by age. However, these figures are likely skewed by the fact that the youngest group includes data from the first two sessions of the youngest child in the study who is rather precocious in comparison with the other children in the study. Figures in both tables grouped by MLU show a slight developmental increase in use of causative *-qu-* by MLU.

Across both *-tit-* and *-qu-* causatives, it is clear from the above tables that both are used in the data sample, though infrequently. In addition, a slight tendency for use of both of these to increase in accord with an increase in

(especially verbal) MLU is suggested.

In the following sections, the actual form that these morphological causative structures take is examined.

4.2.1.2 Unanalyzed routines

The earliest uses of morphological causatives in the data sample constitute unanalyzed routines. In each of the established routines it is clear that the child intends to express the notion of causation. However, the individual morpheme is not yet properly segmented from the relevant surrounding material. Each use by itself is correct, but the fact that there is such a predominance of one and only one (type of) form during a particular taping session is a relatively clear indication that these forms constitute unanalyzed routines for the children at these ages. Three such routines prevail in the data.

4.2.1.2.1 *-tilauq-*

Three of the four children, in their earliest data samples, use the morpheme *-tit-* in conjunction with the politeness morpheme *-lauq-* and an imperative inflection. It is argued here that *-tilauq-* constitutes an unanalyzed routine for these children. All 14 tokens of use of *-tit-* by Mae at 2;6 use the form *-tilauq-*. This form is used with a variety of imperative inflections, but always appears without a verb root[65]. Examples are in (67).

[65] Michael Fortescue (personal communication) rightly points out that colloquial adult usage of Inuktitut sometimes permits word-internal morphemes to be used without the expected verbal root. However, the totality of this usage in Mae's causative utterances at this age seems to indicate something more subtle in this case.

(67) a. *Tilauruk.*

tit-lauq-guk

CAUS-POL-IMP.2sS.3sO

'(You) make it do X.'

(asking mother or father to remove her sock; braid her doll's hair; fix her doll; put back a magazine; make her doll sit on a container; get food for her; remove seal skin boots)

b. *Tilaurlagu?*

tit-lauq-lagu

CAUS-POL-IMP.1sS.3sO

'Shall I make it do X?'

(asking her father if she should remove his slippers from his duffle socks; asking her mother if she should put on a video)

c. *Tilaurta?*

tit-lauq-ta

CAUS-POL-IMP.1pS

'Shall we make (it) do X?'

(wanting her mother to return to a game of asking and answering questions about the cover on a Cinderella video)

d. *Tilaukkit.*

tit-lauq-kkit

CAUS-POL-IMP.2sS.3pO

'(You) make them do X'

(telling her father to put back magazines; telling her mother to increase the volume on the television)

Mae seems to understand *-tilauq-* at this stage as a form to be used when she wants to have herself or someone else do something; she never uses *-tit-* in other than an imperative context. While she realizes that *-tit-* can be used with more than one inflection, she does not yet seem to recognize that it must normally be attached to a verbal stem.

Juupi at 2;0 has a similar strategy, though it is different from Mae's in two respects. First, Juupi always uses the *-tilauq-* form with a verbal stem. In

this way, he seems slightly more advanced in his understanding of the morphological requirements of *-tit-* than Mae. However, Juupi only uses *-tilauq-* with one imperative inflection, *-nnga-* 'IMP.2sS.1sO', and in this way he seems less advanced than Mae. Thirteen of his 14 tokens of the *-tit-* causative morpheme at this age use this set form following a full verbal stem, as in (68).

(68) a. *Takutilaunnga.*
taku-tit-lauq-nnga
see-CAUS-POL-IMP.2sS.1sO
'Make me see.'
(wanting to be lifted up to the window to see outside; wanting to watch the dog urinate on the floor; wanting to see his son[66])

b. *Ataatamuurtilaunnga.*
ataata-mut-uq-tit-lauq-nnga
father-ALL.SG-go-CAUS-POL-IMP.2sS.1sO
'Make me go to father.'
(wanting to be taken to join his father who is outside)

c. *Sikituurtilaunnga.*
sikituuq-tit-lauq-nnga
skidoo-CAUS-POL-IMP.2sS.1sO
'Make me ride the skidoo.'
(wanting to have a ride on the skidoo)

d. *Paamputilaunnga.*[67]
paampu-tit-lauq-nnga
wear.diaper-CAUS-POL-IMP.2sS.1sO
'Make me wear diapers.'
(wanting to have his diapers put on)

---

[66] The "son" referred to here is addressed as such by Juupi according to the practise of fictive kinship mediated through namesake relations (Vallee, 1962; Guemple, 1965).

[67] The word for 'wear diaper' here is derived from the brand name 'Pampers', a popular brand of disposable diapers in arctic Quebec.

c. *Ikirtilaunnga.*

ikiC-tit-lauq-nnga

light-CAUS-POL-IMP.2sS.1sO

'Make me turn it on.'

(wanting his mother to take him to the light switch so he can turn on the light)

f. *Piirtilaunnga.*

piiq-tit-lauq-nnga

remove-CAUS-POL-IMP.2sS.1sO

'Let me get off.'

(wanting his sister to let him down)

For Juupi at this age, then, it appears that the entire form *-tilaunnga* is an unanalyzed routine which he uses to get people to do things for or to him.

Suusi uses the same strategy in one of her two uses of *-tit-* at 2;10, as shown in (69).

(69) *Tilaunnga.*

tit-lauq-nnga

CAUS-POL-IMP.2sS.1sO

'Make me do X.'

(asking her mother to dial the phone for her)

Mae also uses this strategy in one of her two uses of *-tit-* at 2;10, as shown in (70).

(70) *Kutsutaartilaunnga.*

kutsuk-taaq-tit-lauq-nnga

gum-acquire-CAUS-POL-IMP.2sS.1sO

'Make me get gum.'

(wanting someone to give her gum)

However, it is not clear that she is still using *-tilauq-* as an unanalyzed routine here. First, she never used the inflection *-nnga-* with *-tilauq-* in the data sample taken at 2;6, though of course this does not necessarily mean that she did not ever use it in this form. Second, all her previous uses of *-tilauq-* were without a verbal stem, and here she uses a verbal stem. Third, her other use

of *-tit-* at 2;10 is in a quite different structure, as shown in (71).

(71) *Una am silamuutisijara.*

u-na am sila-mut-uq-tit-si-jara

this.one-ABS.SG um outside-ALL.SG-go-CAUS-PRES-PAR.1sS.3sO

'I'll make this one go outside.'

(intending to take a doll outside on her toy ATV)

There is no evidence of the form *-tisijara* being an unanalyzed routine in the data[68]. The fact that *-tit-* is being used here in two quite different forms indicates that Mae has probably analyzed *-tit-* as a unique morpheme by this age.

4.2.1.2.2 *-titau-*

Mae at 3;3 and Suusi at 2;10 seem to have a strategy of treating the combination of the causative morpheme *-tit-* and the passive morpheme *-jau-* as one unanalyzed unit. Mae produces 3 instances of *-tit-* at this age, all of them using the form *-titau-* with a bare root, one with no inflection and two with different inflections, as exemplified in (72).

(72) a. *Anaanali marruni titau titau titau.*

anaana-li marruk-nik tit-jau tit-jau tit-jau

mother-and two-MOD.PL CAUS-PASS CAUS-PASS CAUS-PASS

'Mother, (we) were made were made were made two.'

b. *Jinilu titaulaujugu ilai?*

Jini-Ø-lu tit-jau-lauq-juguk ilai

Jini-ABS.SG-and CAUS-PASS-PAST-PAR.1dS right

'With Jeannie we two were made, right?'

Suusi produces one instance of this construction with a verb root but no inflection, as in (73).

---

[68] Though two of the children use either *-tijara* or *-tisijara* in the data, neither has this as their only form with *-tit-* during the given data session, and neither uses more than one instance of either form during a given session.

(73) *Arqatitau.*

arqa-tit-jau

get.down-CAUS-PASS

'(Let me) be made to get down.'

(wanting a friend who is blocking her way to move so that she can get down the stairs)

It is not clear from these data alone that the *-titau-* combination is in fact one unanalyzed unit for these children. Two types of evidence would seem to support such a position, while two types of evidence cast doubt on this interpretation.

The first piece of evidence in favour of treating *-titau-* as an unanalyzed unit is the fact that all of the instances of *-titau-* in the data have either no verbal stem (72b) or no inflection (73) or both (72a). If the morphology of *-tit-* and *-jau-* were understood at this point, one would expect at least one instance of adult-like use with appropriate verbal stem and inflection. A second piece of evidence in favour of treating *-titau-* as an unanalyzed unit is the fact that the other instances of *-tit-* used by the children at these ages are not productive. Mae has no other instances of *-tit-*. Suusi has one other, given in (69), which is not productive.

The first piece of evidence that casts doubt on treating *-titau-* as an unanalyzed unit is that *-jau-* is being used productively by both children at these ages, as discussed in chapter 3. The second piece of evidence is that Mae seems to be using *-tit-* productively at 2;10, as shown in examples (70) and (71) above. These two pieces of evidence both raise the question of whether a child may continue to use a morpheme in one or more unanalyzed routines either at the same time as or after he or she is using it productively in other instances. I would argue that this is in fact possible[69].

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[69] As a piece of anecdotal evidence in favour of this position, I was 8 or 10 before I realized that Portage Avenue, one of the main streets of Winnipeg, was actually two separate words and not one word pronounced /portajavenue/, though I clearly knew that *avenue* was a separate word in other contexts and used it in combination with several different street names. Similar types of evidence are reported in the literature, as discussed in Bowerman (1974). Berko (1958) notes that children as old as 7 are often unaware that compound words such as *mailman* and *blackboard* are made up of two separate morphemes, though they are likely

Note that this same issue arises with respect to the use of *-tit-* by Juupi at 2;0. As noted above, 13 of the 14 tokens of his use of *-tit-* were in the unanalyzed routine *-tilaunnga.* The other use was in a rather more advanced utterance where *-tit-* would seem to be being used productively, as shown in (74).

(74) *Aah nasanga piirtautillugu.*
aah nasaq-nga piiq-jau-tit-lugu
um hat-ABS.3Ssg remove-PASS-CAUS-ICM.XxS.3sO
'Someone/thing caused his hat to be removed.'

The overwhelming number of uses of *-tilaunnga* at this age would seem to clearly argue for an unanalyzed routine, even in the face of this one instance of seemingly productive use.

In light of the arguments above, it seems that *-titau-* may be used as an unanalyzed routine for Mae and Suusi at the ages given. However, this point cannot be established conclusively and would benefit from examination of further data.

4.2.1.2.3 *-qujau-*

A third candidate for an unanalyzed routine is the combination of the causative morpheme *-qu-* and the passive morpheme *-jau-*. Of the 13 instances of *-qu-* in the data, 5 of them employ the *-qujau-* combination (75). In addition, of the 4 instances of *-qu-* not in the final 2 sessions of data from Juupi, all but one are used in combination with *-jau-*. The remaining use of *-qu-* constitutes an error (76), as discussed in section 4.2.1.4.2.

(75) a. *Imailuuqujautsunga.*
imaak-it-luuq-qu-jau-tsunga
like.this-be-do-want-PASS-CTM.1sS
'I was told to do like this.' (Alec 2;11)

---

cognitively aware of the individual referents of the separate morphemes. Gleitman & Gleitman (1970, p. 87) found differential results for children and adults in novel compound formation. Children asked to provide a name for a dog who brings the mail would often respond "a dog mailman" whereas adults typically respond "a mail dog".

b. *Qujaunnginavit.*
qu-jau-nngit-gavit
want-PASS-NEG-CSV.2sS
'You aren't wanted to.' (Alec 3;3)

c. *Takuqujaujunga.*
taku-qu-jau-junga
see-want-PASS-PAR.1sS
'I am wanted to see (it).' (Juupi 2;5)

d. *Ittumut qaiqujaugavit.*
Ittuq-mut qai-qu-jau-gavit
Ittuq-ALL.SG come-want-PASS-CSV.2sS
'You were asked to come by Ittuq.' (Juupi 2;9)

e. *Qujaunnginama.*
qu-jau-nngit-gama
want-PASS-NEG-CSV.1sS
'I am not wanted to.' (Mac 3;3)

(76) **Qimmiq tursuumiiqujijara maunga.*
qimmiq-Ø tursuuq-mi-it-qu-ji-jara ma-unnga
dog-ABS.SG porch-LOC-be-want-ANTP-PAR.1sS.3sO here-ALL
'I want the dog to be on the porch here.' (Suusi 3;2)

Only in the final two sessions from Juupi is *-qu-* used more than once, as shown in the examples in (78) below. In both these sessions it is productive in that it is used in combination with a different verbal stem and a different inflection in each instance of its use.

The data discussed in this section do not conclusively point to an analysis of *-qujau-* as an unanalyzed routine. Evidence supporting this conclusion derives from the fact that *-qu-* is used in combination with *-jau-* in all but the most advanced sessions (i.e. Juupi 2;5 and 2;9). Evidence against this conclusion comes from the productive use of *-jau-* in all the sessions in which *-qujau-* is used. It is certainly possible, as discussed in the preceding section, for productive use of *-jau-* and unanalyzed use of *-qujau-* to coexist. It is conceded here that the evidence for the existence of *-qujau-* as an

unanalyzed routine is not strong, and would certainly benefit from corroboration with further data.

4.2.1.3 Adult-like use

The causative morphemes *-tit-* and *-qu-* are used in forms which are not unanalyzed routines by the four children in examples such as those in (77) and (78) below. Here, both the notion of causativity and the exact structure of the causative seem to be mastered in that the causative is used in appropriate semantic contexts with a variety of verb roots and inflections.

(77) a. *Ataaguurtitara.*
ata-ngagut-uq-tit-jara
under-VIA.3Ssg-go-CAUS-PAR.1sS.3sO
'I made it go through underneath.' (Alec 3;3)
(rolling a toy car such that it goes under an extension cord)

b. *Una iirqatitaq.*
u-na iirqaC-tit-jaq
this.one-ABS.SG swallow-CAUS-PP
'This one is being made to take medication.' (Alec 3;3)
(a bear in a cartoon is being forced to take medicine)

c. *Paniit itsivatitait?*
panik-it itsiva-tit-jait
daughter-ABS.2Ssg sit-CAUS-PAR.2sS.3sO
'Are you making your daughter sit?' (Alec 3;3)
(his cousin is making her doll sit down)

d. *Uqrutillagu?*
uqru-tit-lagu
fall-CAUS-IMP.1sS
'Should I make it fall over?' (Juupi 2;5)
(threatening to tip over a chair which he has been rocking)

c. **Taimailuurunnailunga akkimi takutilaaraminga?*[70]

ta-imaak-it-luuq-gunnaq-it-lunga akki-mik taku-tit-laaq-gaminga

PRE-like.this-be-do-can-NEG-ICM.1sS fish.hook-MOD.SG see-CAUS-FUT-CSV.4sS.1sO

'If I don't do this, will you show me [= make me see] the fish hook?' (Juupi 2;5)

(making a deal with his cousin who wants him to stop banging on the table)

f. *Sanarvatigialaurlakka.*

sanarvaq-tit-giaq-lauq-lakka

put.in.order-CAUS-PROG-POL-IMP.1sS.3pO

'I'll put them [= make them be placed] somewhere.' (Juupi 2;5)

(announcing that he will put away his father's boots)

g. *Maunngatilaunnga.*

ma-unnga-aq-tit-lauq-nnga

here-ALL-arrive-CAUS-POL-IMP.2sS.1sO

'Put me here [= make me go to here].' (Juupi 2;5)

(asking his mother to put him on the sleeping platform)

h. *Imirartinnga.*

imiraq-tit-nnga

juice-CAUS-IMP.2sS.1sO

'Give me juice [= make me drink juice].' (Alec 2;6)

i. *Niarquatitara panik.*

niarquaq-tit-jara panik

bump.head-CAUS-PAR.1sS.3sO daughter

'I made it bump (its) head, daughter.' (Suusi 3;6)

(telling her playmate that she has made a doll bump its head)

---

[70] In this utterance Juupi uses an incorrect verbal inflection, possibly reflecting only a pronunciation error. The final word in this utterance should be:

(i) *takutilaaravinga.*
taku-tit-laaq-gavinga
see-CAUS-FUT-CSV.2sS.1sO
'you'll show me'

However, this error does not affect usage of the causative.

j. *Ataanuurtitara.*[71]

ata-nganut-uq-tit-jara

under-ALL.3Ssg-go-CAUS-PAR.1sS.3sO

'I made it go to underneath.' (Suusi 3;6)

(rolling a toy car such that it goes under an extension cord)

(78) a. *Auka, qaiqunngigakkit.*

auka qai-qu-nngit-gakkit

no come-want-NEG-CSV.1sS.2sO

'No, I don't want you to come.' (Juupi 2;5)

(telling his mother not to come)

b. *Una aullaqulauruk.*

u-na aullaq-qu-lauq-guk

this.one-ABS.SG leave-want-POL-IMP.2sS.3sO

'(You) tell this one to leave.' (Juupi 2;5)

(telling his mother to send the researcher away)

c. *Qimmialuk taavaniiqunngilauruk.*

qimmiq-aluk-Ø ta-av-ani-it-qu-nngit-lauq-guk

dog-EMPH-ABS.SG PRE-there-LOC-be-want-NEG-POL-IMP.2sS.3sO

'Tell the dog not to be over there.' (Juupi 2;5)

(tells his mother to get the dog to move away so it won't hide his knife)

---

[71] This utterance (repeated later as (91a)) should actually be:

(i) *Ataaguurtitara.*
ata-ngagut-tit-jara
under-VIA.3Ssg-CAUS-PAR.1sS.3sO
'I made it go through underneath.'

Since Suusi rolls the car underneath the extension cord to the other side, the vialis case should be used; the allative wrongly implies that the car remains under the cord. However, this error does not affect the use of the causative morpheme in the utterance.

d. *Qunnginakku.*

qu-nngit-gakku

want-NEG-CSV.1sS.3sO

'I don't want it to.' (Juupi 2;9)

(doesn't want his new knife to do something)

4.2.1.4 Productivity

Several types of data show that the causative morphemes are used productively after being used in unanalyzed routines. Since there are many more instances of *-tit-* than *-qu-* in the data, the former will be the primary focus of this section.

4.2.1.4.1 Incorrect allomorph

Neither of the morphemes *-tit-* and *-qu-* change their initial phoneme as an effect of being preceded by a morpheme ending in a consonant; *-qu-* forces deletion of any immediately preceding consonant while *-tit-* allows any immediately preceding consonant to remain intact[72]. Since *-qu-* ends in a vowel while *-tit-* ends in a consonant, *-qu-* takes the former allomorph of *g/r* and *j/t* allomorphic pairs while *-tit-* takes the latter. The forms in (79) show the effects of these morphophonemic patterns.

(79) a. *Paniqujara.*

paniq-qu-jara

dry-want-PAR.1sS.3sO

'I want it to dry.'

b. *Panirtitara.*

paniq-tit-jara

dry-CAUS-PAR.1sS.3sO

'I made it dry.'

---

[72] Though note that *Tarramiut* follows the Double Consonant Law (Smith, 1977; Massenet, 1978; Lipscomb, 1991). This has the effect that no CCV(V)CC sequence is allowed. The first consonant of the second consonant pair must delete, going left to right through a word. Thus, a structure such as CVCCVCVCCVC would be permitted, but a structure such as CVCCVCCVCVC would not be permitted.

No errors are evident in including a consonant preceding *-qu-* where it should be deleted or in omitting a consonant preceding *-tit-* where it should be included, though such errors may exist since the data are not ideally suited to attending to very fine phonological distinctions. No errors are evident in selecting the *-r-* or *-t-* allomorphs after *-qu-*, though at least one error is noted in selecting the *-j-* allomorph after *-tit-*, as in (80).

(80) a. **Imiq pijariirtijara.*
imiq-Ø pi-jariiq-tit-jara
drink-ABS.SG PLEON-finish-CAUS-PAR.1sS.3sO
'I made the drink finish (doing something).' (Alec 2;6)

However, as discussed in section 3.2.3.1, this is more likely the reflection of changing morphophonemic patterns in *Tarramiut* than the clear existence of an error. Thus, no clear errors in allomorph selection are evident in the data.

4.2.1.4.2 Innovative forms

A second possible indication of productivity of the causative is use of the causative morpheme with clearly innovative forms. One error from Alec is particularly striking in this regard, as in (81a); (81b) provides the correct adult-like form.

(81) a. **Imiq pijariirtijara.*
imiq-Ø pi-jariiq-tit-jara
drink-ABS.SG PLEON-finish-CAUS-PAR.1sS.3sO
'I made the drink finish (doing something).' (Alec 2;6)
(explaining why it is okay for him to turn his juice glass upside down on his face)

b. *Imiriirtara.*
imiq-jariiq-jara
drink-finish-PAR.1sS.3sO
'I finished drinking it.'

The verb root *pijariiq-* in adult usage is ambiguous in that it can be either transitive or intransitive; in either case it takes an external agentive NP in subject position and is not causative in its transitive form. Here Alec treats

it as a verb which takes an internal experiencer argument and thus mistakenly assesses the transitive form as being a lexical causative. This is analogous to the type of error illustrated in (49) in which a non-causative transitive verb is used in the intransitive form as a lexical causative, though in (81) an overt causative morpheme is used.

A second error of this type comes from Suusi at 3;2. Suusi's friend comes over to play and brings with her a small puppy. Suusi wants to let the puppy into the house, or at least into the porch, but her mother is against it. In the utterances surrounding this event, Suusi demonstrates that she is at the beginning of figuring out the correct use of the morpheme *-qu-*. In (82a), Suusi begins by telling her mother she wants the dog inside. However she uses the morpheme meaning *want* that maintains the valency of the original verbal stem rather than adding an external agent of wanting, as illustrated in the adult targets in (82b) and (82c).

(82) a. **Itirumajarali.*
itiq-guma-jara-li
enter-want-PAR.1sS.3sO-but
'But I want to enter it.'

b. *Itiqujara.*
itiq-qu-jara
enter-want-PAR.1sS.3sO
'I want it to enter.'

c. *Itirtigumajara.*[73]

itiq-ti-guma-jara

enter-CAUS-want-PAR.1sS.3sO

'I want to make it enter.'

Her mother responds with (83).

(83) *Ii qimmimik. Itirsimaaviugumanngi!*

iih qimmiq-mik itiq-sima-vik-u-guma-nngit

hey dog-MOD.SG enter-PERF-place-be-want-NEG

'Hey it's a dog . (I) don't want it to be inside (the house)!'

Suusi picks up on the use of perfective *-sima-* here, and uses it in (84a) as well as using the correct inflection for the construction, but still uses *-guma-* rather than *-qu-*, and therefore does not convey by this the meaning she intends of wanting the dog in the house. Possible adult targets are in (84b) and (84c).

(84) a. **Itisimarumajugut.*

itiq-sima-guma-juguk

enter-PERF-want-PAR.1dS

'We want to be inside.'

b. *Itirsimaqujavuk.*

itiq-sima-qu-javuk

enter-PERF-want-PAR.1dS.3sO

'We want it to be inside.'

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[73] The verb root *itiq-* permits causativization by means of either a lexical causative structure or an overt causative morpheme. These two means also accord with meaning differences as indicated in (i) and (ii).

(i) *Qimmiq itirtara.*
itiq-jara
enter-PAR.1sS.3sO
'I brought the dog in.'
(the dog cannot walk by itself so I have to carry it)

(ii) *Qimmiq itirtitara.*
qimmiq itiq-tit-jara
dog-ABS.SG enter-CAUS-PAR.1sS.3sO
'I let the dog in.'
(the dog can walk by itself; I am only opening the door so it can come in)

In the utterances in (82) through (85), the dog in question can walk by itself so the causative morpheme is obligatory. It is possible that at least the error in (82a) occurs because Suusi does not yet understand this difference in use of causativization mechanisms.

c. *Itirsimaqujijuguk.*

itiq-sima-qu-ji-juguk

enter-PERF-want-ANTP-PAR.1dS

'We want it to be inside.'

Finally after another minute, Suusi says (85a), this time correctly using *-qu-*, but since she uses the the antipassive as well, the agreement between verbal stem, inflection, and nominal case is incorrect. Sentences in (85b) and (85c) show possible adult targets.

(85) a. **Qimmiq tursuuniiqujijara, maunga.*

qimmiq-Ø tursuuq-ni-it-qu-ji-jara ma-unnga

dog-ABS.SG porch-LOC-be-want-ANTP-PAR.1sS.3sO here-ALL

'I want the dog to be in the porch, to here.' (Suusi 3;2)

b. *Qimmiq tursuuniiqujara.*

qimmiq-Ø tursuuq-ni-it-qu-jara

dog-ABS.SG porch-LOC-be-want-PAR.1sS.3sO

'I want the dog to be in the porch.'

c. *Qimmimik tursuuniiqujijunga.*

qimmiq-mik tursuuq-ni-it-qu-ji-junga

dog-MOD.SG porch-LOC-be-want-ANTP-PAR.1sS

'I want the dog to be in the porch.'

Thus it seems that Suusi at this age is struggling with the correct use of *-qu-*, especially in relation to the non-valency-alternating desiderative *-guma-*.

4.2.1.4.3 Use/omission alternation

A third piece of evidence of productivity of the causative comes from alternation between use and omission of the causative morpheme. In a series of utterances at 3;2, Suusi alternates between use and omission of the causative morpheme *-tit-*. Suusi has amassed a pile of stuffed animals at the top of the stairs and is pushing them down with some occasional help from the researcher. In the utterances in (86) through (90) she discusses making the stuffed animals fall using the verb *ijukkaq-*, the correct verb for an animate being falling. This verb, while unaccusative and taking an internal theme

argument, does not enter into the causative alternation, but rather requires the morpheme *-tit-* to form a causative. However, Suusi seems to be in a stage of uncertainty since she alternates between the two causativizing strategies, sometimes using *-tit-* and sometimes using the bare verb with a transitive inflection, to refer to making the stuffed animals fall. At the top of the stairs, she says (86a) just before pushing one stuffed animal down the stairs. The adult target is in (86b).

(86) a. **Ijukkasi ... aalai ijukkasijara.*
ijukkaq-si aalai ijukkaq-si-jara
fall-PRES okay fall-PRES-PAR.1sS.3sO
'Fall ... okay, I'll fall it.

b. *Ijukkatitara.*
ijukkaq-tit-jara
fall-CAUS-PAR.1sS.3sO
'I'll make it fall.'

Then later she says (87) when warning the researcher not to push a stuffed animal down the stairs.

(87) *Ijukkatinagu.*
ijukkaq-tit-nagu
fall-CAUS-CTM.NEG.4sS.3sO
'Don't make it fall.'

Later she asks the researcher if she should push another stuffed animal down the stairs, using (88a). The sentence in (88b) shows the adult target.

(88) a. **Ijukkalagu?*
ijukkaq-lagu
fall-IMP.1sS
'Want me to fall it?'

b. *Ijukkatilagu.*
ijukkaq-tit-lagu
fall-CAUS-IMP.1sS
'Want me to make it fall?'

Finally, she says (89) asking the researcher to push the stuffed animal down

the stairs.

(89) *Ijukkatilauruk.*
ijukkaq-tit-lauq-guk
fall-CAUS-POL-IMP.2sS.3sO
'Make it fall.'

Suusi only uses the causative *-tit-* with the verb *ijukkaq-* at this age, but it appears here that she is trying to work out, at least with this verb, whether or not an overt causative is required.

4.2.1.4.4 Control of scope effects

Additional evidence suggesting productivity would be utterances illustrating that subjects control scope effects of the causative in interaction with other verb internal morphemes such as the passive. There is no clear evidence in any one session of the data sample to support the idea that children have such knowledge at this stage. However, as previously discussed in section 3.2.3.4, at least one subject shows control of scope effects with the causative in interaction with the passive across two subsequent sessions. The examples are repeated here for convenience. In (90a) Juupi has produced a word with the causative morpheme outside the passive, whereas in (90b) he places the passive morpheme outside the causative.

(90) a. *Nasanga piitautillugu.*
nasaq-nga piir-jau-tit-lugu
hat-ABS.3Ssg remove-PASS-CAUS-ICM.XxS.3sO
'(Someone/thing) caused his hat to be removed.' (Juupi 2;0)

b. *Allanguartitaujunga.*[74]

allanguaq-tit-jau-junga

draw-CAUS-PASS-PAR.1sS

'Someone is letting me draw a picture.' [= I am being made to draw a picture] (Juupi 2;1)[75]

4.2.1.4.5 Causative/non-causative alternation

Alternation between non-causative and causative uses of the same verb root would provide additional evidence for productivity of the causative. Several examples of this occur within the data, both within the utterances of one speaker, and across two speakers.

Two examples from Suusi show causative/non-causative alternation within the same speaker. In (91), Suusi is playing with a toy car, pushing it down a mini hill in the carpet and trying to make it go underneath a slightly raised extension cord. After one successful attempt she utters (91a), and after another she utters (91b).

(91) a. **Ataanurtitara*[76].

ata-nganut-uq-tit-jara

under-ALL.3Ssg-go-CAUS-PAR.1sS.3sO

'I made it go to underneath.'

b. **Ataanuurtuq.*

ata-nganut-uq-juq

under-ALL.3Ssg-go-PAR.3sS

'It went underneath.' (Suusi 3;6)

In (92), Suusi and her cousin are playing with dolls. Suusi is afraid that she has banged the head of one of the dolls, and asks her cousin (92a) and then

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[74] See footnote 44 for a discussion concerning the productivity of this utterance.

[75] This example is taked from data not specifically analyzed for this thesis, but collected as part of the same project and reported in Allen & Crago (1993a).

[76] Both this utterance and the following should use the morpheme *-ngagut-* 'VIA.3Ssg' in place of *-nganut-* 'ALL.3Ssg' as discussed in footnote 71. However, these errors do not affect the use of the causative/non-causative alternation.

(92b).

(92) a. *Niarquavaa?*

niarquaq-va

bump.head-INT.3sS

'Did it bump its head?'

b. *Niarquatitara?*

niarquaq-tit-jara

bump.head-make-PAR.1sS.3sO

'Did I make it bump its head?' (Suusi 3;6)

Both these examples suggest that Suusi has properly segmented the causative *-tit-* by this point, and is using it productively.

Two examples from Juupi show causative/non-causative alternation across two speakers. In both these examples, the (a) utterance is spoken by Juupi's grandmother, and the (b) utterance by Juupi. In (93), Juupi is wandering around the livingroom. His grandmother is carrying a diaper, and says (93a) to him. Juupi responds with (93b), and his diaper gets changed.

(93) a. *Paampulaullagit.*

paampu-lauq-lagit

wear.diaper-POL-IMP.1sS.2sO

'Let me put your diaper on.'

b. *Paamputilaunnga.*

paampu-tit-lauq-nnga

wear.diaper-CAUS-POL-IMP.1sS.2sO

'Put my diaper on.' [= make me wear a diaper] (Juupi 2;0)

In (94), Juupi is rocking back and forth on a chair beside a table. His mother is trying to get him to stop rocking and says (94a), intimating that if he keeps rocking on the chair, the chair will fall against the table and Juupi will bang his teeth. Juupi mischieviously responds with (94b).

(94) a. *Kigutialutit kililangamimmata ... itsivautaalu uqrupat.*
kiiguti-aluk-tit kili-langa-mi-mmata itsivautaq-aluk-Ø uqru-ppat
tooth-EMPH-ABS.2Spl bleed-FUT-also-CSV.3pS chair-EMPH-ABS.SG fall-CND.3sS
'Your teeth will bleed ... if the chair falls.'

b. *Uqrutillagu?*
uqru-tit-lagu
fall-CAUS-IMP.1sS.3sO
'Shall I let it fall?' (Juupi 2;5)

Each of these examples suggest that Juupi is using at least the semantic notion of causativity productively at these ages, though note that it was argued in section 4.2.1.2.1 that in (93b) Juupi uses *-tit-* as part of an unanalyzed unit.

4.2.1.5 Morphological causative with internally complex verb phrases

The final group of data to be discussed here consists of use of the causative morpheme with internally complex verb phrases, under the assumption that such structures constitute a more advanced level of use of the causative since they require more advanced grammatical abilities. Several examples of this occur in the data sample, as noted in the sections below. While several of these examples occur elsewhere in the text, they are repeated here for convenience.

4.2.1.5.1 Noun incorporation

Several examples of causative in conjunction with noun incorporation (95) and related structures locative incorporation (96) and adverbial incorporation (97).

(95) a. *Kutsutaartilaunnga.*
kutsuk-taaq-tit-lauq-nnga
gum-acquire-CAUS-POL-IMP.2sS.1sO
'Give me gum [= make me acquire gum].' (Mae 2;10)

b. *Uuminga tiiturtikainnalauunga.*
u-minga tii-tuq-tit-kainnaq-lauq-nnga
this.one-MOD.SG tea-consume-CAUS-for.a.while-POL-IMP.2sS.1sO
'Give me tea [= make me drink tea] with this one.' (Juupi 2;5)

(96) a. *Qimmialuk taavaniiqunngilauruk.*
qimmiq-aluk-Ø ta-av-ani-it-qu-nngit-lauq-guk
dog-EMPH-ABS.SG PRE-there-be-LOC-want-NEG-IMP.2sS.3sO
'Tell the dog not to be over there.' (Juupi 2;5)

b. *Una am silamuutisijara.*
u-na am sila-mut-uq-tit-si-jara
this.one-ABS.SG um outside-ALL.SG-go-CAUS-PRES-PAR.1sS.3sO
'I'll make this one go outside.' (Mac 2;10)

(97) a. *Imailuuqujautsunga.*
imaak-it-luuq-qu-jau-tsunga
like.this-be-do-want-PASS-CTM.1sS
'I was told to do like this.' (Alec 2;11)

4.2.1.5.2 Passive

Several examples of both *-tit-* and *-qu-* in combination with passive *-jau-* are discussed in sections 4.2.1.2.2 and 4.2.1.2.3, where it was argued that these combinations may well constitute unanalyzed units for the children at the ages discussed. One additional example of this combination, discussed in detail in section 3.2.3.2, is presented in (98a), with the adult target in (98b).

(98) a. **Anaana kiinaujartautiniarqunga ... uuminga ... atjiliurutimut.*
anaana kiinaujaq-jau-tit-niaq-vunga u-minga atjiliuruti-mut
mother money-PASS-CAUS-FUT-IND.1sS this.one-MOD.SG camera-ALL.SG
target: 'Mother, I will be given money ... by this one ... by the camera.' (Juupi 2;9)

b. *kiinaujartaatitauniarqunga.*

kiinaujaq-taaq-tit-jau-niaq-vunga

money-acquire-CAUS-PASS-FUT-IND.1sS

'I'll get some money.' [= I'll be made to acquire money]

This utterance represents the only attempt in the data to use three valency-altering mechanisms within one verbal complex. Such a construction is clearly at the upper limit of Juupi's grammatical ability at this age since he is incorrect in both the use and relative placement of the affixes.

4.2.1.5.3 Antipassive

The overt antipassive morpheme is used correctly following the causative in several examples from Juupi shown in (99); all but one are in the final two sessions which are the most grammatically advanced data in this study.

(99) a. *Tamaaniiqujinngitualu.*

ta-ma-ani-it-qu-ji-nngit-juq-aluk

PRE-here-LOC-be-want-ANTP-NEG-PAR.3sS-EMPH

'He doesn't want (me) to be here.' (Juupi 2;0)

b. *Panirtisilaurlu?*

paniq-tit-tsi-lauq-luk

dry-CAUS-ANTP-POL-IMP.2dS

'Shall we make bannock [= make something dry]?' (Juupi 2;5)

c. *Aullaitsigiaqarqunga.* [target: *aullatitsigiaqarqunga*]

aullaq-tit-tsi-giaqaq-vunga

leave-CAUS-ANTP-must-IND.1sS

'I have to send something away [= make something leave].'

(Juupi 2;9)

d. *Atjiliurijialuga nitjaatitsisuungunngitualu!*

atjiliuriji-aluk-ga nitjaa-tit-tsi-suuq-u-nngit-juq-aluk

photographer-EMPH-my make.sound-CAUS-ANTP-HAB-be-NEG-PAR.3sS-EMPH

'My photographer isn't one who puts the (TV's) volume on [= makes the TV make sound].' (Juupi 2;9)

e. *Qujimmat.*

qu-ji-mmat

want-ANTP-CSV.3sS

'Someone wants (it) to.' (Juupi 2;9)

In each of the examples in (99), Juupi is causativizing the root verb to add an external agent, and then detransitivizing the resulting verbal stem by affixing the antipassive morpheme.

4.2.1.6 Summary of morphological causative acquisition data

In the preceding sections it has been shown that morphological causatives are used by the subjects of this research between 2;0 and 3;6. The data indicate that earliest uses of the causative morphemes are in unanalyzed routines, though the notion of causation is productive. Subsequently, the individual causative morphemes are aquired productively by the children, as shown by innovative forms, alternations between use and incorrect omission of the causative morpheme, and alternations between causative and non-causative uses of the same verb root.

In the following section, the pattern of acquisition of the lexical causative for the subjects will be discussed.

4.2.2 Lexical causative

In this section the acquisition of lexical causatives is discussed. Section 4.2.2.1 presents information on the age and frequency of use. Examples of adult-like use are given in section 4.2.2.2, while section 4.2.2.3 offers two different types of evidence of productivity. Finally, section 4.2.2.4 summarizes the data presented.

4.2.2.1 Age and frequency of use

The four children collectively produced at least one instance each of 232 different verb roots across the data set, and some 1544 tokens in total, as shown in table 33.

TABLE 33: *Verb roots used*[77,78]

CHILD	TYPES	TOKENS
A2;6	33	56
A2;11	27	61
A3;3	53	143
J2;0	48	123
J2;5	70	191
J2;9	85	218
M2;6	30	101
M2;10	57	195
M3;3	27	53
S2;10	23	39
S3;2	50	241
S3;6	39	123
TOTAL	232	1544

[77] TYPES = total number of verb types used; TOKENS = total number of utterances in which the verb root is used in the relevant construction type.

[78] Figures in this table reflect all and only utterances containing verb roots which are complete and fully intelligible, and are not exact imitations, exclamations, routines, or self-repetitions for emphasis or comprehension. Utterances which meet these criteria and are also identical to a previous utterance in the same taping session are included in the figures in this table.

Of these some 91 verb roots (435 tokens) were used in transitive syntactic frames, either with a two-argument inflection or in an antipassive construction, as shown in table 34.

TABLE 34: *Transitive uses of verb roots*

	2-ARGUMENT		ANTIPASSIVE		TOTAL	
	TYPE	TOKEN	TYPE	TOKEN	TYPE	TOKEN
A2;6	9	13	2	2	11	15
A2;11	9	19	0	0	9	19
A3;3	10	14	11	17	18	31
J2;0	5	13	6	11	9	24
J2;5	25	47	11	16	32	63
J2;9	17	31	18	33	28	64
M2;6	9	38	6	7	12	45
M2;10	15	35	9	22	21	57
M3;3	7	10	5	5	10	15
S2;10	5	5	1	1	6	6
S3;2	14	47	10	19	18	66
S3;6	8	19	5	11	12	30
TOTAL	66	291	49	144	91	435

Finally, some 37 verb roots (197 tokens) were used correctly as lexical causatives, as shown in table 35. These include the verb roots listed in table 36.

TABLE 35: *Lexical causative uses of verb roots*[79]

	2-ARGUMENT		ANTIPASSIVE		TOTAL	
	TYPE	TOKEN	TYPE	TOKEN	TYPE	TOKEN
A2;6	5	7	1	1	6	8
A2;11	6	10	0	0	6	10
A3;3	5	5	3	4	7	9
J2;0	3	5	2	2	4	7
J2;5	9	11	3	3	10	14
J2;9	6	8	8	10	12	18
M2;6	4	12	3	4	5	16
M2;10	5	15	2	2	6	17
M3;3	3	5	1	1	4	6
S2;10	1	1	0	0	1	1
S3;2	8	19	4	8	9	27
S3;6	5	11	3	3	7	14
TOTAL	26	109	20	38	37	147

[79] Figures in this table reflect all and only utterances containing lexical causatives which are complete and fully intelligible, and are not exact imitations, exclamations, routines, or self-repetitions for emphasis or comprehension. Utterances which otherwise meet these criteria but are identical to a previous utterance in the same taping session are also excluded for reasons given in footnote 36. Were the latter to be included, the following numbers of tokens of lexical causatives should be added to table 35:
Two-argument: A2;6 - 2; A2;11 - 2; A3;3 - 1; J2;0 - 2; J2;5 - 3; J2;9 - 2; M2;6 - 17; M2;10 - 3; S3;2 - 7; S3;6 - 5.
Antipassive: A3;3 - 1; J2;9 - 2; S3;2 - 3.
Total: A2;6 - 2; A2;11 - 2; A3;3 - 2; J2;0 - 2; J2;5 - 3; J2;9 - 4; M2;6 - 17; M2;10 - 3; S3;2 - 10; S3;6 - 5.

TABLE 36: *Verb roots used as lexical causatives*[80]

aaC- 'give'	*kuvi-* 'pour'	*qamiC-* 'extinguish'
aahaaq- 'hurt'	*matuq-* 'cover'	*qilaC-* 'tie'
aanniq- 'hurt'	*naavik-* 'empty'	*qimaC-* 'leave behind'
aarqiC- 'repair'	*nakat-* 'cut'	*singu-* 'squeeze'
amu- 'pull'	*nammaq-* 'suffice'	*sukkuq-* 'break'
annuraaq- 'dress'	*nani-* 'find	*taursi-* 'exchange'
atsungiq- 'lock'	*natsaC-* 'carry'	*tupaq-* 'wake up'
igiq- 'throw'	*nungu-* 'deplete'	*tuqu-* 'die'
ikiC- 'light'	*piiq-* 'remove'	*ukkuaq-* 'close door'
itiq- 'enter'	*pitatsaq-* 'add sugar'	*ukkui-* 'open door'
kamik- 'don footwear'	*puviq-* 'blow'	*usi-* 'load'
katak- 'fall'	*qaaq-* 'burst'	
kisaq- 'anchor'	*qai-* 'come'	

It is clear from these tables that the children studied are using lexical causative structures with some degree of frequency at the ages considered. The following tables show developmental patterns in use of (tokens of) lexical causative structures by age (table 37), general MLU (table 38), and verbal MLU (table 39)[81].

TABLE 37: *Frequency of use of lexical causatives per verbal clause by age*

	2;0-2;6	2;7-3;2	3;3-3;6
No. of verbal clauses	792	1164	628
No./% of lexical causatives	45/5.7	73/6.3	29/4.6

[80] Translations given are equivalent to the most compact of the variants in English where there is a different translation for the transitive and intransitive. This is done simply for ease of expression and does not intend to indicate that one form is more basic than another.

[81] The figures in these tables are calculated from the "total token" figures in table 35.

TABLE 38: *Frequency of use of lexical causatives per verbal clause by general MLU*

	2.00-2.49	2.50-2.99	3.00-3.49
No. of verbal clauses	71	1195	1318
No./% of lexical causatives	1/1.4	82/6.8	64/4.9

TABLE 39: *Frequency of use of lexical causatives per verbal clause by verbal MLU*

	3.25-3.99	4.00-4.74	4.75-5.49
No. of verbal clauses	506	1328	750
No./% of lexical causatives	36/7.1	73/5.5	38/5.1

Each of these tables shows a general trend to decrease in use of lexical causative structures as age or MLU increases. Since there are no comparative figures in the literature, it is not clear how to interpret these figures. Perhaps they are most useful for indicating that lexical causative structures occur in between 4% and 7% of verbal utterances within the age range considered. It is likely that the more revealing insights into developmental patterns in the case of lexical causatives derive from qualitative analyses rather than quantitative. Further research with a larger data sample or crosslinguistic comparison would also shed further light on the information in these tables.

The following sections present a more qualitative analysis of the acquisition of lexical causative structures. Examples are shown of adult-like use of these structures, and evidence is provided that lexical causatives are productive for the subjects considered.

4.2.2.2 Adult-like use

Some examples of adult-like use of lexical causatives in the data are shown in (100).

(100) a. *Matulaurlaguruna?*

matuq-lauq-lagu-u-na

cover-POL-IMP.1sS.3sO-this.one-ABS.SG

'Shall I cover this one?' (Alec 2;6)

b. *Taatsuminga nakailangajunga.*

ta-u-minga nakat-i-langa-junga

PRE-this.one-MOD.SG cut-ANTP-FUT-PAR.1sS

'I'm going to cut this one.' (Juupi 2;5)

c. *Una qilalaurlagu imaak?*

u-na qilaC-lauq-lagu imaak

this.one-ABS.SG tie-POL-IMP.1sS.3sO thus

'Shall I tie this one like this?' (Mac 2;10)

d. *Una qimattara.*

u-na qimaC-jara

this.one-ABS.SG leave.behind-PAR.1sS.3sO

'I left this one behind.' (Suusi 3;2)

e. *Qupirrualunni naaviijualu!*

qupirruq-aluk-nik naavik-i-juq-aluk

insect-EMPH-MOD.PL empty-ANTP-PAR.3sS-EMPH

'He spilled insects!' (Juupi 2;9)

However, it is not clear from these examples that the children are aware of the causative element inherent in these structures, or that they are using them in other than memorized forms. The following section provides several examples of use of lexical causative structures showing productivity on the part of the children.

4.2.2.3 Productivity

Two types of data show that lexical causative formation is productive for these children at the ages considered: alternation between causative and non-causative uses of the same verb, and novel creative uses of the lexical causative paradigm.

4.2.2.3.1 Causative/non-causative alternation

One piece of evidence supporting these childrens' productivity in terms of use of lexical causatives is their ability to alternate between transitive causative and intransitive non-causative uses of the same verb root in sequence and/or in similar contexts. Some examples of this alternation are given in (101) through (105).

The utterances in (101) focus on the verb root *piiq-* 'come off, take off' which is very common in the speech of all the children in both transitive causative and intransitive non-causative forms. The examples given here occur within 5 minutes of each other though they do not refer to the same context. In (101a) Suusi uses *piiq-* in its intransitive non-causative form, noting that her attempts to pull a piece of paper out of the bottom of a wagon will not be successful. In (101b) she is taking off a small cap she has been wearing, using the antipassive form of the lexical causative for this verb root.

(101) a. *Piinianngituq.*
piiq-niaq-nngit-juq
come.off-FUT-NEG-PAR.3sS
'It won't come off.'

b. *Piilirqunga mikijurulummik.*
piiq-liq-vunga miki-juq-guluk-mik
come.off-PRES-IND.1sS be.small-NOM-DIM-MOD.SG
'I'm taking off the small one.' (Suusi 3;2)

In the next set of utterances Juupi uses the verb root *aarqiC-* 'fix', another common verb root across the four children. In the first three of these utterances, Juupi is talking about a small toy organ which he has recently received. Several minutes previous to these utterances, Juupi had broken the organ by pulling off its back, and his friend Juupi's mother had fixed it for him. Now Juupi is reporting this to his own mother and says (102a) using the transitive causative form, followed immediately by (102b) using the intransitive non-causative form. Several minutes later he goes back to playing with the organ and says (102c), again in the intransitive non-causative form. Some twenty minutes later, still talking to his mother but now without the organ,

Juupi spies a Christmas decoration on the wall which his brother put up and comments on it. In this last utterance he again uses the verb root *aarqiC-* as a lexical causative, this time in the antipassive form, as shown in (102d).

(102) a. *Anaanangata Juupiup aarqirataakainnatanga.*
anaana-ngata Juupi-up aarqiC-rataaq-kainnaq-janga
mother-ERG.3Ssg Juupi-ERG.SG fix-PAST-PAST-PAR.3sS.3sO
'Juupi's mom fixed this just a little while ago.'

b. *Aarqiquq.*
aarqiC-vuq
fix-IND.3sS
'It's fixed.'

c. *Aarqirataakainnatuq.*
aarqiC-rataaq-kainnaq-juq
fix-PAST-PAST-PAR.3sS
'It got fixed a little while ago.'

d. *Mirquluk qitinnguutiu pingani aarqisuijuvini!*
Mirquluk-Ø qitinnguuti-up pi-nganik aarqisuk-i-juq-viniq
Mirquluk-ABS.SG Christmas-ERG.SG thing-MOD.3Ssg fix-ANTP-PAR.3sS-PAST
'Mirquluk fixed a Christmas decoration!' (Juupi 2;9)

In the next sequence, Alec is sitting with his legs under the edge of a carpet, running a toy car down the resulting rise and trying to make it go down and under a bridge created by an extension cord without having the car crash or turn over. He uses the verb root *sukkuq-* for any disastrous result happening to the car, announcing to his playmates that the car either did or didn't smash or get overturned during each attempt. During the half-hour duration of this interaction, he utters sentences like that in (103a), using the intransitive non-causative form of this verb, many times in both the affirmative and negative with a variety of inflections. In the middle of the interaction he says (103b), using the transitive causative form of the verb.

(103) a. *Sukkungitturulu.*

sukkuq-nngit-juq-guluk

break-NEG-PAR.3sS-DIM

'It didn't break.'

b. *Sukkuqara.*

sukkuq-vara

break-IND.1sS.3sO

'I broke it.' (Alec 3;3)

During the utterances in (104), Mae is sitting on the floor in her playroom with her mother and sister playing with dolls. Using the intransitive non-causative form of the verb root *ukkuaq-* 'close' in (104a), she asks her mother if the door should be closed. Her mother tells her not to close the door, to which Mae responds with the transitive causative form of the verb, as in (104b), while closing the door.

(104) a. *Una ukkuali?*

u-na ukkuaq-li

this.one-ABS.SG close-IMP.3sS

'Shall this one close?'

b. *Una am ukkualangajara.*

u-na am ukkuaq-langa-jara

this.one-ABS.SG um close-FUT-PAR.1sS.3sO

'I'm closing this one.' (Mae 2;6)

The next set of utterances centers around the verb root *qai-* 'come, get, bring'. This is a common verb root across all the children, especially with imperative inflections, and is used by all the children in both intransitive and lexical causative frames. The following utterances, though not used consecutively or referring to the same referents, are used within an hour of each other in the same general situation. In (105a), Juupi is standing by the window looking out and asks his mother to come and join him using the intransitive non-causative form of *qai-*. In (105b), Juupi is wanting to play with a ball and tells his mother, using the transitive causative form of *qai-*, that he wants to get the hockey stick in order to do so. In (105c), Juupi's mother

is eating some potato chips and he wants to have some too so asks her to give him some, using the antipassive version of the transitive causative form of the verb root.

(105) a. *Qaigit.*
qai-git
come-IMP.2sS
'Come here.'

b. *Haakirutialu silamiittuq qaigumajara.*
haakiruti-aluk-Ø sila-mi-it-juq qai-guma-jara
hockey.stick-EMPH-ABS.SG outside-LOC-be-PAR.3sS come-want-PAR.1sS.3sO
'I want to get (= make come) the hockey stick (that is) outside.'

c. *Qaitsigit anaana.*
qai-tsi-git anaana
come-ANTP-IMP.2sS mother
'Give me some (= make some come to me), mother.'

(Juupi 2;0)

It is evident from these data that these children control the causative alternation with at least some verbs at the ages considered.

4.2.2.3.2 Innovative forms

There are also several examples in the data of apparent overgeneralizations of the lexical causative pattern with verb roots which do not permit the lexical causative alternation. Some of these are shown in (106) through (117) below.

In the first example, Suusi is playing in the bedroom while being taped by the researcher. She has gone inside the clothes closet and upon trying to exit it discovers that the bed has gotten in the way of her being able to fully open the door. She asks the researcher to move the bed, but the researcher does not comply as quickly as Suusi would like. Suusi then tries to tempt the researcher by offering her gum, saying (106a). However, the verb *kutsuk-* 'chew', does not permit the lexical causative alternation; Suusi should instead

use the sentence in (106b) with the *-tit-* causative morpheme.

(106) a. *Kutsuniarakki.*

kutsuk-niaq-gakkit

chew.gum-FUT-CSV.1sS.2sO

'I will chew you after.' (Suusi 3;3)[82]

b. *Kutsutiniarakki.*

kutsuk-tit-niaq-gakkit

chew.gum-CAUS-FUT-CSV.1sS.2sO

'I will make you chew after.'

In the next utterance Suusi makes a similar error. She has set up a pretend grocery store at a night table in the bedroom which has been the focus of play for several short periods during this taping session. Just prior to the utterance in (107a) Suusi has returned to the grocery store, and uses (107a) to invite the researcher to once again participate in the grocery store interaction by offering to act as cashier to let the researcher buy something at the store. However the verb *niuviq-* 'buy', does not permit the lexical causative alternation; once again Suusi should use the causative morpheme *-tit-* to encode the notion of causation here.

(107) a. *Niuvirialaurlagit?*

niuviq-giaq-lauq-lagit

buy-begin-POL-IMP.1sS

'Want me to go buy you?' (Suusi 3;5)

(acting as cashier in a pretend store)

b. *Niuvirniatilaurlagit?*

niuviq-giaq-tit-lauq-lagit

buy-begin-CAUS-POL-IMP.1sS

'Want me to let you buy something?'

Slightly later in the same taping session, Suusi is again behind the counter at the pretend grocery store. There is some discrepancy over the identity of an

[82] Utterances in (106a), (107a), and (108a) are taken from data not specifically analyzed for this thesis, but collected as part of the same project and reported in Allen & Crago (1993a).

item in the store, and Suusi asks the utterance in (108a) in hopes of identifying the item. Again she is missing the obligatory causative morpheme; the correct utterance is shown in (108b).

(108) a. *Niuvinniatilli?*
niuviq-giaq-ji-li
buy-begin-AG-where
'Where is the buyer?' (Suusi 3;5)

b. *Niuvinniatitsijili?*
niuviq-giaq-tit-tsi-ji-li
buy-begin-CAUS-ANTP-AG-where
'Where is the cashier?'

The utterance in (109a), discussed in some detail in section 4.2.1.4.2, also proves relevant for the present discussion. In the context surrounding the utterance in (109a), Suusi's friend has come over to play, bringing with her a small puppy. Suusi's mother does not want the puppy to come inside, but Suusi does want it to come inside, and says (109a). While this verb does permit a lexical causative alternation in some contexts, it does not in this context (see footnote 73) and so Suusi's utterance is ungrammatical; she should rather say either (109b) or (109c), using an overt causative morpheme.

(109) a. **Itirumajarali.*
itiq-guma-jara-li
enter-want-PAR.1sS.3sO-but
'But I want to enter.' (Suusi 3;2)

b. *Itiqujara.*
itiq-qu-jara
enter-want-PAR.1sS.3sO
'I want it to enter.'

c. *Itirtigumajara.*
itiq-ti-guma-jara
enter-CAUS-want-PAR.1sS.3sO
'I want to make it enter.'

The next examples show overgeneralization of the lexical causative

alternation with the verb root *itsivaq-* 'sit'. Suusi has taken a number of stuffed animals and dolls to the stairs and is carrying them up and down. She throws up one baby with moving limbs that can sit by itself, and the researcher makes it sit properly in the hall at the top of the stairs. Suusi comes up the stairs and is pleased with the seated doll. She produces utterances in (110) through (113); the sentences in the (a) examples are her actual utterances while the sentences in the (b) examples represent the respective adult targets. In the first three utterances she incorrectly overgeneralizes the lexical causative alternation when she should correctly use the overt causative morpheme *-tit-*. Suusi says the utterances in (110a) and (111a) while she is looking at the doll and sitting down beside it.

(110) a. **Una itsivasijaapiga.*
u-na itsiva-si-jaq-apik-ga
this.one-ABS.SG sit-PRES-PP-DIM-ABS.1Ssg
target: 'I will let this cute one have a seat.'

b. *Una itsivatisijaapiga.*
u-na itsiva-tit-si-jaq-apik-ga
this.one-ABS.SG sit-CAUS-PRES-PP-DIM-ABS.1Ssg
'I will let this cute one have a seat.'

(111) a. **Itsivataapiga.*
itsiva-jaq-apik-ga
sit-PP-DIM-ABS.1Ssg
target: 'I have made my cute one to sit.'

b. *Itsivatitaapiga.*
itsiva-tit-jaq-apik-ga
sit-CAUS-PP-DIM-ABS.1Ssg
'I have made my cute one to sit.'

Then she seats the doll on her own lap and says (112a).

(112) a. **Itsivasijaapiga.*
itsiva-si-jaq-apik-ga
sit-PRES-PP-DIM-ABS.1Ssg
target: 'I will let my cute one have a seat.'

b. *Itsivatisijaapiga.*

itsiva-tit-si-jaq-apik-ga

sit-CAUS-PRES-PP-DIM-ABS.1Ssg

'I will let this cute one have a seat.'

Finally she gets up, goes back downstairs, brings up another doll, gives it to the researcher, and says (113a). In this utterance, she seems to avoid the difficulty of expressing causation by just using a bare verb root; again an overt causative morpheme is required.

(113) a. *Unaalulu itsiva.*

u-na-aluk-lu itsiva

this.one-ABS.SG-EMPH-and sit

target: 'And make/let this one sit.' (Suusi 3;2)

b. *Unalu itsivatilauruk*

u-na-aluk-lu itsiva-ti-lauq-guk

this.one-ABS.SG-EMPH-and sit-CAUS-POL-IMP.2sS.3sO

'And make this one sit.'

c. *Unalu itsivalaurli*

u-na-aluk-lu itsiva-lauq-li

this.one-ABS.SG-EMPH-and sit-POL-IMP.3sS

'And let this one sit.'

A final example of apparent overgeneralization of the lexical causative alternation comes from alternation between use and omission of the causative morpheme in a series of utterances using the verb root *ijukkaq-* 'fall', as discussed in section 4.2.1.4.3. Having amassed a pile of stuffed animals at the top of the stairs, Suusi is interested in making the stuffed animals fall down the stairs. The verb she uses heredoes not permit the causative alternation, but rather requires the morpheme *-tit-* to form a causative. However, Suusi seems to be in a stage of uncertainty since she alternates between the two causativizing strategies, sometimes using *-tit-* and sometimes using the bare verb with a transitive inflection, to refer to making the stuffed animals fall. The examples are repeated here for convenience.

(114) a. **Ijukkasi ... aalai ijukkasijara.*

ijukkaq-si aalai ijukkaq-si-jara

fall-PRES okay fall-PRES-PAR.1sS.3sO

'Fall ... okay, I'll fall it.

b. *Ijukkatitara.*

ijukkaq-tit-jara

fall-CAUS-PAR.1sS.3sO

'I'll make it fall.'

(115) *Ijukkatinagu.*

ijukkaq-tit-nagu

fall-CAUS-CTM.NEG.4sS.3sO

'Don't make it fall.'

(116) a. **Ijukkalagu?*

ijukkaq-lagu

fall-IMP.1sS

'Want me to fall it?'

b. *Ijukkatilagu.*

ijukkaq-tit-lagu

fall-CAUS-IMP.1sS

'Want me to make it fall?'

(117) *Ijukkatilauruk.*

ijukkaq-tit-lauq-guk

fall-CAUS-POL-IMP.2sS.3sO

'Make it fall.'

Several observations emerge from these examples of innovative forms. First, all the examples observed come from the speech of only one child among the four. There may be several reasons for this. One possiblity is that individual differences are apparent in the appearance of lexical causative overgeneralization, as has been already noted in the literature concerning English and K'iche' (Maratsos *et al*, 1987; Pye, 1994). Thus Suusi may be the only subject involved in this research who exhibits such errors even outside the range of the data sample. A second possibility is that Suusi is the only child

in this sample at the appropriate stage of development to exhibit such errors either at all or with great enough frequency to appear in the data collected. Recall that Bowerman (1974, 1982b) claims that errors of this nature begin to appear once the child in question begins productively using the overt derived (periphrastic or morphological) causative. Data discussed in section 4.2.1 suggest that Suusi is indeed beginning to productively use the morphological causative *-tit-* at exactly the age at which the first examples of overgeneralization of the lexical causative appear in her data. Maratsos *et al* (1987) and Morikawa (1990) both note that many more instances of such errors occur when the child first starts to make this type of error; errors then continue for perhaps two or three years but occur much more infrequently. It is possible, then, that the other children either have not yet reached productive use of the morphological causative (possibly the case for Mae) or else have already passed the point of first achieving productive use of the morphological causative (possibly Juupi and/or Alec), so that they are not in a developmental stage at which large number of errors of this sort would be expected.

A third possibility to explain the occurrence of errors of innovative form in only one of the children is that the other children are producing similar errors at the ages considered but that they do not surface in the data collected because these errors are too infrequent. Maratsos *et al* (1987) conjecture that the errors of this type represented in Bowerman's data represent some 0.01% of the total utterances produced by her child during the period considered. If this estimation is correct, it is not at all unlikely that the data collected for the present research would reveal very few or none of the errors of the relevant type; in fact, only one error would be expected in the 6305 utterances available for analysis. The relatively large number of such errors for Suusi could be explained if she is at the beginning of productively acquiring the grammatical methods of encoding causation and thus produces many more such errors than children at a later stage of this process. Note also that none of these three possibilities is mutually exclusive of the others, and that the three taken together would certainly provide a plausible explanation of the difference in number of errors across the four children.

A second point to note concerning the errors of innovative forms is that even within this child the number of errors is very small. As just discussed, this is not surprising in relation to other data reported in the literature. Almost every study published to date concerning errors of overgeneralization of the causative alternation has relied on data collected by parents in diary format over a period of two or more years, whereas the data collected for the present research comprises only two hours per month per child for a period of nine months. While the latter has the advantage of allowing for later study and review of utterances that are indeed errors but might not be striking enough to be noticed by a parent at the time, it also has the disadvantage of considering much less potential data. In light of the small number of errors of this type in the present Inuktitut data, then, claims as to the place of these errors in the acquisitional process must be considered only speculative and in need of confirmation from further data.

A third issue to be considered is that the errors of innovative forms illustrated above are all in one direction; they are all errors of intransitive verb roots which do not permit a lexical causative alternation being used as lexical causatives. There are no errors of causative transitive verb roots being used incorrectly as intransitive non-causatives. This reflects the pattern documented by Bowerman (1974, 1982b) for English. However, other researchers have found examples in the reverse direction, though they often report fewer errors of this type, or errors with fewer verbs or verb classes (English: Lord, 1979, Maratsos *et al*, 1987; Brazilian Portuguese: Figueira, 1984; Hebrew: Berman, 1982; Japanese: Morikawa, 1990). In addition, at least two studies report that the onset of the former type of errors (intransitives as lexical causatives) occurs as much as 3 months later than the onset of the latter type (causative transitives as non-causative intransitives) (English: Lord, 1979; Brazilian Portuguese: Figueira, 1984). Of course, the fact that the errors observed in the Inuktitut data only occur in one direction does not mean that no errors occur in the other direction in Inuktitut child language in general; they may just not appear in the present sample. In addition, several researchers have observed that errors of intransitive use of transitive causative verbs are much harder to

notice than errors of transitive causative use of intransitive verbs.

The fourth point arising from these data showing innovative forms is that there are no errors resulting from selection of the incorrect lexical item within a suppletive pair; all errors result from lack of use of an overt causative morpheme in a context in which it is obligatory. This phenomenon occurs very simply because there are no suppletive pairs in Inuktitut and thus no opportunity for errors of incorrect lexical selection of this type to arise[83].

4.2.2.4 Summary of lexical causative acquisition data

This section has presented information on use of lexical causative structures by the subjects of this research. It has been shown that the subjects do use lexical causative structures at the ages considered, with a wide variety of verb roots. While lexical causative structures are produced correctly in the vast majority of instances, there are a small number of errors of overgeneralization of the causative alternation pattern. These few errors begin appearing at about the same time as the morphological causative *-tit-* is being acquired. Potential explanations for such errors in Inuktitut are discussed in section 4.4 below. First, however, data concerning acquisition of causatives in West Greenlandic is presented.

4.3 Comparison with data from West Greenlandic

Both the causative morphemes *-tit-* and *-qqu-*, as well as the lexical causative construction, exist in West Greenlandic and serve essentially the same functions and performing syntactically and morphologically in the same way as in Inuktitut (Fortescue, 1984). Acquisition data have been reported in the literature for six West Greenlandic children, aged 2;2, 2;3, 3;1, 3;4, 4;7, and 5;2 (Fortescue, 1985; Fortescue & Lennert Olsen, 1992). In the following sections, acquisition data concerning each of these three constructions are

[83] Suppletive pairs are not reported at all in the standard literature on Eskimo. Consultation with native speakers and Eskimologists has also failed to reveal any examples of suppletive pairs. It is concluded that if any such pairs exist in the language, they are both few and infrequent and thus do not present an issue in the acquisition of Inuktitut.

discussed.

4.3.1 *-tit-*

Instances of the causative morpheme *-tit-* are not evidenced in data from the youngest child at 2;2, but are evidenced in data from all the children aged 2;3 and older, and are claimed to be productive at these ages. Examples from ages within the same range as Inuktitut data are given in (118).

(118) a. *uppi-ti-le-qa-akkit*
fall-CAUS-begin-intensifier-IND.1sS.2sO
'I'm going to make you fall!'
(age 2;3; Fortescue, 1985, p. 108)

b. *ajugaa-tin-niar-pakkit*
win-CAUS-be.going.to-IND.1sS.2sO
'I'll let you win.'
(age 3;1; Fortescue & Lennert Olsen, 1992, p. 151)

c. *attuakka-t nakkar-tip-pai*
book-PL fall-CAUS-IND.3sS.3pO
'He dropped the books.'
(age 3;1; Fortescue & Lennert Olsen, 1992, p. 151)

d. *nakkar-tip-pat*
fall-CAUS-IND.2sS.3sO
'You got it to fall down.'
(age 3;4; Fortescue & Lennert Olsen, 1992, p. 151)

e. *kanunngar-tin-nia-ruk qimaa-til-lugu*
go.down-CAUS-IMP.MOD-IMP.2sS.3sO go.away-CAUS-CTM.(2sS).3sO
'Get it down so it goes away.'
(age 3;4; Fortescue & Lennert Olsen, 1992, p. 151)

Thus the *-tit-* causative morpheme seems to be used frequently enough to appear in the data, and productively, at an age similar to that found in the data from Inuktitut.

4.3.2 *-qu-*

No instances of use of causative *-qqu-* are reported in the data or listed in the lists of productive affixes for any of the children in the West Greenlandic data. This does not necessarily mean that the children are not using *-qqu-* at these ages; it may only be a reflection either of a difference in use of *-qqu-* between Inuktitut and West Greenlandic, or of the relative infrequency of *-qqu-* in the data, as is apparent in the data from Inuktitut. First, Fortescue (1984, p. 84) notes that the *-qqu-* construction is generally syntactically more complex in West Greenlandic than in Inuktitut, and also that *-qqu-* is used in somewhat more restricted senses in West Greenlandic than in Inuktitut since it does not include the meaning 'want (one) to'. Second, the smaller data sample from West Greenlandic may affect the difference in apparent acquisition of *-qqu-*. For the Greenlandic-speaking child at 2;3, one-half hour of tape was recorded and studied (Fortescue, 1985). For the remaining five Greenlandic-speaking children, between 10 and 17 pages of transcript were studied per child, which included transcription of utterances of other persons present during the taping (Fortescue & Lennert Olsen, 1992). Since *-qu-* causatives appeared in the Inuktitut data an average of 0.56 times per hour and in an average of 0.5% of the verbal utterances, it would not be surprising to find few or no instances of this morpheme in a smaller data sample, even if it were being productively used by the children in their daily speech.

4.3.3 Lexical causative

The issue of lexical causatives is not discussed at all in the data presented for West Greenlandic. From an examination of the data exemplified, it is rather difficult to tell what is a lexical causative and what is not since the distribution may well be slightly different in Inuktitut and in West Greenlandic. One example of use of a verb in both lexical causative and intransitive forms occurs, as shown in (119).

(119) a. *taava toqu-sar-put*

then die-HAB-IND.3pO

'Then they die ....'

(age 3;1; Fortescue & Lennert Olsen, 1992, p. 151)

b. **toqu-sa-ramikkit tama-asa* [target: *toquttaramikkit tamaasa*]

die-HAB-CSV.4pS.3pO all-3PL

'Because they kill them all.'

(age 3;1; Fortescue & Lennert Olsen, 1992, p. 155)

This example in fact shows productivity in the causative alternation due to the morphophonological error in (119b). The child in question here has misconstrued the transitive form of the verb to be *toqu-*, identical to the intransitive, rather than the correct transitive form *toqut-*[84]. Thus the following morpheme *-sar-* appears in the allomorphic form which follows vowels (*-sar-*) rather than the allomorphic form which follows consonants (*-tar-*). Thus the child seems to think that there is only one stem which can be used in two different syntactic frames depending on causation.

Other examples of apparent use of lexical causatives, based on analogy with Inuktitut, are given in (120).

(120) a. *aappaa aserorsimavara*

'I broke the other one.' (age 2;3; Fortescue, 1985, p. 107)

b. *ataatap aaqqissuai*

'Daddy will fix them.' (age 2;3; Fortescue, 1985, p. 107)

c. *iki-inna-ruk / ikin-niar-siuk*

switch.on-just-IMP.2sS.3sO / switch.on -IMP.MOD-IMP.2pS.3pO

'Just switch it on.' / 'Do switch it on.'

(referring to tape recorder)

(age 3;1; Fortescue & Lennert Olsen, 1992, p. 154)

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[84] As noted in footnote 58, intransitive *toqu-* and transitive *toquC-* can be considered lexical alternants since the transitivizing morpheme *-t-* on the transitive form is no longer productive in West Greenlandic but has become lexicalized with the verb root (see Fortescue 1984, p.271 for further discussion).

d. *appi-guk*

switch.on-IMP.2sS.3sO[85]

'Switch it on.' (referring to tape recorder)

(age 3;4; Fortescue & Lennert Olsen, 1992, p. 167)

e. **toqo-ralua-rakku* (= *toquk-kalua-rakku*)

kill-however-CSV.1sS.3sO

'When I killed it however.'

(age 3;4; Fortescue & Lennert Olsen, 1992, p. 177)

No evidence can be construed from the data presented to support any of the various positions discussed in section 4.4 below since these issues are not addressed in discussion of the West Greenlandic data.

4.4 Discussion of theoretical and empirical issues

The primary issue discussed in the literature concerning the acquisition of causative structures is the nature of the error involving the overgeneralization of the causative alternation. As mentioned in the introduction to this chapter, several potential sources of this error have been hypothesized across a number of languages. This section discusses those hypotheses in more detail and assesses them in terms of the data from Inuktitut presented above.

4.4.1 Hypotheses to explain causative overgeneralization

Causative alternation overgeneralization errors were first comprehensively reported in the literature by Bowerman (1974). Bowerman presents data from one English-speaking child aged 2;3 through 4;0 (with a few examples from others in the same age range) showing over 100 errors of intransitive (e.g. *fall*, *giggle*, *down*) and transitive (e.g. *eat*, *drink*, *guess*) non-causative verbs and predicates being used incorrectly in transitive causative contexts, as shown in the utterances in (121).

[85] The verbal root *appi-* actually means 'produce sound, begin to speak or sing' (M. Fortescue, personal communication).

(121) a. *I come it closer so it won't fall.*

[= make it come closer; bring it closer]

(Christy 2;3; Bowerman, 1974)

b. *I'm singing him.*

[= making (musical cow toy) sing]

(Christy 3;1; Bowerman, 1974)

c. *You can drink me the milk.*

[= make me drink the milk] (Jennifer 3;8; Lord, 1979)

In contrast, she finds very few errors of ditransitive (e.g. *feed*) or transitive (e.g. *kill*) causative verbs used in incorrectly in transitive or intransitive non-causative contexts respectively, as shown in (122).

(122) a. *I think I better put it down there so it won't lose.*

[= so I won't make it be lost] (Benjy 3;7; Lord, 1979)

b. *It can hear now.*

[= I can hear (the clock) ticking now] (Jennifer 2;9; Lord, 1979)

c. *I want to take it out so it can't put on my nose.*

[= so (the cone) won't make (ice cream) go on my nose]

(Jennifer 2;10; Lord, 1979)

For ease of later reference, the errors of increased valency such as those in (121) are referred to here as type 1 errors, and the errors of decreased valency such as those in (122) as type 2 errors, following Figueira (1984).

Two additional factors are relevant here. First, the errors begin appearing in the data at almost exactly the same time as other forms of linguistic encoding of causation begin appearing. Use of two-clause utterances denoting cause and effect (e.g. *mommy push me fall*) and of cause and effect resultative structures (e.g. *put hat on*) slightly precede this period, while use of periphrastic causatives using *make* and *get* coincides almost exactly. Second, the errors discussed begin appearing only after the verbs in question have been used correctly in the data for some time, thus showing a pattern of U-shaped development (Bowerman, 1982b).

Several later studies have focused on the same phenomenon in English and other languages, as listed in the introduction to this chapter. Similar errors

to those exemplified in (121) and (122) appear in each of these languages.

Several hypotheses have been proposed to explain causative alternation errors. Bowerman offers three possibilities, termed here the "transitivity hypothesis", the "agentivity hypothesis" and the "causativity hypothesis", and herself finds the latter to provide the best explanation of her data. Some researchers working on data from English-, Hebrew-, and Japanese-speaking children opt for an explanation similar to Bowerman's "transitivity hypothesis", while a study with Brazilian Portuguese-speaking child adopts an explanation similar to Bowerman's "agentivity hypothesis". Other researchers find unrelated hypotheses more adequate to explain their data. Studies of English- and K'iche'-speaking children identify similar errors as resulting from difficulties in lexical retrieval, while a study reanalyzing Bowerman's data attributes these errors to late maturation of certain principles of grammar. Each of these are discussed in turn in the sections below.

4.4.1.1 Three argument structure hypotheses

In attempting to account for causative alternation overgeneralization errors, Bowerman addresses three factors in the realm of argument structure which adult uses of causative alternation verbs have in common. First, they differ in transitivity: the causative member of the pair has one more argument than the non-causative member. Second, they differ in agentivity: the causative member of the pair has an agent of causation while the non-causative member does not. Finally, they differ in causativity: the causative member of the pair entails causativity while the non-causative member does not. Child errors in use of these verbs, then, could theoretically result from any of these three factors. Bowerman addresses each hypothesis in turn; they are referred to here as the "transitivity hypothesis", the "agentivity hypothesis", and the "causativity hypothesis".

Under the "transitivity hypothesis", the child in question would produce errors due to misclassification of the transitivity associated with certain verbs (and predicates used verbally). In English, some verbs may only be used intransitively, others only transitively, and others either intransitively or

transitively depending on the context. Type 1 and type 2 errors under this hypothesis, then, would reflect incomplete or confused knowledge on the part of the child as to which verbs select which argument structures. However, Bowerman rejects this hypothesis for two reasons. First, it cannot explain why the errors in question occur after the transitivity distinction is already correctly reflected in the child's speech for the verbs in question; it rather predicts that such errors would be most frequent in the earliest stages of verb learning[86]. Second, it cannot account for use of already transitive verbs used mistakenly as causatives.

Under the "agentivity hypothesis", the child in question would produce errors due to misclassification of which verbs allow addition of an agent to form a transitive counterpart. Early generative semantics literature analyzes verbs such as *break* and *open*, and verb pairs such as *kill/die* and *teach/learn* as having one entry in the lexicon associated with different case frames in which they can occur; presence of an agent forces transitive usage of the verb whereas absence of an agent forces intransitive usage (Fillmore, 1968). Type 1 and type 2 errors under this hypothesis, then, would reflect incomplete or confused knowledge on the part of the child as to which verbs have a lexical entry allowing for both these case frames, and which verbs do not. However, Bowerman rejects this hypothesis as well. First, it cannot account for the unidirectionality of errors which Bowerman finds; it rather predicts an equal number of errors in each direction[87]. Second, it cannot account for the causative use of verbs such as *eat* which already have agents and thus (at least under this model) would not be expected to take additional agents.

Under the "causativity hypothesis", the child in question would produce errors due to misclassification of which verbs allow addition of the semantic component CAUSE to allow them to be used transitively. Early syntactic literature, as reported in Bowerman (1974), analyzes lexical causatives as being

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[86] This objection is true for the "agentivity hypothesis" as well, though Bowerman does not mention it in that context.

[87] This objection is true for the "transitivity hypothesis" as well, though Bowerman does not mention it in that context.

composed of a verb of state or change of state plus the semantic component CAUSE, and crucially as the transitive causative form being derived from, or at least less basic than, its intransitive counterpart (Lyons, 1968; McCawley, 1968, 1970, 1971; Bierwisch, 1970; Lakoff, 1970; Binnick, 1971). Type 1 errors under this hypothesis, then, would reflect incomplete knowledge on the part of the child as to which verbs allow for forming causatives by means of derivation with the semantic component CAUSE, and which verbs do not. Type 2 errors would not be expected since the derivation only goes one way. Bowerman accepts this "causativity hypothesis" as the one that best fits the details of her data. First, it explains the observation that type 1 errors begin appearing in the data at almost exactly the same time as do more overt forms of linguistic encoding of causation. Second, the cooccurrence of appearance of various methods of encoding causation linguistically with errors of overgeneralization of the causative alternation also explains why lexical causatives are used correctly before they are overgeneralized, analogous to the discussion in the literature of overgeneralized plurals and past tense forms (see Marcus, Ullman, Pinker, Hollander, Rosen & Xu, 1990, and references cited therein). The forms are first used as memorized whole units, and only once the component parts are sorted out do errors of overgeneralization appear in irregular forms. Third, the "causativity hypothesis" explains the unidirectionality in Bowerman's errors. Fourth, it is consistent with the fact that all Bowerman's errors are ones in which the transitive error form includes a causative notion and often coincides with disappearance of the correct equivalent suppletive verb from the child's vocabulary; they are not just random transitivization errors.

Other researchers finding similar errors, however, do not find the "causativity hypothesis" the most adequate to explain their data. Lord (1979) presents data on English similar to Bowerman's from her two children aged 2;5 through 8;6. She finds some 80 verbs used in type 1 errors (Bowerman found 42), but also finds 55 verbs used in type 2 errors (Bowerman found extremely few). She also finds examples with verbs like *sound*, *fit*, *interest*, *hear*, *see*, and *eat*, in which the errors cannot be explained by erroneous

addition or deletion of the element CAUSE. Her errors, then, are neither unidirectional in nature nor are they strictly causative in origin. For these reasons Lord rejects Bowerman's "causativity hypothesis" and opts instead for a version of her "transitivity hypothesis". Lord claims that the difficulty represented is one of misclassification of which verbs permit which types of alternation between syntactic positions (subject and direct object alternate position for monovalent-bivalent pairs, while subject and indirect object alternate position for bivalent-trivalent pairs). Lord does not address at all the relative time of acquisition of other causative phenomena in her children's language, or the issue of errors occurring only after the correct forms seem to have been mastered.

Both Berman (1982) and Morikawa (1990), in their studies of this phenomenon in Hebrew and Japanese respectively, also opt for a version of Bowerman's "transitivity hypothesis". Berman's subjects range from 2;6 through 5;6, while Morikawa reports data from one child aged 1;11 through 3;3. In both these languages, unlike in English and Brazilian Portuguese, there are extremely few causative alternation pairs in which both members of the pair share identical phonetic form. In Japanese the pairs show phonological relationship but are not identical; in Hebrew the root is the same but the causative and non-causative alternants typically are formed using different binyan patterns. In both languages the relationship between the morphology and causativity is not predictable. Also in both languages errors in both directions are observed, and these errors occur from the earliest uses of lexical causatives in the data rather than appearing only later as is the case in English and Brazilian Portuguese. Thus it seems the most likely explanation here is one of misclassifying the transitivity of certain verb roots (Japanese) or binyan patterns applicable to verb roots (Hebrew).

Figueira (1984) reports errors of the same type, again in both directions, in the speech of one child aged 2;8 through 5;0 learning Brazilian Portuguese. She opts finally for an explanation similar to Bowerman's "agentivity hypothesis", presenting it in terms of sentence frames. Figueira claims that her subject erroneously believes that NVN (or NVNN in the case

of trivalent verbs) word order is the relevant and sufficient way to encode causativity (which she seems to equate with agentivity), while NV or VN word order (NVN for trivalent verbs) is the appropriate way to encode lack of causativity or agentivity. She gives examples from errors of the child in question in several other construction types to support this claim. She does not address the issue raised by Bowerman of errors in which agents are added to verbs which already have agents.

4.4.1.2 Lexical selection hypothesis

Pye (1994) and Braine (1988), for K'iche' and English respectively, attribute errors of causative alternation overgeneralization to difficulties in lexical selection. Braine claims that children first store words with only their semantic meanings and without information as to the syntactic frames in which they can be used. Thus both type 1 and type 2 errors occur due to retrieval of the generic form in the lexicon with the relevant semantic meaning. Pye (1994), following Hoek, Ingram & Gibson (1986), suggests that, while children store both semantic and syntactic information for given verbs in the lexicon, they have problems with lexical retrieval when two verbs share the same semantic meaning. Thus, when they are having difficulty thinking of the correct verb, they substitute it with another which has the relevant semantic meaning. Neither of these explanations addresses the phenomenon of late rather than early errors, or the fact that the errors in question seem to occur most predominantly with causative/non-causative pairs. Pinker (1989), in reanalyzing Bowerman's data, hypothesizes two similar reasons for causative alternation overgeneralizations. He suggests that either children have not yet acquired an adult semantic representation for some verbs and thus misuse these verbs, or they have acquired adult semantic representations for all verbs but retrieve the wrong verb stem under pressure from the discourse. He also suggests that the children may be failing to notice the semantic constraints that restrict the lexical rule of causative alternation.

4.4.1.3 Maturation hypothesis

A final hypothesis to explain errors of overgeneralization of causative alternation comes from Borer & Wexler's (1987) Maturation Hypothesis. They claim that at least type 1 errors can be explained by the late maturation of the principle governing A-chain formation. This explanation crucially relies on an analysis of the intransitive members of lexical causative pairs as unaccusative verbs. Recall that unaccusative verbs are those whose surface subjects are themes rather than agents and are base-generated as objects. Borer & Wexler claim that children only acquire the underlying principle that allows them the correct representation of unaccusatives sometime around age 4;0 by a process of maturation of the principle governing A-chain formation (i.e. the principle necessary to allow them to relate the argument moved to subject position with its D-structure position to allow for transmission of thematic role information). Previous to age 4;0, then, children analyze all intransitive verbs as unergatives (i.e. with one base-generated argument in subject position). Recall that only unaccusative verbs permit the causative alternation. However, since children cannot structurally differentiate between unergative and unaccusative verbs at the relevant age, they assume that all intransitive verbs permit the causative alternation and thus produce at least type 1 errors until about age 4;0. There are several problems with this hypothesis. First, less than 20% of the novel causative alternations cited by Bowerman derive from unergative verbs. While it is not surprising that other types of verbs undergo novel lexical causativization, one might expect the proportions to be somewhat more balanced. Second, a maturation explanation does not explain why novel causatives with other verb types (e.g. unaccusative, transitive) would stop. This is particularly relevant in terms of type 1 errors with unaccusative verbs which do not permit lexical causatives in adult language. Third, maturation does not explain the U-shaped development of this phenomenon; it rather predicts the occurrence of type 1 errors throughout the pre-maturation period. Finally, individuals learning second languages also typically overgeneralize lexical causatives to unergative verbs (Juffs, 1993), and this certainly could not be explained by maturation. In addition, evidence from acquisition of passives

in Inuktitut (and other languages) casts doubt on the validity of the maturation hypothesis for other structures, as discussed in chapter 3.

4.4.1.4 Summary of hypotheses

In summary, then, causative alternation overgeneralization errors of both type 1 and type 2 appear in child utterances across several languages. Explanations for these errors range from misclassifications of transitivity, agentivity and causativity to difficulties in lexical retrieval and late maturation of grammatical principles. Explanations vary to suit the idiosyncracies of the data for the language in question in each situation. In the following section these hypotheses are discussed in light of data from Inuktitut.

4.4.2 Assessment of hypotheses for explaining Inuktitut data

In the following sections the hypotheses in section 4.4.1 are assessed in terms of the errors discussed above in data from one Inuktitut-speaking child. The data are summarized in section 4.4.2.1, complicating factors are presented in section 4.4.2.2, and conclusions are given in section 4.4.2.3.

4.4.2.1 Relevant aspects of Inuktitut data

Errors of causative alternation overgeneralization are presented and discussed in section 4.2.2.3.2 above; the main points are summarized here. First, the errors in Inuktitut are unidirectional: only type 1 errors have been found in the data sample under analysis. Second, the errors presented so far are all errors involving causative/non-causative pairs. Third, the occurrence in time of the errors does seem to coincide with the onset of acquisition of the causative morpheme *-tit-*. At first glance, then, Bowerman's "causativity hypothesis" seems to fit the Inuktitut data well. Two complicating factors emerge, however, as discussed in the following sections.

4.4.2.2 Complicating factors

Data from Inuktitut concerning causative alternation overgeneralization errors are complicated by two factors - one an aspect of Inuktitut structure, and

the other an issue of other errors in the data. These are presented in turn.

4.4.2.2.1 Lack of suppletive pairs

First, there are no (or very few if any) suppletive pairs in Inuktitut. Thus all the errors noted are in fact errors of omission of the overt causative morpheme, and could be easily explained in the context of learning appropriate use of the causative morpheme without recourse to any notions of overgeneralization of the causative paradigm. The similarity of the errors to those reported in the literature, then, may only be a surface similarity in that the source of the errors may be different.

4.4.2.2.2 General errors involving transitivity

Second, there are a similar number of errors of transitivity without any causative component, as shown in the examples below. In each case, the (a) example represents the child utterance whereas the (b) and (c) examples represent correct adult ways of saying the same thing. The example in (123) shows incorrect use of two-argument in place of one-argument inflection, completely inconsistent with the pragmatic context of the utterance.

(123) a. *Irqutukainnaqara.*
irqutuq-kainnaq-vara
wash-PAST-IND.1sS.3sO
'I washed her.' (Juupi 2;9)
(commenting on woman in mouthwash commercial who has just saved her work partnership by using mouthwash to get rid of her bad breath)

b. *Irqutukainnaquq.*
irqutuq-kainnaq-vuq
wash-PAST-IND.3sS
'She washed.'

The example in (124) again shows incorrect use of two-argument inflection in place of one-argument inflection, this time for semantic reasons. This utterance is a noun incorporation structure in which the only possible direct

object is incorporated into the verb. Thus the inflection can only grammatically reflect the remaining subject argument.

(124) a. **Panik, kaamuliusijara.*
panik kaamu-liuq-si-jara
daughter camel-make-PRES-PAR.1sS.3sO
'Daughter, I'm making a camel.' (Alec 3;3)
(drawing a camel in the carpet with his finger)

b. *Panik, kaamuliusijunga.*
panik kaamu-liuq-si-junga
daughter camel-make-PRES-PAR.1sS
'Daughter, I'm making a camel.'

The examples in (125) through (127) show mismatches between case marking and verbal inflection. In (125a) the antipassive morpheme is present on the verb, but the inflection is for two arguments and the object is in absolutive case.

(125) a. **Manna aitsikainnatara*?
matsu-na ai-tsi-kainnaq-jara
this.one-ABS.SG get-ANTP-PAST-PAR.1sS.3sO
'Did I get this?' (Juupi 2;9)

b. *Matsuminga aitsikainnatunga*? (antipassive)
matsu-minga ai-tsi-kainnaq-junga
this.one-MOD.SG get-ANTP-PAST-PAR.1sS
'Did I get this?'

c. *Manna aikainnatara*? (ergative)
matsu-na ai-kainnaq-jara
this.one-ABS.SG get-PAST-PAR.1sS.3sO
'Did I get this?'

In (126a) the object argument is in absolutive case while the verb is inflected for only one argument.

(126) a. *Iivau pialua aturtu.*

Iiva-up pi-aluk-nga atuq-juq

Eva-ERG.SG thing-EMPH-ABS.3Ssg use-PAR.3sS

'Eva's thing is using.' (Juupi 2;1)[88]

(a man on TV is drawing using a pen like the one Eva owns)

b. *Iivau pialuanik aturtu.* (antipassive)

Iiva-up pi-aluk-nganik atuq-janga

Eva-ERG.SG thing-EMPH-MOD.3Ssg use-PAR.3sS.3sO

c. *Iivau pialua aturtanga.* (ergative)

Iiva-up pi-aluk-nga atuq-janga

Eva-ERG.SG thing-EMPH-ABS.3Ssg use-PAR.3sS.3sO

'He's using Eva's thing.'

Finally in (127a) the verbal stem contains an antipassive morpheme and is inflected for one argument but the direct object is in absolutive case.

(127) a. **Una qaitsilirit!*

u-na qai-tsi-liq-git

this.one-ABS.SG come-ANTP-PRES-IMP.2sS

'Bring me that one!' (Suusi 3;6)

(wanting researcher to bring her a puzzle)

b. *Uuminga qaitsilirit!* (antipassive)

u-minga qai-tsi-liq-git

this.one-MOD.SG come-ANTP-PRES-IMP.2sS

'Bring me that one!'

c. *Una qailiruk.* (ergative)

u-na qai-liq-guk

this.one-ABS.SG come-PRES-IMP.2sS.3sO

'Bring me that one!'

These examples suggest that perhaps the difficulty is with mechanisms of transitivity in general rather than with causative alternations alone, and thus

[88] This utterance is taken from data not specifically analyzed for this thesis but collected as part of the same project and reported in Allen & Crago (1993a).

Bowerman's "transitivity hypothesis" would be a more suitable explanation for the Inuktitut data.

4.4.2.3 Summary of hypothesis assessment

The above discussion of data from Inuktitut relevant to errors of overgeneralization of the causative alternation indicate that two hypotheses are consistent with the data. First, it may well be the case that all errors of this type are in fact errors of learning the appropriate use of the morpheme *-tit-* since all errors may be explained solely as a result of its incorrect omission. Second, it may be the case that Inuit children at this stage have difficulty with marking transitivity in general, as illustrated in the examples in 4.4.2.2.2, and thus Bowerman's "transitivity hypothesis" may provide adequate explanation of the data.

Since the data from Inuktitut are relatively few in number, especially in terms of errors of the relevant type, and since they are collected at times with relatively large intervals in between, it is difficult to be conclusive in deciding on a hypothesis. Ideally one would wish to examine data from closer time intervals and find a larger number of errors of the relevant type from more than one child. This would also provide the possibility for a closer assessment of the relative time of acquisition of other mechanisms of linguistic encoding of causativity and a closer assessment of the possible origins of the errors in transitivity not related to the causative alternation.

4.5 Conclusion

In this chapter data have been presented that illustrate the development of both morphological and lexical causatives in early Inuktitut. The morphological causative first appears in unanalyzed routines denoting causation, then emerges as a productive unique morpheme. Lexical causatives are used from the earliest ages available in the data analyzed. Certain errors of seeming overgeneralization of the causative alternation appear in the data from one child at about the time that she is first productively acquiring the morphological causative. These errors can be analyzed most consistently either

in terms of errors in learning which verbs require a morphological causative, or in terms of general errors in representing transitivity. It is not apparent that an analysis in terms of either agentivity or the semantic feature CAUSE (cf. Bowerman, 1974) is necessary. These errors from Inuktitut also do not serve to support the Maturation Hypothesis (Borer & Wexler, 1987); the same difficulties apparent for this hypothesis with English data also apply to the Inuktitut facts.

CHAPTER 5

ACQUISITION OF NOUN INCORPORATION[89]

Noun incorporation is a structure which appears in many genetically and typologically diverse languages, from Mohawk to Southern Tiwa and from Chukchee to Gunwinggu (see Mithun, 1984, and Baker, 1988, for a detailed overview). In noun incorporation structures, a certain noun root[90] from the sentence appears inside the verb form rather than as an independent lexical item. The two roots appear to work together as a unit for purposes of agreement marking, case assignment, and other relevant processes. Examples are shown in (128) and (129).

(128) a. *Seuan-ide ti-mu-ban.*
man-SUF 1sgS/AO-see-PAST
'I saw the/a man.'

b. *Ti-seuan-mu-ban.*
1sgS/AO-man-see-PAST
'I saw the/a man.'

(Southern Tiwa; Allen, Gardiner & Frantz, 1984)

(129) a. *Wa?kyvtho? oji:ja?.*
wa?-k-yvtho? o-ji:ja-?
AOR-1sS-plant PRE-flower-SUF
'I planted a flower.'

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[89] An earlier version of some of the material in this chapter reporting on data from Crago (1988) was presented at the Stanford Child Language Research Forum (April, 1989) and was published as Allen & Crago (1989). An earlier version of portions of the material in this chapter reporting on both data from Crago (1988) and the present project was presented at the Max Planck Insititute for Psycholinguistics (March, 1994).

[90] A semantic account such as that in Mithun (1984, p. 875) states that possible incorporated nouns include patients of transitive verbs, patients of intransitive verbs, instruments and locations. A syntactic account such as that in Baker (1988, pp. 81-92) states that any noun root in a structural object position may incorporate since only items in this position meet the relevant Empty Category Principle requirements. These two accounts essentially coincide in terms of the actual noun roots that incorporate.

b. *Wa?kji?jayvtho?.*

wa?-k-ji?ja-yvtho?

AOR-1sS-flower-plant

'I planted a flower.' (Mohawk; Bonvillain, 1974)

In the (a) examples above, the relevant noun root appears as an independent lexical item with its own case marking, agreeing with the verb where necessary. In the (b) examples, the noun root appears inside the verbal complex, and its case inflection has been dropped.

Though noun incorporation structures appear similar to N-V compounding structures in English, they are different in several important respects[91]: they are always verbal, they are not backformations from N-V nominal compounds, and they may be referential to a specific object[92]. Facts concerning the obvious differences between noun incorporation and compounding, the surprising syntactic relevance of the occurrence restrictions of noun incorporation, and the productivity of noun incorporation structures, indicate that they may well be formed in the syntax rather than in the lexicon, as outlined in Baker (1988)[93]. Under a syntactic account, noun incorporation is characterized as a movement process in which a noun head (rather than phrase) undergoes the process of Move-α from its position at D-structure to Chomsky-adjoin to the head into which it incorporates. This analysis neatly captures both the difference between two seemingly similar structures (N-V compounding in English; noun incorporation in polysynthetic languages) and the similarity between unincorporated and incorporated counterparts of parallel sentences. Such a syntactic account is assumed in this chapter.

Very little research has been reported on concerning the acquisition of noun incorporation. Mithun's (1989) discussion of general patterns in the

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[91] See Baker (1988, pp. 78ff) and Mithun (1984, p. 847) for more detail on this point.

[92] This latter claim is somewhat controversial. Though Mithun (1984, 1986) claims that incorporated nouns may never be referential, both Sadock (1986) and Baker (1988) present good evidence to support the claim that they may indeed be referential.

[93] In addition, Allen (1988) suggests that a syntactic analysisis is preferable to a lexicalist analysis in accounting for incorporation of case-marked nouns in Eskimo.

acquisition of Mohawk suggests that noun incorporation is not productive in her subjects until sometime after 4;9 (the age of her oldest subject). She states that all examples of noun incorporation appearing in her data up until that time are forms which are memorized as one unit by the child in question. However, Allen & Crago's (1989) assessment of the acquisition of noun incorporation in one Inuk child aged 1;9 through 2;9 suggests that this child does have productive noun incorporation structures in his speech by age 2;1. The present chapter offers acquisition data from four additional Inuit children which support the claim that Inuit children do indeed control noun incorporation productively at an early age.

The chapter proceeds as follows. Section 5.1 begins with a description of the structure of noun incorporation in Inuktitut. Section 5.2 presents acquisition data from Inuktitut, including information about age and frequency of use of noun incorporation structures, evidence of their productivity, and examples of their use in potentially more advanced constructions. Section 5.3 compares patterns for Inuktitut with relevant data from West Greenlandic. Section 5.4 returns to a comparison of the acquisition of noun incorporation in Inuktitut and Mohawk, offering several hypotheses to account for the relatively early acquisition of noun incorporation in Inuktitut.

5.1 Structure of noun incorporation in Inuktitut

Basic noun incorporation structures in Inuktitut consist of a noun root incorporated into an affixal verb root. A more advanced form of noun incorporation involves stranding modifiers ofthe incorporated noun root outside the verbal complex. Each of these is discussed in turn.

5.1.1 Basic noun incorporation

Basic noun incorporation in Inuktitut proceeds in much the same way as in other languages. Structural object noun roots (though not subjects of unaccusatives / patients of intransitives) incorporate into verbal stems, as in (130).

(130) a. *Jaaniup iqaluk nirijanga.*

Jaani-up iqaluk-Ø niri-janga

Johnny-ERG.SG fish-ABS.SG eat-PAR.3sS.3sO

'Johnny eats/ate the fish.'

b. *Jaani iqaluturtuq.*

Jaani-Ø iqaluk-tuq-juq

Johnny-ABS.SG fish-eat-PAR.3sS

'Johnny eats/ate fish.'

In (130a), the structural object noun root *iqaluk-* 'fish' appears as an independent lexical item with its own case marking, while the verbal inflection reflects both object and subject agreement. In (130b), however, the noun root appears inside the verbal complex, its case and other inflections have been dropped, and inflection indicating agreement of the verb with the incorporated noun also disappears[94]. Note here that the forms of the independent verb *niri-* 'eat' and the incorporating verb *-tuq-* 'consume' are different. In fact, all incorporating verbs in Inuktitut are affixal verbs and thus can never exist independently of noun incorporation structures. In some cases a root verb with the same semantic connotations as the incorporating verb exists in the language (e.g. *niri-* 'eat' and *imiq-* 'drink' vs. *-tuq-* 'consume'), but in most cases this parallel does not occur. However, a pleonastic element *pi-* 'thing' may be incorporated into the verb in place of a "real" noun, giving the illusion of an unincorporated structure, as in (131).

(131) *Qimmimik pitaarumajunga.*

qimmiq-mik pi-taaq-guma-junga

dog-MOD.SG thing-acquire-want-PAR.1sS

'I want to get a dog.'

The trees in (132) show the relevant aspects of the S-structure

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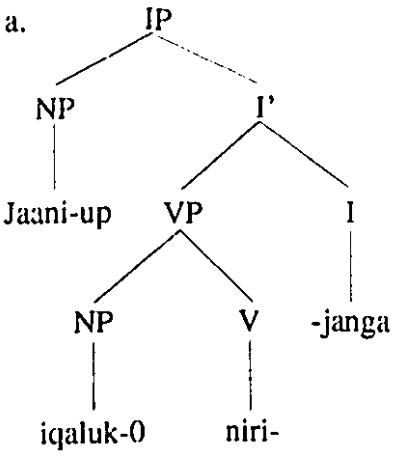
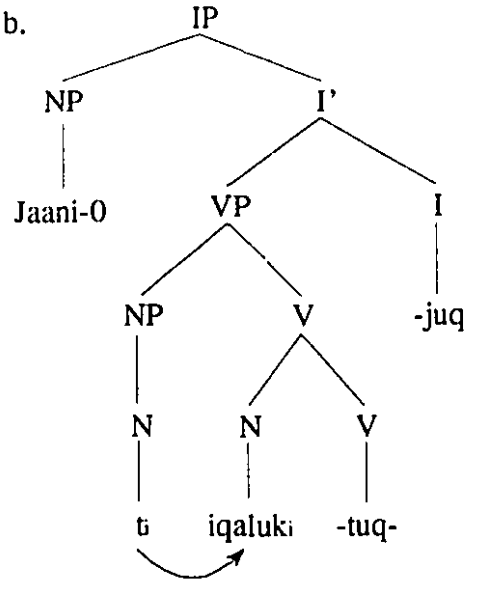
[94] Languages vary in whether or not they require object agreement to be dropped upon incorporation. It is obligatorily dropped in Eskimo, optionally dropped in Niuean, and never dropped in Southern Tiwa. This correlates with the possibility of incorporating unaccusative subjects. Baker (1988, pp. 124-129) attributes both phenomena to a language-specific stipulation that incorporated nouns in some languages require that case be abstractly assigned to them, thus removing the overt case-assigning properties of the verb complex.

representations of the sentences in (130).

(132) a.



b.



Note that the N and V appear as separate lexical items under their own respective XPs, regardless of the fact that *niri-* 'eat' is a free morpheme while *-tuq-* 'consume' is bound. The noun in (132a) remains in the same position at both D-structure and S-structure. In (132b), however the noun moves from its D-structure position to adjoin to the verb, leaving a trace to record its movement.

Some additional facts about noun incorporation in Inuktitut are also relevant. First, incorporated nouns can be fully referential in Inuktitut. Thus proper names can be incorporated, as in (133), and noun incorporation can be used to (and is often the most idiomatic way to) represent a noun newly introduced into discourse, as shown in the example from West Greenlandic in (134)[95].

(133) *Jaaniuvunga.*

Jaani-u-vunga

Johnny-be-IND.1sS

'I am Johnny.'

[95] The referentiality of incorporated nouns is discussed in detail for West Greenlandic in Sadock (1986). Note, however, that incorporated nouns cannot be referential in many languages including Mohawk.

(134) *Ernertaarput, atserlugulu Malamik.*

ernerq-taar-put atser-lugu-lu Mala-mik

son-get.a.new-IND.3pS name-CTM.XxS.3sO-and Mala-MOD.SG

'They had a son and called him Mala.'

(West Greenlandic; Sadock, 1986, p. 23)

In (134), the son is first introduced into the discourse through a noun incorporation structure using *-taar-* 'get a new', and subsequently referred to in the verbal inflection *-lugu* 'CTM.XxS.3sO' and in various other structures in the continuing story.

Second, in addition to nouns, locatives and adverbials may also be incorporated in Inuktitut, as shown in (135) and (136) respectively[96].

(135) *Maaniikainnatunga.*

ma-ani-it-kainnaq-junga

here-LOC-be-PAST-PAR.1sS

'I was here.'

(136) *Imailuugiaqartut.*

imaak-it-luuq-giaqaq-jut

thus-be-do-must-PAR.3pS

'They had to do thus.'

Though the subjects of this research do produce many examples of both locative and adverbial incorporation, this chapter is restricted to analysis of canonical noun incorporation.

5.1.2 Stranding of modifiers

An additional variation on noun incorporation concerns structures in which independent lexical items modify the incorporated noun. These independent lexical items carry the same semantic relationship to the noun in both unincorporated and incorporated structures, even though, in the incorporated structures, the noun which is modified has been incorporated into

[96] The syntax of incorporated locatives and adverbials in Inuit is discussed in some detail in Allen (1988).

the verb complex and the modifier maintains its position outside the verb complex[97]. Such structures are commonly termed *stranding* since the modifier is stranded apart from the noun root. In (137) an adjectival is stranded, in (138) a numeral phrase, and in (139) a possessor.

(137) *Mikijummik qimmiqarqutit.*

miki-juq-mik qimmiq-qar-vutit

be.small-NOM-MOD.SG dog-have-IND.2sS

'You have a small dog.'

(138) *Jaani atausirmik iqaluturtuq.*

Jaani-Ø atausiq-mik iqaluk-tuq-juq

Johnny-ABS.SG one-MOD.SG fish-consume-PAR.3sS

'Johnny ate one fish.'

(139) *Miajimik amautisiurtuq.*[98]

Miaji-mik amauti-siuq-juq

Mary-MOD.SG woman's.parka-look.for-PAR.3sS

'He looks for Mary's parka.'

Note that the structure in (131) above can also be classified as an example of

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[97] Languages which have noun incorporation may allow stranding of determiners (demonstratives, relative clauses, adjectives, quantifiers, numeral phrases) and/or possessors (see Baker, 1988, pp. 92-105). Inuktitut allows for both of these types of stranding.

[98] Possessor stranding in *Tarramiut* does not seem to be as free as in West Greenlandic. The utterance in (i) is fully grammatical in West Greenlandic, but the utterances in (ii) through (iv) are not grammatical in *Tarramiut*. Further investigation would be fruitful here.

(i) *Sisimiut sissa-p naalaga-qar-put.*
Holsteinborg shore-ERG.SG chief-have-3pS.IND
'(The inhabitants of) Holsteinborg used to have a supervisor of the shore.'
(West Greenlandic; Rischel, 1971)

(ii) **Miajiup amautisiurtuq.*
Miaji-up amauti-siuq-juq
Mary-ERG.SG woman's.parka-look.for-PAR.3sS
'He looks for Mary's parka.'

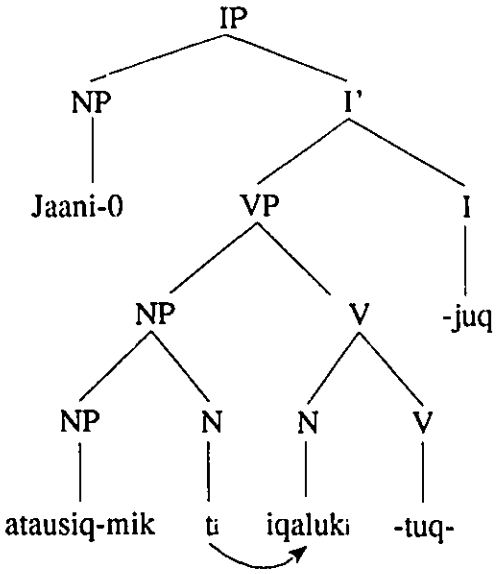
(iii) **Miajiup amautiqartuq.*
Miaji-up amauti-qaq-juq
Mary-ERG.SG woman's.parka-have-PAR.3sS
'He has Mary's parka.'

(iv) **Miajimik amautiqartuq.*
Miaji-mik amauti-qaq-juq
Mary-MOD.SG woman's.parka-have-PAR.3sS
'He has Mary's parka.'

stranding in that the independent noun modifies the pleonastic inside the noun incorporation structure.

A syntactic analysis of noun incorporation can adequately account for these discontinuous dependencies, as shown in the S-structure tree in (140) which represents the sentence in (138).

(140)



The incorporated noun simply moves out of the D-structure NP to adjoin to the verb at S-structure, leaving behind the other elements under their own nodes within the NP. The noun still governs elements such as the stranded possessor by virtue of the Government Transparency Corollory which allows the verb complex to act as governor over everything which the incorporated noun governed at its D-structure position.

Production of stranding structures requires either the cognitive or the structural ability to deal with the discontinuous dependency between the incorporated noun and its corresponding modifier, as well as the basic noun incorporation structure, and thus these structures potentially constitute a more advanced step in the acquisition of noun incorporation.

5.2 Acquisition data

This section discusses acquisition data concerning noun incorporation structures in Inuktitut. Data are taken from the transcripts analyzed for this thesis as described in chapter 2. Section 5.2.1 begins with a discussion of the

age and frequency of use of noun incorporation structures in order to establish that they exist in the data, and to serve as a basis for future crosslinguistic comparison. Section 5.2.2 demonstrates the productivity of seven incorporating verbs according to two criteria of diversity of attachment. Section 5.2.3 presents some errors in noun incorporation structures from the data. Section 5.2.4 offers examples in which two incorporating verbs are used in the same word, potentially constituting an advanced stage in acquisition of noun incorporation. Finally, section 5.2.5 discusses the presence in the data of stranding structures, another potentially advanced stage.

5.2.1 Age and frequency of use

In order to establish the existence of noun incorporation structures in the Inuktitut data, this section begins with figures concerning age and frequency of use of noun incorporation as summarized in table 40.

TABLE 40: *Summary of noun incorporation data from Inuktitut*[99,100]

CHILD	HRS	VC	NI	NI/HR	NI/VC(%)
A2;6	1.93	103	9	4.66	8.74
A2;11	0.95	97	16	16.84	16.49
A3;3	2.30	225	33	14.35	14.67
J2;0	2.05	220	26	12.68	11.82
J2;5	1.87	308	53	28.34	17.21
J2;9	1.95	321	52	26.67	16.20
M2;6	2.05	161	8	3.90	4.97
M2;10	2.43	343	19	7.82	5.54
M3;3	1.00	121	26	26.00	21.49
S2;10	2.02	71	7	3.47	9.86
S3;2	2.38	332	23	9.66	6.93
S3;6	2.35	282	34	14.47	12.06
TOTAL	23.28	2584	306	13.14	11.84

Table 40 shows that the subjects use noun incorporation structures at the youngest ages studied, and use them more frequently than the other structures investigated in this thesis. In addition, the number of noun incorporation

[99] HRS = hours of tape; VC = number of verbal clauses; NI = number of noun incorporation structures; NI/HR = number of noun incorporation structures per hour; NI/VC(%) = percentage of noun incorporation structures per verbal clause

[100] Figures in this table reflect all and only utterances containing noun incorporation structures which are complete and fully intelligible, and are not exact imitations, exclamations, routines, or self-repetitions for emphasis or comprehension. Utterances which otherwise meet these criteria but are identical to a previous utterance in the same taping session are also excluded for reasons given in footnote 36. Were the latter to be included, the following numbers of of noun incorporation structures should be added to table 40: A2;11 - 2; A3;3 - 2; J2;0 - 3; J2;5 - 6; J2;9 - 2; M2;6 - 1; M2;10 - 3; M3;3 - 3; S2;10 - 4; S3;2 - 2; S3;6 - 3.

structures used both per hour and per utterance increases with age for each child. The following tables illustrate more clearly this trend for data grouped by age (table 41), general MLU (table 42), and verbal MLU (table 43).

TABLE 41: *Frequency of use of noun incorporation structures per verbal clause by age*

	2;0-2;6	2;7-3;2	3;3-3;6
No. of verbal clauses	792	1164	628
No./% of NI structures	96/12.1	117/10.1	93/14.8

TABLE 42: *Frequency of use of noun incorporation structures per verbal clause by general MLU*

	2.00-2.49	2.50-2.99	3.00-3.49
No. of verbal clauses	71	1195	1318
No./% of NI structures	7/9.9	116/9.7	183/13.9

TABLE 43: *Frequency of use of noun incorporation structures per verbal clause by verbal MLU*

	3.25-3.99	4.00-4.74	4.75-5.49
No. of verbal clauses	506	1328	750
No./% of NI structures	39/7.7	136/10.2	131/17.5

The figures for the youngest group in table 41 are somewhat skewed because the youngest child in the study, the first two of whose sessions appear here in the youngest group, is rather precocious in comparison with the other children in the study. Otherwise, figures across all three tables show a clear

developmental trend towards increase in use of noun incorporation structures in accordance with increase in both age and MLU.

While the nouns that may incorporate in noun incorporation structures are quite variable, the number of verb roots that allow incorporation is quite small. Table 44 lists those verb roots that are used by the subjects in noun incorporation structures.

TABLE 44: *Verb roots used in noun incorporation structures*

-gi- 'have as'	*-mitiq-* 'cover with'	*-taaq-* 'acquire'
-guq- 'become'	*-ngu-* 'feel sick in'	*-taq-* 'fetch'
-ijaq- 'remove'	*-niaq-* 'hunt'	*-tuq-*$_1$ 'consume'
-laq- 'remove'	*-nnguq-* 'become'	*-tuq-*$_2$ 'ride'
-liaq- 'go to'	*-qaq-* 'have'	*-tuu-* 'be the only'
-liuq- 'make'	*-siuq-* 'look for'	*-u-* 'be'

The distribution of these verb roots across children is shown in table 45[101].

[101] In a few cases more than one incorporating verb root is used in one noun incorporation structure. These cases are counted as only one instance of a noun incorporation structure in tables 40 through 43, but each verb root is counted separately in table 45. Seeming discrepancy in total numbers for each child results only from this difference in counting procedure.

TABLE 45A: *Frequency of use of verb roots in noun incorporation structures*

CHILD	*-gi-*	*-guq-*	*-ijaq-*	*-laq-*	*-liaq-*	*-liuq-*
A2;6						1
A2;11	1				1	2
A3;3	1					2
J2;0	3				5	
J2;5	6				2	2
J2;9	4		1			1
M2;6				2		
M2;10		2	1	1	1	
M3;3	1		1			
S2;10						
S3;2	1				3	
S3;6		1			1	
TOTAL	17	3	3	3	13	8

TABLE 45B: *Frequency of use of verb roots in noun incorporation structures*

CHILD	*-mitiq-*	*-niaq-*	*-ngu-*	*-nnguq-*	*-qaq-*	*-siuq-*
A2;6						
A2;11						2
A3;3					12	
J2;0	1				1	2
J2;5		1			5	2
J2;9				1	20	1
M2;6						
M2;10						
M3;3					9	
S2;10			1			
S3;2						1
S3;6					4	
TOTAL	1	1	1	1	51	8

TABLE 45C: *Frequency of use of verb roots in noun incorporation structures*

CHILD	*-taaq-*	*-taq-*	*-tuq-*$_1$	*-tuq-*$_2$	*-tuu-*	*-u-*
A2;6			1			7
A2;11			3			7
A3;3	1		1	1		16
J2;0			3			11
J2;5	1		14			23
J2;9	6	3	1	3		11
M2;6	1					5
M2;10	3		1			10
M3;3						15
S2;10			3			3
S3;2	1					17
S3;6					1	27
TOTAL	13	3	27	4	1	152

It is clear from table 45 that, while noun incorporation structures are fairly common across the subjects, certain incorporating verb roots are used much more frequently than others, and in fact 5 of the 18 roots are used only once each in the entire data sample.

5.2.2 Productivity of incorporating verb roots

In the sections that follow, seven of the above 18 incorporating verb roots are discussed in terms of the structures in which they appear in the data, and in terms of their productivity for the subjects, in order of frequency of occurrence of the incorporating verb in the data. Since most of the other 11 verb roots appear only infrequently in the data set, it is rather difficult to

assess their productivity, and thus these will not be discussed. It will be assumed without further discussion that if it can be demonstrated that noun incorporation is productive for certain verb roots, then one can assume that noun incorporation is present in the child's grammar.

Two criteria involving diversity of attachment are used in this section to determine productivity of noun incorporation. The first and strongest of these is occurrence of the incorporating verb root with more than one incorporated noun, since this illustrates that the noun plus verb structure is not functioning as a single unanalyzed unit for the child. The second criterion is occurrence of the incorporated noun in other environments than the noun incorporation structure, since this illustrates that the noun is recognized in the child's grammar as a separate unit.

5.2.2.1 *-u-* 'be'

The incorporating verb *-u-* 'be' is used 152 times in the data, by far the most common of the incorporating verbs. Not surprisingly, it is used with several different noun roots by each subject at each age studied. Examples in (141) through (144) give evidence for productivity at the youngest age for each child. It is assumed that productivity at the youngest age indicates productivity at older ages as well.

(141) a. *Paisikuummat.*
paisikuq-u-mmat
bicycle-be-CSV.3sS
'It's a bicycle.'

b. *Mikijuunnginama.*
miki-juq-u-nngit-gama
be.small-NOM-be-NEG-CSV.1sS
'I'm not small [= I'm not one who is small].' (Alec 2;6)

(142) a. *Naammajuuvit anaanautsutit.*
Naammajuq-u-vit anaana-u-tsutit
Naammajuq-be-INT.2sS mother-be-CTM.2sS
'You are Naammajuq while you are mother?'

b. *Akilitsaaluummat.*

akilitsaq-aluk-u-mmat

debt-EMPH-be-CSV.3sS

'It's a debt.' (Juupi 2;0)

(143) a. *Imaasuunguvuq.*

imaak-suuq-u-vuq

thus-HAB-be-IND.3sS

'It goes like this [= it is one which is habitually like this].'

b. *Aullasimajualuuvit?*

aullaq-sima-juq-aluk-u-vit

leave-PERF-NOM-EMPH-be-INT.2sS

'Are you gone away [= are you one who has gone away]?'

(Mae 2;6)

(144) a. *Kinauvit?*

kina-u-vit

who-be-INT.2sS

'Who are you?'

b. *Maakiunngi.*

Maaki-u-nngit

Maggie-be-NEG

'(I) am not Maggie.' (Suusi 2;10)

5.2.2.2 *-qaq-* 'have'

The incorporating verb root *-qaq-* 'have' is used 51 times in the data, though in only the most advanced data - A3;3, J2;5, J2;9, M3;3, and S3;6. During each of these sessions *-qaq-* is used several times with several different incorporating nouns. Examples in (145) through (149) serve as illustration.

(145) a. *Uppinguaqartu.*

uppik-nnguaq-qaq-juq

owl-imitation-have-PAR.3sS

'He has a pretend owl.'

b. *Daaniu qarunnaiqit?*

daaniu qaq-gunnaq-it-vit

daniel have-can-NEG-INT.2sS

'Daniel, don't you have any more?' (Alec 3;3)

(146) a. *Puugutaqanngilatit.*

puugutaq-qaq-nngit-vutit

plate-have-NEG-IND.2sS

'You don't have any plates.'

b. *Nitjanngilaurittik sinittuqarmat.*

nitja-nngit-lauq-gittik sinik-juq-qaq-mmat

make.noise-NEG-POL-IMP.2dS sleep-NOM-have-CSV.3sS

'Don't make noise because there's someone sleeping.'

(Juupi 2;5)

(147) a. *Piirutiqanngimat.*

piiruti-qaq-nngit-mmat

screwdriver-have-NEG-CSV.3sS

'There is no screwdriver.'

b. *Taimaittuqarmijuu kuapa?*

ta-imaak-it-juq-qaq-mi-juq kuapa-Ø

PRE-thus-be-NOM-have-also-PAR.3sS coop-ABS.SG

'Does the co-op have this kind too?' (Juupi 2;9)

(148) a. *Siutiqarsimajuq.*

siuti-qaq-sima-juq

ear-have-PERF-PAR.3sS

'He has an ear.'

b. *Kukiqarunnaimat.*

kukik-qaq-gunnaq-it-mmat

nail-have-can-NEG-CSV.3sS

'He has no (finger or toe) nails anymore.' (Mac 3;3)

(149) a. *Nasaqanngitu.*

nasaq-qaq-nngit-juq

hat-have-NEG-PAR.3sS

'He doesn't have a hat.'

b. *Piaraqannguanginnavit.*

piaraq-qaq-nnguaq-nngit-gavit

baby-have-pretend-NEG-CSV.2sS

'You aren't pretending to have a baby.' (Suusi 3;6)

5.2.2.3 *-tuq-* 'consume'

The incorporating verb *-tuq-* 'consume' is used 27 times in the data - once each at A2;6, A3;3, J2;9, and M2;10, three times each with two different noun roots at A2;11, J2;0, and S2;10, and fourteen times with five different noun roots at J2;5. In each of the former cases save one, the relevant noun root is used in other environments thus illustrating productivity of the incorporating verb, as shown in (150) through (152).

(150) a. *Icecreamturumajunga.*

ice.cream-tuq-guma-junga

ice.cream-consume-want-PAR.1sS

'I want to have some ice cream.'

b. *Saanli icecreammik pigiallagumajunga.*

Saanli ice.cream-mik pi-giallak-guma-junga

Shanley ice.cream-MOD.SG thing-little.bit-want-PAR.1sS

'Shanley, I want a bit more ice cream.' (Alec 3;3)

(151) a. *Qaqquujarturumallipaa!*

qaqquujaq-tuq-gumalli-paa

cracker-consume-yearn.for-oh.how.I

'I yearn for munching crackers.'

b. *Qaqquujaaluit nuilangasivut.*

qaqquujaq-aluk-it nui-langa-si-vut

cracker-big-ABS.PL appear-FUT-PRES-IND.3pS

'The big crackers are going to appear.' (Juupi 2;9)

(152) a. *Kutsutu.*

kutsuk-tuq

gum-consume

'Have some gum.'

b. *Kutsutaartilaunnga.*

kutsuk-taaq-tit-lauq-nnga

gum-acquire-CAUS-POL-IMP.2sS.1sO

'Give me (=make me get) some gum.' (Mac 2;10)

In each of the latter sets of cases, the use of the incorporating verb with more than one incorporated noun root illustrates its productivity, as shown in the examples in (153) through (156).

(153) a. *Aaputusigama.*

aapu-tuq-si-gama

apple-consume-PRES-CSV.1sS

'I'm going to have an apple.'

b. *Imaittutulangavunga?*

imaak-it-juq-tuq-langa-vunga

thus-be-NOM-consume-FUT-IND.1sS

'Am I going to have one like this?' (Alec 2;11)

(154) a. **Putugunnguatutu.* [target: *putugunnguatuq*]

putuguq-nnguaq-tuq

toe-imitation-consume

'(I want to) eat a pretend toe (candy shaped like a toe).'

b. *Suitisitu.*

suitisik-tuq

candy-consume

'(Let me) consume a candy.' (Juupi 2;0)

(155) a. *Uunartualuunngimat qajurtutara.*

uunaq-juq-aluk-u-nngit-mmat qajuq-tuq-jaq-ga

be.hot-NOM-EMPH-be-NEG-CSV.3sS soup-consume-PP-ABS.1Ssg

'The soup I'm drinking is not very hot.'

b. *Anaana tiitulaurmilanga.*
anaana tii-tuq-lauq-mi-langa
mother tea-consume-POL-also-IMP.1sS
'Mom, I shall have more tea.' (Juupi 2;5)

(156) a. *Taimaittutu manngat.*
ta-imaak-it-juq-tuq ma-anngat
PRE-thus-be-NOM-consume here-ABL
'(Let's) have some like that from here.'

b. *Kutsutu.*
kutsuk-tuq
gum-consume
'Have some gum.' (Suusi 2;10)

5.2.2.4 *-gi-* 'have as'

The incorporating verb *-gi-* 'have as' is used 17 times in the data - once each in A2;11, A3;3, M3;3 and S3;2, and between three and six times in each session with Juupi. This incorporating verb is unusual in that it takes three arguments, and thus takes two-argument inflection though an object noun root is incorporated. In two of the sessions in which *-gi-* is used only once, as well as in J2;0 where *-gi-* is used several times but with only one noun root, the relevant noun root is used in other environments, thus illustrating its productivity, as shown in (157) through (159).

(157) a. *Piararinnginaviuk.*
piaraq-gi-nngit-gaviuk
baby-have.as-NEG-CSV.2sS.3sO
'You don't have it as (your) baby.'

b. *Piarakkanik atjiliurama.*
piaraq-kkanik atjiliuq-gama
baby-MOD.1Spl film-CSV.1sS
'I'm filming my babies.' (Alec 3;3)

(158) a. *Una panik pigilirtara.*

u-na panik pi-gi-liq-jara

this.one-ABS.SG daughter PLEON-have.as-PRES-PAR.1sS.3sO

'This is mine [= I have this one as my thing], daughter.'

b. *Piijalangajuit.*

pi-ijaq-langa-juq-it

PLEON-remove-FUT-NOM-ABS.PL

'Will they get off?' (Mac 3;3)

(159) a. *Ataataup piginngitaaluaguna.*

ataata-up pi-gi-nngit-jaq-aluk-nga-u-na

father-ERG.SG PLEON-have.as-NEG-PP-EMPH-ABS.3Ssg-this.one-ABS.SG

'It's not Dad's [= Dad doesn't have this one as his thing].'

b. *Ajaapiu pialuani aturqit?*

najak-apik-up pi-aluk-nganik atuq-vit

sister-DIM-ERG.SG PLEON-EMPH-MOD.3Ssg use-INT.2sS

'Are you using my younger sister's thing?' (Juupi 2;0)

In J2;5 and J2;9, *-gi-* is used with at least three different noun roots each, as illustrated in the examples in (160) and (161) which give evidence of its productivity.

(160) a. *Kinaumuna pigilangalirtanga?*

kina-up-u-na pi-gi-langa-liq-janga

who-ERG.SG-this.one-ABS.SG PLEON-have.as-FUT-PRES-PAR.3sS.3sO

'Who is going to have this one (as their thing)?'

b. *Una saviginngitara?*

u-na savik-gi-nngit-jara

this.one-ABS.SG knife-have.as-NEG-PAR.1sS.3sO

'Isn't this my knife [= don't I have this one as a knife]?'

(Juupi 2;5)

(161) a. *Kanna niriqautiginiartanga.*
katsu-na niriqauti-gi-niaq-janga
that.one-ABS.SG plate-have.as-FUT-PAR.3sS.3sO
'He will have that one down there as a plate.'

b. *Saviginngitaalukkanik kamannginama.*
savik-gi-nngit-jaq-aluk-kkanik kama-nngit-gama
knife-have.as-NEG-PP-EMPH-MOD.1Spl touch-NEG-CSV.1sS
'I don't touch knives that don't belong to me [= I don't touch a knife that I don't have as mine].' (Juupi 2;9)

5.2.2.5 *-liaq-* 'go to'

The incorporating verb root *-liaq-* 'go to' appears 13 times in the data - once in each of A2;11, M2;10, and S3;6, twice and three times respectively in J2;5 and S3;2 with the same noun root but different inflections, and five times in J2;0 with two different noun roots. While the incorporated noun roots used with *-liaq-* in A2;11 and S3;6 do not appear in other environments, those used in J2;5, M2;10 and S3;2 do, giving evidence of their productivity as shown in (162) through (164) respectively.

(162) a. ?*Quaqtalialaartunga uuminga takulaartunga.*[102]
Quaqtaq-liaq-laaq-junga u-minga taku-laaq-junga
Quaqtaq-go.to-FUT-PAR.1sS this.one-MOD.SG see-FUT-PAR.1sS
'I'll see this one (when) I go to Quaqtaq.'

[102] This utterance would be better with a conditional inflection on the subordinate verbal, as in (i).

(i) *Quaqtalialaartuaruma uuminga takulaartunga.*
Quaqtaq-liaq-laaq-junga u-minga taku-laaq-junga
Quaqtaq-go.to-FUT-as.soon.as-CND.1sS this.one-MOD.SG see-FUT-PAR.1sS
'I'll see this one when I go to Quaqtaq.'

b. *?Quaqtakut.*[103]

Quaqtaq-kkut

Quaqtaq-VIA.SG

'Through Quaqtaq.' (Juupi 2;5)

(163) a. *Anaana qataapikkuliarumajunga.*

anaana qataq-apik-kkut-liaq-guma-junga

mother cousin-DIM-group-go.to-want-PAR.1sS

'Mom, I want to go to (my) cousin's place.'

b. *Qataapikkunuusigama.*

qataq-apik-kkut-nut-uq-si-gama

cousin-DIM-group-ALL.PL-go-PRES-CSV.1sS

'I'm going to (my) cousin's place.' (Mac 2;10)

(164) a. *Ataata kuapaliasivit?*

ataata kuapa-liaq-si-vit

father coop-go.to-PRES-INT.2sS

'Dad, are you going to the co-op?'

b. *Una kuapami.*

u-na kuapa-mit

here-ABS.SG coop-ABL.SG

'This one (is) from the co-op.' (Suusi 3;2)

Examples in (165) show productivity of *-liaq-* in J2;0 since it is used with two different incorporating noun roots.

(165) a. *Kuapaliartualulli anaana?*

kuapa-liaq-juq-aluk-li anaana

coop-go.to-NOM-EMPH-where mother

'Where is the one who has gone to the co-op, Mom?'

---

[103] Since Juupi is speaking here about travelling to Quaqtaq rather than through it or by means of it, the utterance should be as in (i).

(i) *Quaqtamut.*
Quaqtaq-mut
Quaqtaq-ALL.SG
'To Quaqtaq.'

b. *Qangattajuuliaqqauju.*
qangattajuuq-liaq-qqau-juq
airplane-go.to-PAST-PAR.3sS
'She went to the airplane.' (Juupi 2;0)

5.2.2.6 *-taaq-* 'acquire'

The incorporating verb *-taaq-* 'acquire' is used 13 times in the data, including once each at A3;3, J2;5, M2;6, and S3;2, three times with different noun roots at M2;10, and six times each with different incorporating nouns at J2;9. In the former cases in which *-taaq-* is used with only one noun root during each session, the relevant noun root is used in another environment once, as shown in (166).

(166) a. **Una am pitaalaartuta.* [target: *pitaalaarqita*][104]
u-na am pi-taaq-laaq-vita
this.one-ABS.SG um PLEON-acquire-FUT-INT.1pS
'This one um we're getting it.'

b. *Pigumagama.*
pi-guma-gama
PLEON-want-CSV.1sS
'I want it.' (Mae 2;6)

Examples from the latter two cases illustrating productivity of *-taaq-* are shown in (167) and (168) respectively.

(167) a. **Imaittumitaaq pitaaq.*[105]
imaak-it-juq-mik-taaq pi-taaq
thus-be-NOM-MOD.SG-acquire thing-acquire
'(I want to) get the thing like that.'

---

[104] The incorrect inflection here seems to be a mix of the participative *-ju-/-tu-* with the first person plural *-ta* common across several modalities. Note also that the demonstrative *una* 'this one' is in the absolutive form and should rather be in the modalis form, *uuminga*. This error is likely due to pausing and searching in the utterance as signified by the filler *am* 'um', and thus seems to be a result of sentence reformulation rather than an error of performance rather than competence.

[105] The ungrammaticality of this utterance is discussed in section 5.2.3.

b. *Kutsutaartilaunnga.*
kutsuk-taaq-tit-lauq-nnga
gum-acquire-CAUS-POL-IMP.2sS.1sO
'Give me (= make me get) some gum.' (Mac 2;10)

(168) a. *Imaittutaalirsuni.*
imaak-it-juq-taaq-liq-tsuni
thus-be-NOM-acquire-PRES-CTM.4sS
'He got one like this.'

b. *Umiarjuataarta?*
umiarjuaq-taaq-ta
ship-acquire-IMP.1pS
'Shall we get a ship?' (Juupi 2;9)

5.2.2.7 *-siuq-* 'look for'

The incorporating verb *-siuq-* 'look for' is used only 8 times in the data set - once each at J2;9 and S3;2, twice each but with the same noun incorporated (though different inflections) at A2;11 and J2;5, and twice with different nouns incorporated at J2;0. In two of the former two cases, the incorporated noun root is used in other environments illustrating its productivity, as shown in (169) and (170).

(169) a. *Tuttusiulaaqinuk.*
tuttu-siuq-laaq-vinuk
caribou-look.for-FUT-INT.1dS
'Will we go look for caribou?'

b. *Qukisigakku tuttualu.*
qukiq-si-gakku tuttu-aluk-Ø
shoot-PRES-CSV.1sS.3sO caribou-EMPH-ABS.SG
'I'll shoot the caribou.' (Alec 2;11)

(170) a. *Kiinaujarsiugasuarqunga maani.*
kiinaujaq-siuq-gasuaq-vunga ma-ani
money-look.for-try-IND.1sS here-LOC
'I'm trying to look for money here.'

b. **Anaana kiinaujartautiniarqunga ... uumunga ... atjiliurutimut.*[106]
anaana kiinaujaq-tau-tit-niaq-vunga u-munga atjiliuruti-mut
mother money-PASS-CAUS-FUT-IND.1sS this.one-ALL.SG
camera-ALL.SG
target: 'Mom, I'll be given some money ... by this one ... by the camera.' (Juupi 2;9)

Examples in (171) show *-siuq-* used at J2;0 with different noun roots incorporated into it, thus illustrating its productivity.

(171) a. *Uvilursiulangagavit?*
uviluq-siuq-langa-gavit
mussel-look.for-FUT-CSV.2sS
'You're going to look for mussels?'

b. *Uquuqusiurialangajualuguna.*
uquuqu-siuq-giaq-langa-juq-aluk-u-na
animal(BW)-look.for-begin.to-FUT-NOM-EMPH-this.one-ABS.SG
'This one is going to go look for an animal.' (Juupi 2;0)

5.2.2.8 Summary of productivity

In the sections above, the productivity of seven incorporating verb roots is discussed. It is concluded that each of them is productive in at least some of the sessions for which data is presented, based on use of either the incorporating verb or the incorporated noun in more than one morphological environment. Following these criteria of productivity, the above seven incorporating verbs are claimed to be productive at those ages indicated in table 46.

[106] The ungrammaticality of this utterance is discussed in sections 3.2.3.2, 4.2.1.5.2, and 5.2.3.2.

TABLE 46: *Productivity of incorporating verb roots in Inuktitut*

CHILD	*-gi-*	*-liaq-*	*-qaq-*	*-siuq-*	*-taaq-*	*-tuq-*	*-u-*
A2;6							X
A2;11				X		X	X
A3;3	X		X			X	X
J2;0	X	X		X		X	X
J2;5	X	X	X			X	X
J2;9	X		X	X	X	X	X
M2;6					X		X
M2;10		X			X	X	X
M3;3	X		X				X
S2;10						X	X
S3;2		X					X
S3;6			X				X

It is clear from this table that at least two of the seven incorporating verb roots are productive for each child at each age except for Alec at 2;6. This implies that noun incorporation as a structure is also productive at all these ages.

5.2.3 Errors

Several errors in noun incorporation structures occur in the data, including errors of incorrect verbal inflection, incorrect omission of incorporating verb roots, incorrect use of modalis case, and overuse and overgeneralization of noun incorporation structures. Each is discussed in turn in the following sections.

5.2.3.1 Incorrect verbal inflection

Alec produces 3 utterances at 3;3 involving incorrect inflections on noun incorporation structures with *-liuq-*, as shown in (172).

(172) a. **Pani kaamuliusijara.*
panik kaamu-liuq-si-jara
daughter camel-make-PRES-PAR.1sS.3sO
'Daughter, I'm going to make a camel.'

b. **Pani itigaliusijara.*
panik itiga-liuq-si-jara
daughter foot-make-PRES-PAR.1sS.3sO
'Daughter, I'm going to make a foot.'

c. **Kaamuu itigaliusijara.*
kaamu-up itiga-liuq-si-jara
camel-ERG.SG foot-make-PRES-PAR.1sS.3sO
'I'm going to make a camel's foot.' (Alec 3;3)

During each of these utterances Alec is drawing a camel on the carpet with his finger. Since in each utterance a noun root is incorporated, the verbal inflection should agree with the subject only. However, each verb in (172) is inflected for both subject and object. At this age Alec is using at least 4 other incorporating verb roots productively and correctly, so it is not clear why he does not produce the correct inflection when using *-liuq-*. It is possible that he has not yet analyzed *-liuq-* as an incorporating verb root, though he has clearly analyzed it as an independent morpheme.

5.2.3.2 Incorrect omission of incorporating verb root

In a few utterances, such as those in (173) through (175), the incorporating verb *-u-* 'be' is incorrectly omitted. The actual utterances are in the (a) examples, while the correct adult targets are in the (b) examples.

(173) a. **Kapputitsuni?*
kapputi-tsuni
plug-CTM.4sS
target: 'Is it a plug?' (Juupi 2;9)

b. *Kapputiutsuni?*

kapputi-u-tsuni

plug-be-CTM.4sS

'Is it a plug?'

(174) a. **Taamisaqquumat.*

Taamisa-qquuq-mmat

Taamisa-probably-CSV.3sS

target: 'It's probably Taamisa.' (Mac 2;6)

b. *Taamisauqquumat.*

Taamisa-u-qquuq-mmat

Taamisa-be-probably-CSV.3sS

'It's probably Taamisa.'

In the examples in (175), Juupi first utters (175a), then is corrected by his mother and utters (175b).

(175) a. **Napaunirartaujuvinijuti Taamisamu.*

Napa-u-niraq-jau-juq-viniq-jutit Taamisa-mut

Napa-be-say-PASS-NOM-former-PAR.2sS Taamisa-ALL.SG

target: 'You were called Napa by Taamisa.' (Juupi 2;5)

b. *Napaunirartaujuviniujuti Taamisamu.*

Napa-u-niraq-jau-juq-viniq-u-jutit Taamisa-mut

Napa-be-say-PASS-NOM-former-be-PAR.2sS Taamisa-ALL.SG

'You were called Napa by Taamisa.' (Juupi 2;5)

It is likely that these utterances are simple performance errors since *-u-* is clearly productive for each of these children at the ages in question.

An additional error of this type that is perhaps more complicated is in (176a), with the adult target in (176b).

(176) a. **Anaana kiinaujartautiniarqunga ... uumunga ... atjiliurutimut.*

anaana kiinaujaq-jau-tit-niaq-vunga u-minga atjiliuruti-mut

mother money-PASS-CAUS-FUT-IND.1sS this.one-MOD.SG

camera-ALL.SG

target: 'Mother, I will be given money ... by this one ... by the camera.' (Juupi 2;9)

b. *kiinaujartaatitauniarqunga.*

kiinaujaq-taaq-tit-jau-niaq-vunga

money-acquire-CAUS-PASS-FUT-IND.1sS

'I'll get some money.' [= I'll be made to acquire money]

Here Juupi incorrectly omits the incorporating verb, and also reverses the order of the passive and causative morphemes, as discussed in sections 3.2.3.2 and 4.2.1.5.2. This utterance represents the only attempt in the data to use three valency-altering mechanisms within one verbal complex. Such a construction is clearly at the upper limit of Juupi's grammatical ability at this age, and thus the error likely reflects a difficulty in competence rather than performance.

5.2.3.3 Incorrect inflection for modalis case

Two utterances in the data show incorrect use of modalis case in the noun incorporation structure. In (177), Suusi incorporates the noun *tii-* 'tea' into an incorporating verb, but then marks the structure with a nominal inflection.

(177) **Tiitummi.*

tii-tuq-mik

tea-consume-MOD.SG

'(I want to) have some tea.' (Suusi 2;10)

Either *tiituq* or *tiimik* would be grammatical by itself, both meaning the intended '(I want to) have some tea'. However, they cannot be used together. It is possible that Suusi has not correctly segmented the incorporation structure *tiituq* yet, even though *-tuq-* 'consume' seems to be productive in her speech at this age, since *tiituq* is very commonly used in child language and may in fact be treated as an unanalyzed unit well into the acquisition process. It is also possible that the morpheme *-mi* used here is not in fact a modalis case ending. Research on the language of one Inuk specifically language impaired subject from a neighboring settlement revealed a strategy in this child of using a generic inflection *-mi* incorrectly on both nominal and verbal stems (Crago & Allen, in press a, in press b). It could be, then, that this is a common strategy appearing very infrequently in normally developing children and more

frequently in subjects with language impairment. This phenomenon certainly bears further investigation.

A similar error is found in the data from Mae, as shown in (178).

(178) **Imaittumitaaq pitaaq.*

imaak-it-juq-mik-taaq pi-taaq

thus-be-NOM-MOD.SG-acquire thing-acquire

'(I want to) get the thing like that.' (Mae 2;10)

In the utterance in (178), Mae incorrectly affixes a modalis inflection to the nominal *imaittuq* 'one like this' before incorporating it. Since *imaittumik* is a very common expression in child language, it is possible that Mae has not yet correctly segmented the inflection on this word. Note that *imaittumik* is also very commonly used in an unanalyzed form as a filler nominal by one specifically language impaired Inuk child reported on in the literature (Crago & Allen, in press a, in press b). It may be that Mae said *pitaaq* here as a sort of correction of *imaittumitaaq* since she somehow knew it was incorrect but did not know how to correct it.

5.2.3.4 Overuse of noun incorporation structure

At 3;2, Suusi seems to be somewhat overzealous in her use of noun incorporation structures. With the incorporating verb roots *-u-* 'be' and *-gi-* 'have as', it is quite common to incorporate a nominalized phrase such that the property expressed by that phrase is attributed to the person or thing which is the subject of the structure. Suusi overuses this strategy, making some of her utterances more complicated than necessary, as shown in (179) through (181). The actual utterances are in the (a) examples while the adult targets are shown in the (b) examples.

(179) a. *Una sinittualuunngitu.*

u-na sinik-juq-aluk-u-nngit-juq

this.one-ABS.SG sleep-NOM-EMPH-be-NEG-PAR.3sS

'This one isn't sleeping.' [= this one is not one who is sleeping] (Suusi 3;2)

b. *Una sininngitualu.*

u-na sinik-nngit-juq-aluk

this.one-ABS.SG sleep-NEG-PAR.3sS-EMPH

'This one isn't sleeping.'

(180) a. *Takugit nasaittuungittu.*

taku-git nasaq-it-juq-u-nngit-juq

see-IMP.2sS hat-NEG-NOM-be-NEG-PAR.3sS

'Look, she has a hat.' [= she isn't one who has no hat]

(Suusi 3;2)

b. *Takugit nasaqanngituq.*[107]

taku-git nasaq-qaq-nngit-juq

see-IMP.2sS hat-have-NEG-PAR.3sS

'Look, she doesn't have a hat.'

(181) a. *Unaalu ilangitaalugijara.*

u-na-aluk pi-langa-nngit-jaq-aluk-gi-jara

this.one-ABS.SG-EMPH PLEON-FUT-NEG-PP-EMPH-have.as-PAR.1sS.3sO

'I'm not going to have this yucky stuff as mine.' (Suusi 3;2)

b. *Unaalu pilanganngitaaluga.*

u-na-aluk pi-langa-nngit-jaq-aluk-ga

this.one-ABS.SG-EMPH PLEON-FUT-NEG-PP-EMPH-ABS.1Ssg

'I'm not going to (eat) this yucky stuff.'

Examples such as those in (179) through (181) are clear evidence of productivity since Suusi would not have heard such utterances in the caregiver input. While adult speakers certainly create noun incorporation structures in which a nominalized phrase is incorporated, they do not create redundant structures such as those used by Suusi in these examples.

[107] Note in (180) that the negation does not match across the (a) and (b) examples. In this context, Suusi is talking about a friend who is not in fact wearing a hat. It is likely that she confused the extent of the negation of this utterance in her zeal to make it overly complex.

5.2.3.5 Overgeneralization

In at least two utterances in the data, Suusi overgeneralizes the use of *-u-* 'be' when she should rather use *-gi-* 'have as'. Such overuse of *-u-* seems, on the basis of my personal observations, to be common among Inuktitut second language learners as well. Again, the (a) examples show actual utterances while the (b) examples show the adult targets.

(182) a. **Una atjingaunngituq.*
u-na atji-nga-u-nngit-juq
this.one-ABS.SG same-ABS.3Ssg-be-NEG-PAR.3sS
'This one is not its same one.' (Suusi 3;2)

b. *Una atjiginngitanga.*
u-na atji-gi-nngit-janga
this.one-ABS.SG same-have.as-NEG-PAR.3sS.3sO
'This one is not the same one [= it doesn't have this one as its same one].'

(183) a. **Piaraunngualavu.*
piaraq-u-nnguaq-lavuk
baby-be-pretend-IMP.1dS.3sO
'Let's pretend it to be a baby.' (Suusi 3;6)

b. *Piararinngualaurlavuk.*
piaraq-gi-nnguaq-lauq-lavuk
baby-have.as-pretend-POL-IMP.1dS.3sO
'Let's pretend to have it as a baby.'

Note that the utterance in (183a) also is incorrectly inflected in that it reflects both subject and incorporated object. These errors undoubtedly reflect Suusi's grappling with the acquisition of *-gi-* since it is one of the more complex incorporating verb roots to master due to its ditransitive nature. In addition, they reflect productivity on Suusi's part since the utterances in the (a) examples would not be used by adults but do show Suusi's knowledge of the use of noun incorporation structures to create her own novel words.

5.2.3.6 Summary of errors

The above sections have shown a variety of errors in use of noun incorporation structures. While incorrect omission of incorporating verb roots illustrated in 5.2.3.2 is likely no more than a performance error, the errors illustrated in the other sections show signs of struggle toward the acquisition of productive noun incorporation. The errors in sections 5.2.3.4 and 5.2.3.5 particularly illustrate productive use of the mechanism of noun incorporation to create utterances that are neither present in the input nor correct by adult standards but clearly reflect an understanding of the relevant structural patterns.

5.2.4 Double incorporation

Several examples occur in the data of use of more than one incorporating verb in one utterance. Examples are shown in (184).

(184) a. *Sunaturtuviniuvunga?*
suna-tuq-juq-viniq-u-vunga
what-consume-NOM-former-be-IND.1sS
'What did I have to eat before [= I am one who had what to eat before]?' (Juupi 2;5)

b. *Napaunirartaujuviniujuti Taamisamu.*
Napa-u-niraq-jau-juq-viniq-u-jutit Taamisa-mut
Napa-be-say-PASS-NOM-former-be-PAR.2sS Taamisa-ALL.SG
'You were called Napa [= you are one who was said to be Napa] by Taamisa.' (Juupi 2;5)

c. *Saanliunngitualuuvit?*
Saanli-u-nngit-juq-aluk-u-vit
Shanley-be-NEG-NOM-EMPH-be-INT.2sS
'You're not Shanley [= are you one who is not Shanley]?' (Juupi 2;5)

d. *Nanurni piaraqasungumata.*

nanuq-nik piaraq-qaq-suuq-u-mmata

polar.bear-MOD.PL baby-have-HAB-be-CSV.3pS

'They have polar bear babies [= they are ones who have polar bear babies].' (Alec 3;3)

These utterances are potentially more complex than simple noun incorporation since they involve incorporating an already-incorporated and nominalized structure.

5.2.5 Stranding

The children in this study produced only four examples of apparent stranding structures, and only in the most advanced sessions. This is not really surprising since stranding is undoubtedly more complex than noun incorporation itself.

Suusi, at 3;6, produced the equivalent of a stranding structure in which the stranded adjectival seemingly modifies a verb as in (185).

(185) *Ilai angijualummi nasarsimanngituq?*

ilai angi-juq-aluk-mik nasaq-sima-nngit-juq

right be.big-NOM-EMPH-MOD.SG wear.hat-PERF-NEG-PAR.3sS

'He's not wearing a big hat, right?' (Suusi 3;6)

Note that the verb root *nasaq-* 'wear hat' here has the same form as the noun root *nasaq-* 'hat'; a similar relationship is observed for many clothing items in Inuktitut. The stranding structure in (185) suggests that this verb root might in fact be a noun root in a noun incorporation structure in which the incorporating verb root is either phonetically null or of phonetic content that is subsumed by the morphophonological processes in Inuktitut. It is also possible that the verb root is actually a verb root and maintains ability to refer; however, this explanation does not fit well within current theories of morphology which claim that only nominals have the possibility to refer.

Alec, at 3;3, produced an example of possessor stranding, though in a grammatically incorrect utterance, as shown in (186).

(186) **Kaamuu itigaliusijara.*

kaamu-up itiga-liuq-si-jara

camel-ERG.SG foot-make-PRES-PAR.1sS.3sO

'I'm going to make a camel's foot.' (Alec 3;3)

(drawing a camel on the carpet with his finger)

This utterance is incorrect since the inflection incorrectly marks the incorporated noun root object argument, as discussed in section 5.2.3.1. However, it is clear that this noun root *itiga-* 'foot' is part of a possessive construction including *kaamuup* 'camel's'.

Finally, Juupi and Alec each produced one noun incorporation structure stranding an adjective.

(187) a. *Taamisakkut imaittunik saviqarqut.*

Taamisa-kkut imaak-it-juq-nik savik-qaq-vut

Taamisa-group thus-be-NOM-MOD.PL knife-have-IND.3pS

'Taamisa and his friends have knives like this.' (Juupi 2;9)

b. *Nanurni piaraqasungumata.*

nanuq-nik piaraq-qaq-suuq-u-mmata

polar.bear-MOD.PL baby-have-HAB-be-CSV.3pS

'They have polar bear babies [= they are ones who have polar bear babies].' (Alec 3;3)

In (187a), the nominal *imaittunik* 'ones like this' is actually an adjectival modifying the incorporated noun root *savik-* 'knife', while in (187b) the nominal *nanurnik* 'polar bears' modifies the incorporated noun root *piaraq-* 'baby'.

Examples of stranding structures involving stranded numerals and demonstratives were found in the speech of slightly older children whose utterances appeared in the data though they were not the focus of study, as shown in (188).

(188) a. *Qilalugalialu uuminga ataata.*

qilalugaq-lik-aluk u-minga ataata

whale-have-EMPH this.one-MOD.SG father

'He owns this whale, dad.' (Daniel 4;0)

b. *Paniqarsunga atausirmik.*
panik-qaq-tsunga atausiq-mik
daughter-have-CTM.1sS one-MOD.SG
'I have one daughter.' (Louisa 4;0)

c. *Marruulunuk uuminga paniqanngua.* [target: *paniqannguatavuk*]
marruq-u-lunuk u-minga panik-qaq-nnguaq(-javuk)
two-be-ICM.1dS this.one-MOD.SG daughter-have-pretend(-PAR.2dS)
'Two of us will pretend to have this daughter.' (Louisa 4;0)

In (188a) and (188c), the incorporated noun is modified by a demonstrative. In (188b), the incorporated noun is modified by a numeral.

5.3 Comparison with data from West Greenlandic

Acquisition data from West Greenlandic (Fortescue, 1985; Fortescue & Lennert Olsen, 1992) corroborate the findings from Inuktitut concerning the relatively early acquisition of noun incorporation. Several incorporating verb roots are reported as productive in the West Greenlandic data (using the criteria of diversity of attachment), as shown in table 47.

TABLE 47: *Productivity of incorporating verb roots in West Greenlandic* (data from Fortescue, 1985 and Fortescue & Lennert Olsen, 1992)

VERB	TRANSLATION	2;2	2;3	3;1	3;4	4;7	5;2
-gi-	'have as'				X		
-ler-	'apply, provide with'					X	X
-lersor-	'provide with several'						X
-liaq-	'go to'		X				
-lior-	'make'						X
-nngor-	'become'	X			X	X	X
-qar-	'have'				X	X	X
-taar-	'acquire'						X
-u-	'be'		X	X	X	X	X

Though some of these incorporating verb roots are used at ages other than those indicated in the table, they are not deemed to be productive since they do not appear with more than one incorporated noun root at the age in question. While the data from West Greenlandic do not seem to show as early or diverse acquisition of productive noun incorporation as the data from Inuktitut, this may only be an artefact of the differences in data available. First, recall that data from West Greenlandic are based on between 10 and 17 pages of transcript per child (including utterances from others). Thus it may well be the case that the incorporating verb roots in question do not appear frequently enough in typical child speech to occur enough times in the transcripts to meet the productivity criterion. Second, note that there are only four data points within the age range from 2;0 to 3;6 in West Greenlandic, whereas there are 12 data points in this range in the Inuktitut data. However, it is interesting that four of the earliest incorporating verbs to appear are identical across the two languages: *-gi-* 'have as', *-liaq-* 'go to', *-qaq-* 'have',

and *-u-* 'be'.

Several examples of productive noun incorporation in West Greenlandic child language are shown in (189).

(189) a. *qulinngorpa?*
quli-nngor-pa
ten-become-INT.3sS
'Is it ten (o'clock)?'
(age 2;2; Fortescue &Lennert Olsen, 1992, p. 145)

b. *atsaaqqa-kkut taava, ee, uffa nakorsa-a-sutit oqar-puti*
auntie-and.family then uh although doctor-be-INTR.PART.2sS say-IND.3pS
'Auntie and the other then, uh, and you who are a doctor, said ...' (age 3;1; Fortescue & Lennert Olsen, 1992, p. 150)

c. *qarle-qar-punga-mi*
pants-have-IND.1sS-but
'But I'm wearing pants.'
(age 3;4; Fortescue & Lennert Olsen, 1992, p. 170)

d. *qimussi-nik anu-lersu-i-sar-poq*
sled-MOD.PL trace-attach.to-HALF.TRANS-HAB-IND.3sS
'He attaches the dog-traces to sleds.'
(age 5;2; Fortescue & Lennert Olsen, 1992, p. 200)

e. *nuno-ora-ati-taar-poq*
baby-little-alien.POSS-get.a.new-IND.3sS
'She got a little baby.'
(age 5;2; Fortescue & Lennert Olsen, 1992, p. 201)

In addition, the West Greenlandic data show stranding structures appearing at least as early as age 4;7. The structure in (190) is similar to that in (185) in Inuktitut in that the stranded element here modifies a verb root with nominal content instead of an incorporated noun.

(190) *ajunngi-laq mikisu-mik kukku-galua-rama*

be.good-IND.3sS small.one-MOD.SG make.mistake-however-CSV.1sS

'It's alright if I make a little mistake.'

(age 4;7; Fortescue & Lennert Olsen, 1992)

A more straightforward example of stranding is given at 5;2, shown in (191).

(191) *taava qimmi-t toqu-gunik alla-nik ini-ssa-qa-nngin-namikkit*

then dog-ABS.PL die-CND.4pS other-MOD.PL place-FUT-have-NEG-CSV.4pS.3pO

'So when dogs die, since they don't have any other place for them...' (age 5;2; Fortescue & Lennert Olsen, 1992)

The modifier *allanik* 'other' is stranded from the noun root, *ini-* 'place', which it modifies.

It is evident from the data presented from West Greenlandic that the pattern of relatively early acquisition of noun incorporation structures is not restricted only to Inuktitut, but rather could well be a trait of the Inuit language family in general.

5.4 Discussion of theoretical and empirical issues

As mentioned in the introduction to this chapter, acquisition data from Mohawk show that noun incorporation in Mohawk is not acquired productively until after at least age 4;9 (Mithun, 1989). The instances of noun incorporation which do appear before this age are claimed to be lexicalized forms unanalyzed by the child. In section 5.4.1 below, relevant data and discussion concerning acquisition of noun incorporation in Mohawk is presented. Section 5.4.2 offers several potential explanations for the relative difference in time of acquisition of noun incorporation between Inuktitut and Mohawk. These explanations include the difference in criteria for use of noun incorporation, the difference in degree of "usualness" of noun incorporation in adult speech, the difference in position of the verbal affixation in relation to the noun root, and the difference in degree and intensity of child exposure to language.

5.4.1 Noun incorporation in Mohawk

Noun incorporation is a common structure in Mohawk, and is discussed in some detail in Beatty (1974), Bonvillain (1974) and Mithun (1984). The following sections present first a short overview of the structure of noun incorporation in Mohawk, and second a description of its acquisition.

5.4.1.1 Structure of noun incorporation in Mohawk

This section constitutes a very brief outline of Mohawk nominals, verbals, and noun incorporations structures. Examples of typical nominals are given in (192), of typical verbals in (193), and of typical noun incorporation structures in (194). Of particular note are the affixation and inflection patterns associated with these elements.

Regular nouns in Mohawk consist minimally of a pronominal prefix indicating the number and gender of the referent (or its possessor), a noun root, and a nominal suffix, as in (192a). A number of derivational suffixes may also be added to nominals, including the locative *-ke/-ne* 'at, to, in(to), on(to)', as in (192b). Nouns are not inflected for case.

(192) a. *ka-hná:w-a'*
NEUTER.SINGULAR.PATIENT-rapids-NOMINAL.SUFFIX
'current, rapids'

b. *ra-'nionhs-à:-ke*
MASC.SG.AGENT-nose-NOMINAL.SUFFIX-LOCATIVE
'on his nose' (Mithun, 1989, p. 287)

Mohawk verbs consist minimally of a pronominal prefix, a verb root and an aspect suffix, as in (193a). Pronominal prefixes include a set for agents, a set for patients, and a transitive set for a combination of the two. Person, number and gender information is included within these prefixes. Verbs containing a large number of morphemes are not unusual, as in (193b).

(193) a. *ro-tà:'-on*
MASCULINE.SINGULAR.PATIENT-sleep-STATIVE.ASPECT
'He is sleeping.' (Mithun, 1989, p. 288)

b. *wa'akwataweńha'*.

wa'-iakwa-at-awen-ha-'

PAST-1.PL.AGT.EXCL-SEMIREFL-bathe-DISLOC-PUNC

'We went swimming.' (Mithun, 1989, p. 309)

The sentences in (194) show examples of noun incorporation - a single word expressing verb, incorporated noun, tense, aspect, and agreement. Example (194a) shows stylistic incorporation, while example (194b) shows obligatory incorporation.

(194) a. *takakaratatyo?.*

t-a-ka-kar-a-tētye-?

CSLOC-PAST-3.NEUT.ZOIC-story-Ø-to.be.going.around-PUNC

'There was a story going around.' (Beatty, 1974, p. 112)

b. *vhatuhnò:ktv.*

v-h-at-uhn-ò:ktv

FUT.MODAL.PREFIX-3.SG.MASC.AGT-REFL-life-be.out.of.it

'He will live out the rest of his life.' (Bonvillain, 1974, p. 24)

Note particularly the position of the incorporated noun in relation to the other parts of this word.

5.4.1.2 Acquisition data

Mithun (1989) presents acquisition data from a cross-sectional study of 5 children learning Mohawk as a first language. The children, aged 1;9, 2;4, 2;9, 2;10, and 4;9, were each observed and recorded for at least half a day, in casual circumstances at either home or school.

Examples of noun incorporation appear in the speech of one subject at 2;10, as in (195).

(195) *ronkwe'táksen*

r-onkwe't-aks-en

MASC.SG.PATIENT-person-bad-STATIVE

'he is a bad man' (age 2;10; Mithun, 1989, p. 303)

However, Mithun states that while "this child used several verbs containing incorporated noun stems, ... these had clearly been learned as lexical units, not created" (Mithun, 1989, p. 303). This same child could also comprehend

directions given with locative incorporations structures, as in (196), but could not produce such structures himself.

(196) a. *o'neróhkwakon*
o-'nerohkw-k-on
NEUTER.SINGULAR.PATIENT-box-inside-STATIVE
'in the box'

b. *atekhwahra'tsheró:kon*
at-khw-hra-'tshr-ok-on
(NEUT-)SEMI.REFL-food-set-NOMINALIZER-under-STATIVE
'under the table' (Mithun, 1989, p. 303)

Another child at 4;9 produced a number of verbs containing incorporated nouns, but Mithun states that "there is no reason to suspect that he created any of the forms himself. All of the combinations he used are heard frequently, and in many cases the constituent roots do not occur alone, so the forms were most likely learned as lexical units" (Mithun, 1989, p. 309).

(197) a. *kanahskwáksen*
ka-nahskw-aks-en
NEUTER.SINGULAR.AGENT-animal-bad-STATIVE
'it is a bad animal'

b. *iohnó:tes*
io-hnot-es
NEUTsgPAT-water.level-deep.STAT
'it is deep'

c. *kanońhses*
ka-nonhs-es
NEUTER.SINGULAR.AGENT-house-long.STATIVE
'longhouse' (age 4;9; Mithun, 1989, p. 309)

Mithun (1989, p. 311) also notes that there are no examples of overgeneralization or innovation in uses of noun incorporation by her subjects, and takes this as evidence for lack of productivity on the part of the children. However, she suggests that perhaps productivity is not something to be expected in the child since it does not typically exist even among adults. She

states,

> These facts are probably more indicative of the nature of this linguistic knowledge in Mohawk than of the linguistic immaturity of the children. Most derived forms are learned and stored as lexical units, although the learning and storage are undoubtedly facilitated by the pervasive regularities running through such a vast lexicon. It is likely that much innovative derivation by adults is more a process of analogizing on the basis of sets of acquired lexical items than the application of general rules. Speakers are very conscious of which derivationally complex words already exist in the language and which could but do not. Many excellent adult Mohawk speakers have great difficulty deriving new forms or incorporating creatively on demand, although they have little trouble interpreting neologisms. These same speakers can easily switch the tense, person or number of a verb when asked, even with invented verb stems. (Mithun, 1989, p. 311)

This quotation is particularly interesting in light of facts from Inuktitut which are dissimilar at least two important respects. First, there is no evidence that noun incorporation structures in general are learned or stored as lexical units in Inuktitut. Adult Inuktitut speakers have no trouble deriving new forms or incorporating creatively on demand, and do not seem to make a clear distinction such as that Mithun describes for Mohawk between derivationally complex words which already exist in Inuktitut and those which could but do not. Thus, productivity in noun incorporation is certainly a realistic goal for children learning Inuktitut. This evidence indicates that perhaps the structure underlying noun incorporation is in fact different across the two languages in spite of the surface similarities.

Second, there is certainly evidence that Inuktitut-speaking children are using noun incorporation structures productively at the ages considered here. Though the majority of the structures they use are clearly present in the input, the large number of noun incorporation structures used by each child, as well

as the fact that many of the incorporating verb roots are used not only in one fixed form but in several contrasting environments, indicate that they cannot all be purely memorized and imitated unanalyzed units. In addition, several errors in use of noun incorporation structures illustrate novel uses that clearly represent knowledge of the structure on the part of the children but cannot represent reproduction of unanalyzed units since the forms would never be heard in the adult input.

Thus, there seems to be clear indication that noun incorporation structures are used productively by Inuktitut-speaking children at a much earlier age than they are used productively by Mohawk-speaking children. The next sections explore some potential reasons for this relative difference in time of productive acquisition between Mohawk and Inuktitut.

5.4.2 Possible explanations of crosslinguistic differences

Presumably there are some factors in effect, whether structural or sociolinguistic, which make it more difficult for Mohawk children than for Inuit children to acquire noun incorporation structures. Several potential factors are discussed in the following sections.

5.4.2.1 Criteria for use of noun incorporation

One possible explanation for the relative difference in time of acquisition of noun incorporation structures between Inuktitut and Mohawk derives from the criteria for use of noun incorporation in these two languages. Noun incorporation in Inuktitut may be termed "obligatory" or "lexically governed" in that verbs into which nouns incorporate are only allowed to appear with incorporated nouns. Noun incorporation in Mohawk, on the other hand, is mostly "optional" or "stylistically governed" in that most verbs which permit incorporation of nouns can also appear as independent lexical items without incorporated nouns. Very few verb roots in Mohawk obligatorily require incorporated nouns.

This difference in criteria for noun incorporation may affect the acquisition process in at least two ways. First, Slobin (1985a) observes that

children typically have a preference for analytic over synthetic expressions, and tend to acquire analytic expressions first where both are possible and equivalent in the language. Under this hypothesis, it is not surprising that the earliest noun incorporation expressions to emerge in Mohawk are "obligatory" noun incorporation structures which have no analytic counterpart in that both the adjectival verb roots and the nouns which are incorporated into them may only appear in incorporating structures. Analytic forms are otherwise used in child speech until at least age 4;9. The Inuktitut data are slightly problematic in this respect, however. Even in cases in which more or less equivalent synthetic noun incorporation structures and analytic unincorporated counterparts exist in Inuktitut, the analytic forms are acquired later than the synthetic ones, as pointed out in section 5.4.2.2.

Second, the differing cognitive requirements of lexically-governed and stylistically-governed structures may affect acquisition. Lexically-governed noun incorporation offers no choice in terms of when it is to be used; every case of occurrence of the relevant verb root requires a noun incorporation structure. Stylistically-governed noun incorporation, however, requires much more subtle interpretive abilities on the part of the child in order to determine appropriateness of use. Therefore the child might find it easier in Inuktitut than in Mohawk to figure out when noun incorporation is to be used.

5.4.2.2 Degree of "usualness" of noun incorporation in adult speech

A second possible reason for the relatively early acquisition of noun incorporation in Inuktitut is the degree of "usualness" of noun incorporation in adult speech. When two or more structures are available to express basically the same meaning, and there is a feeling among native speakers as to which of the forms is the most usual, one intuitively expects the most usual form to be learned first, all other things being equal.

Mithun (1984) claims that in most cases of noun incorporation the unincorporated form is the norm and noun incorporation takes place for a specific purpose. Under such conditions a child would be expected to acquire the unincorporated form first, then alter it as necessary according to the

pragmatics of the situation at hand. Since Mohawk follows this pattern, it is not surprising to observe that noun incorporation is acquired relatively late in this language.

In contrast, however, this pattern does not seem to hold for Inuit languages. Sadock (1986, p. 25) notes that in many cases Greenlandic "provides no non-incorporated form of equal or less complexity and idiomaticity than the incorporated form", and claims that in this language ". . . it is not the case that 'speakers . . . incorporate for a purpose' [Mithun, 1984], but rather that they REFRAIN from incorporating for a purpose" (Sadock, 1986, p. 21). This observation concerning Greenlandic is consistent with my own field work experience in Inuktitut. Consultants offer noun incorporation structures more readily than their unincorporated counterparts, judge noun incorporation forms as preferable to unincorporated forms which are presented to them, and accept unincorporated forms as ones which are possible but not the most usual.

In a language like Inuktitut in which noun incorporation is considered the "most usual" way to represent the concept at hand, it would not be surprising for a child to learn the incorporated form first and to produce the unincorporated form only at a later date. In fact, for those structures in Inuktitut for which semantically equivalent incorporated and unincorporated forms both exist, the unincorporated forms are never used in the present data with overt direct objects. The clearest case of this type of correspondence is between the incorporating verb *-tuq-* 'consume' and the root verbs *niri-* 'eat' and *imiq-* 'drink'. Though *niri-* is used from the earliest ages available in the Inuktitut data, it is used all but once in reference to the process of eating and not to the act of eating a particular item, as shown in (198).

(198) a. *Nirigumagama.*
niri-guma-gama
eat-want-CSV.1sS
'I want to eat.' (Alec 2;6)

b. *Sinigunnairit niriIangaliratta.*

sinik-gunnaq-it-git niri-langa-liq-gatta

sleep-can-NEG-IMP.2sS eat-FUT-PRES-CSV.1pS

'Don't sleep because we're going to eat now.' (Juupi 2;5)

Only in one case is an object of eating indicated in the inflection, as shown in (199), and even then the noun phrase representing this object is not overt.

(199) *Nirijait?*

niri-jait

eat-PAR.2sS.3sO

'Are you eating it?' (Alec 2;11)

It seems, then, that when a particular food item is being consumed and the utterance specifies that item overtly, a noun incorporation structure using the incorporating verb root *-tuq-* 'consume' is the preferred way to express this.

5.4.2.3 Placement of verbal affixation in relation to noun root

A third possible explanation for the relative difference in time of acquisition of noun incorporation across Inuktitut and Mohawk derives from the difference in placement of verbal affixation in relation to the incorporated noun in the two languages. Agreement, tense, reflexive and other affixes precede the V in the Mohawk verb complex, while all these affixes and more follow the V in the Inuktitut verb complex. This difference is made clear by contrasting the examples in (200).

(200) a. *takakaratatyo?.*

t-a-ka-kar-a-tētye-?

CSLOC-PAST-3.NEUT.ZOIC-story-Ø-to.be.going.around-PUNC

'There was a story going around.' (Beatty, 1974, p. 112)

b. *Jaani iqalutukainnatuq.*

Jaani-Ø iqaluk-tuq-kainnaq-juq

Johnny-ABS.SG fish-eat-PAST-PAR.3sS

'Johnny just ate a fish.'

In (200a) from Mohawk, the incorporated noun appears in the middle of the word, separating the verb root from its affixes. In (200b) from Inuktitut, the

incorporated noun appears on the edge of the word and does not interfere with the relationship of the verb root to its affixes. This difference in structure could affect the acquisition of noun incorporation in at least two respects.

The first possible effect concerns the degree of adjacency between the verb and its affixes. Slobin (1985a) discusses the importance of the degree of relevance of the meaning of a grammatical marker to the meaning of the stem to which it is attached. Evidence from a cross-linguistic comparison of Japanese, Turkish, Polish and Hungarian shows that children exhibit "preferences to keep grammatical markers of aspect, tense, and person close to the verb, while keeping negation and conditionality peripheral (Slobin, 1985a, p. 12)." These preferences are based on the part of speech which the grammatical markers modify: tense and person are more inherently part of the meaning of the verb itself, while negation and conditionality have scope over the meaning of an entire clause. It is possible, then, that children might initially resist placing the incorporated noun in a position which increases the distance between a verb and its tense and person affixes. This is a quite plausible explanation for the relatively late acquisition of noun incorporation in Mohawk. Since noun incorporation structures can be represented in an unincorporated form in the sentence and since the process of noun incorporation tends to indicate a pragmatic effect encompassing the entire clause or sentence, the incorporated noun must fall relatively low in the hierarchy. Children would presumably rather tend to leave the noun unincorporated until later in the acquisition process. In Inuktitut, however, the incorporated noun does not block the adjacency of any affixes of person, tense, etc., since they all appear on the other side of the verb. Therefore there is no reason why this factor of hierarchy of relevance should affect the acquisition of noun incorporation in Inuktitut.

A second reason that placement of the incorporated noun in relation to verbal affixation is important concerns the relative salience of the incorporated noun. In Mohawk the incorporated noun is well-entrenched inside the verbal complex with various affixes on either side. In Inuktitut, on the other hand, the incorporated noun is always at the very beginning of the verbal complex.

Crosslinguistic evidence shows that morphemes at the edges of words are more salient to children and are more quickly and easily acquired than morphemes which are word-internal and unstressed. It would not be surprising for noun incorporation to be acquired later in Mohawk than in Inuktitut, then, since incorporated nouns are more salient in Inuktitut.

5.4.2.4 Degree and intensity of child exposure to language

Sociological factors may also affect the difference in time of acquisition of noun incorporation across Mohawk and Inuktitut, and particularly those factors concerning the degree and intensity of the child's exposure to the language being learned. If exposure is limited to a few times a week, short periods daily, or conversing with only one or two conversational partners in that language, acquisition is likely to progress more slowly than in a complete immersion environment.

The Mohawk living environment does not in most cases present the ideal situation for language learning. Mohawk is a language suffering fairly rapid attrition. It is spoken proficiently by adults of grandparent age and by some adults over age 30, but few children are currently acquiring it as a first language (though a recent Mohawk immersion school is beginning to reverse this trend). For those children who do live in predominantly Mohawk-speaking homes, input of second languages is prevalent in interactions with extended family and members of the community, and in the media. As a result, fluency in Mohawk is not very prevalent among children. Most children who begin learning Mohawk at home usually stop as soon as they encounter English-speaking peers (Mithun, 1989), though reach at least kindergarten age with a high level of proficiency in Mohawk.

Of the five children Mithun studied, three belonged to families which made every effort to expose their children only to Mohawk. Nonetheless, two (2;4, 2;10) spoke some English and one was fluent in English (4;9). Another child (2;9) learned Mohawk from her grandmother during the day while her mother was at work, but the family language was primarily English.

The Inuit children in the present study, in contrast, all lived in homes

and communities in which Inuktitut is the primary language of daily interaction. English (and occasionally French) input is present in the form of television programs, videotaped movies, some radio broadcasts, and occasional conversations in some homes, but this input is far outweighed by the constant presence of Inuktitut.

On the basis of this information it would not be unreasonable to suspect a differential level of exposure to the respective native language in the two societies, leading to differential acquisition in favor of Inuktitut. The acquisition process in general may well be slowed as a result of such factors as prevalent in the Mohawk situation, and the effect of this slowing may be especially visible in the case of a structure used predominantly for semantic purposes since less exposure to the language may well decrease the speed with which the child picks up semantic nuances. Semantic effects would be especially relevant to noun incorporation in Mohawk, since according to Mithun (1984), noun incorporation is used in that language for primarily semantic purposes. It is certainly possible, however, that under more empirical testing no effect is evidenced.

5.4.3 Summary

In this section the early acquisition of noun incorporation in Inuktitut has been discussed in relation to data from Mohawk acquisition reported in the literature. Though both languages exhibit noun incorporation, it is learned earlier in Inuktitut than in Mohawk. Possible reasons for this crosslinguistic difference include criteria for use of noun incorporation, degree of "usualness" of noun incorporation, placement of verbal affixation in relation to the noun root, and degree and intensity of child exposure to the language in question.

5.5 Conclusion

This chapter has presented data concerning the acquisition of noun incorporation structures by Inuit children. It is shown that at least several incorporating verb roots are used productively by the children, including at the earliest ages studied, and thus that the relevant structure is present in the

children's grammar from an early age. It is also shown that development occurs over time in the number, range and complexity of noun incorporation structures used. Data described for Inuktitut concurs with data presented in the literature from West Greenlandic. Though productivity in noun incorporation in West Greenlandic seems to occur at a slightly later age, it is hypothesized that this difference is only due to the relatively smaller amount of data sampled. In contrast, noun incorporation is reported to be acquired relatively late in Mohawk. Several reasons are hypothesized for this difference, including differences in relevant aspects of language structure and differences in environments of language use.

CHAPTER 6
CONCLUSION

This chapter concludes the thesis. Section 6.1 presents a summary of the findings from chapters 3 through 5. Section 6.2 highlights those elements of this thesis that constitute an original contribution to knowledge in the field of language acquisition. Section 6.3 discusses the findings of chapters 3 through 5 in light of two current debates in acquisition theory, concerning the initial state of the grammar of the child, and the processes by which this grammar develops into an adult-like form. Finally, section 6.4 offers directions for future research, focusing on the roles of inflection, polysynthesis and ergativity in affecting the acquisition of Inuktitut and in potential contributions of such data to the field of acquisition.

6.1 Summary of thesis

In this thesis, longitudinal naturalistic spontaneous speech data from four Inuit children, aged 2;0 to 2;10 at outset, is described and analyzed in light of three mechanisms of transitivity alternation - passive, causative, and noun incorporation. Information is presented concerning the age and frequency of use of each type of transitivity alternation for each child at each age, as well as across the subjects grouped by age, general MLU and verbal MLU. Productivity in use of each structure is assessed by means of examples showing use of innovative forms, use of incorrect allomorphs or errors of attachment, use of the morpheme in question in a variety of different environments, presence of self-correction, alternation between use and incorrect lack of use of the morpheme, alternation between use of a transitivity-alternating structure and a basic underived structure, and demonstration of control of scope effects involving the relevant morpheme. Basic patterns of use and development are illustrated for each construction, ranging from its absence to its use in unanalyzed routines to its use in relatively advanced forms. Use and productivity of each transitivity-alternating mechanism in Inuktitut is compared with data reported in the literature from West

Greenlandic-speaking children in a similar age range in order to assess the generality of findings for Inuktitut across the Inuit language group as a whole. Finally, findings concerning each construction are assessed in light of relevant issues in the general acquisition literature. Results from each chapter are summarized below.

Chapter 3 discusses the acquisition of passive structures by the subjects. Data show that Inuktitut-speaking children use passive structures productively from the earliest ages and MLU levels studied here. Passives are used at a strikingly early age relative to English-speaking children, but consistent in age with speakers of non-Indo-European languages reported on in the literature. In addition, some more advanced forms of passives are used at this early age including full passives, passives with experiential verbal stems, and passives with internally complex verbal stems. Data argue clearly against a maturation hypothesis of language acquisition which takes as its foundation the claim that one major principle of grammar essential for passive formation, the principle governing A-chain formation necessary for NP-movement, matures around age 4;0. A relationship in the data is shown between frequency of input and age of acquisition across English- and Inuktitut-speaking subjects, but it is not clear if this is a causal relationship. Finally, it is speculated that the details of structure of Inuktitut influence the age of acquisition of passive in that the mechanisms of head movement and NP-movement necessary for passive formation crosslinguistically are more common in Inuktitut than in English.

Chapter 4 reviews the acquisition of causative structures by the subjects, including both morphological and lexical causatives. Data show that earliest uses of the morphological causative in three of the four Inuktitut-speaking children constitute unanalyzed routines. However, morphological causatives are used productively by all the children by the last taping sessions. Lexical causatives are present from the earliest ages studied, and are used productively. Data show evidence of a period of overgeneralization of the lexical causative in one subject at the same time as the morphological causative shows signs of being productively acquired. Data showing a similar phenomenon across languages reported on in the literature are reviewed, and

data from Inuktitut are assessed in light of explanations posited concerning data from those other languages. It is concluded that the seeming overgeneralization of the lexical causative by the Inuktitut-speaking subject likely reflects nothing more than as yet unstable use of the morphological causative, and does not conclusively support other explanations present in the literature.

Chapter 5 assesses the acquisition of noun incorporation structures by the subjects. Data show productive use of noun incorporation in Inuktitut-speaking children from the earliest ages studied. More advanced stranding structures are evidenced in the latest sessions for three of the subjects. Noun incorporation structures in Inuktitut are used productively at an age consistent with reports concerning children learning West Greenlandic, but at an early age relative to Mohawk-speaking children reported on in the literature who do not evidence productive noun incorporation until sometime after 4;9 (Mithun, 1989). Several hypotheses concerning this difference between Inuktitut and Mohawk are explored. Noun incorporation in Inuktitut is obligatory and often the most usual form of expressing a particular concept. In addition the incorporated noun appears on the edge of the word and does not intervene between the verb and its inflections. In contrast, noun incorporation in Mohawk is largely optional, being used for stylistic purposes, and is typically a marked form of expressing a particular concept. The incorporated noun in Mohawk appears inside the word and does intervene between the verb and its inflections. In addition, the children learning Inuktitut reported on here live in environments in which Inuktitut is the language of daily use in almost all contexts, whereas the children learning Mohawk live in environments in which English is often more commonly used than Mohawk. For these reasons of language structure and relative language use in the environments of the learners, then, the difference in time of acquisition of noun incorporation across the two languages is not surprising.

6.2 Contribution of thesis to knowledge

This thesis constitutes an important contribution to knowledge in the

field of language acquisition. It represents the first detailed description of the acquisition of language by preschool Inuktitut-speaking children, as discussed in the introduction to chapter 1, as well as only the second description of preschool language acquisition in the entire Eskimo-Aleut language family, and, as far as I am aware, the third in any polysynthetic language and in any Native American language. In addition, it is one of very few descriptions of the acquisition of an ergative language, as discussed in section 6.4.3, though it has not focused primarily in the area of ergativity. On a smaller scale, chapter 5 is the first work focused solely on the acquisition of noun incorporation in any language (apart from Allen & Crago, 1989, on which this chapter is based). Chapter 4 is an addition to only a handful of studies of the acquisition of the morphological causative, and a similarly small number of crosslinguistic studies of the acquisition of lexical causatives, as discussed in the introduction to that chapter. Finally, chapter 3 is one of only a small number of crosslinguistic studies of passive acquisition noted in the introduction to that chapter, and presents important evidence countering the Maturation Hypothesis of language acquisition (Borer & Wexler, 1987).

On a more general level, discussion in this thesis clearly reflects the importance of crosslinguistic acquisition research. In each of chapters 3 through 6, aspects of language structure common in Inuktitut are identified as evidence calling into question certain hypotheses in the field of acquisition. Discussion here adds weight to one of the primary motivations for crosslinguistic acquisition research, namely that it is not enough to assume that a certain structure will be acquired in one language at a given time based on facts for another language. One must take into account both structural factors, such as the relative pervasiveness or complexity of a structure in a given language, and functional factors, such as the role a particular structure plays in the information it conveys, across several languages of different typologies in order to reach an accurate explanation of acquisition processes.

In terms of potential uses, this work may serve as a basis for further detailed study of Inuktitut acquisition in both monolingual and bilingual environments, and as well as a basis of comparison for studies of the same

structures in other languages. It may also help to guide assessment of language delay in Inuktitut (e.g. Crago & Allen, in press a, in press b) and as an historical record of the current state of child language in this potentially endangered language (Taylor, 1990). Finally, it may serve as a source for information about first language acquisition taught to Inuit teachers and other Inuit professionals dealing with language.

6.3 Relevance of results for current debates in acquisition theory

Current acquisition theory within the Principles and Parameters framework centers largely around two closely related debates for which acquisition data from Inuktitut may prove useful. The first debate concerns the initial state of the child's grammatical knowledge, and the second concerns how the child develops from this initial state to an adult-like linguistic competence. Each of these is considered separately in the following sections.

6.3.1 Initial state of the grammar

It is not yet well understood what linguistic knowledge and abilities the child comes to the task of language learning with. While it is generally assumed that the child is innately endowed with Universal Grammar (UG), as discussed in section 1.2, researchers do not completely agree concerning the details of what aspects of UG are initially available. Most researchers agree that the child does know at least basic X-bar principles, the general inventory of parameters available for setting, and the lexical syntactic categories V and N (and perhaps A and P), and that the child does not know any language-specific information including the correct settings in his or her language for any of the parameters. In terms of parameters, there is considerable debate as to whether parameters come in UG with no setting whatsoever, or with default settings that must then be reset by the child on the basis of language-specific input. In terms of syntactic categories, debate rages over exactly which categories beyond N and V are present in UG, and how much information about each of these categories is available. The latter debate is most relevant in light of data from Inuktitut, and is described in more detail in the following

paragraphs.

Within Principles and Parameters theory there are generally considered to be two types of syntactic categories, known as lexical categories and functional categories. Lexical categories include the verb (V), the noun (N), the adjective (A), and the pre- or postposition (P). The first three of these four groups of lexical items constitutes what is known as an open class in that it can easily take on new members, and the lexical items involved are generally viewed as having semantic content outside their grammatical roles[108]. Functional categories include the determiner (D), the case inflection (K), the verbal inflectional (I), and the complementizer (C). Recent work has argued for an articulated inflectional phrase including at least tense (T) and agreement (Agr) (Pollock, 1989), and proposals for new functional categories continue to abound in the literature. Each of these groups of lexical items constitutes what is known as a closed class in that it does not easily take on new members, and the lexical items involved are viewed as important primarily in terms of their grammatical function (hence the term *functional category*)[109].

The adult verbal system of most languages, then, is assumed to include the phrases VP, IP (or TP and AgrP), and CP[110]. The head of VP serves as the point of base-generation of the verb, while its specifier is generally assumed to serve as the point of base-generation for the subject argument (Kitagawa, 1986; Kuroda, 1988; Koopman & Sportiche, 1991). The head of IP serves as the point of base-generation of verbal agreement, tense features, and auxiliaries, and as a landing site for moved verbs, while the specifier of IP serves as the landing site for moved subjects. The head of CP serves as the

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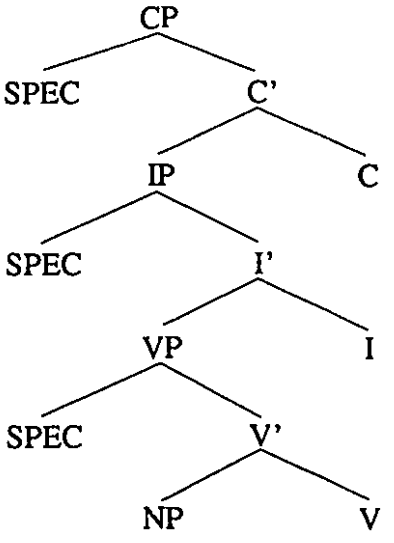
[108] Pre- or postpositions are usually seen as a closed class in that new adpositions are not easily admitted into the language, but the syntactic category P is standardly included in the repertoire of lexical categories.

[109] See Ouhalla, 1991a, pp. 9-16, for a more principled characterization of the distinction between lexical and functional categories.

[110] Much of the current work in syntax within the Principles and Parameters framework focuses on ther presence or absence of universality across functional categories and the phrases they head. For instance, Fukui (1986) claims that Japanese does not contain CP. Analyses of Inuit within this framework generally include both CP and IP (Bok-Bennema, 1991; Bittner, 1994a).

point of base-generation for complementizers, and as a landing site for moved verbs and auxiliaries, while the specifier of CP serves as the landing site for moved WH-words. Note that this is only a brief sketch, and details may vary considerably across languages. A typical tree structure for a head-final language like Inuktitut is something like that in (201).

(201)



The relevant question for acquisition, then, is exactly how much of this structure the child knows before beginning the task of language learning. Proposals constitute three major hypotheses, termed here the small clause hypothesis, the short clause hypothesis, and the full clause hypothesis, following Hyams (1994). Proponents of the small clause hypothesis (also known as the VP hypothesis) claim that the child at the earliest stage has only lexical categories, and thus only a VP in the verbal system (Lebeaux, 1988; Platzack, 1990; Radford, 1990; Tsimpli, 1991; Felix, 1987, 1992; Guilfoyle & Noonan, 1992). Proponents of the short clause hypothesis claim that the child at the earliest stage has all lexical categories and some but not all functional categories (Clahsen, 1990; Clahsen & Penke, 1992; Demuth, 1992a; Gawlitzek-Maiwald, Tracy & Fritzenschaft, 1992; Meisel & Müller, 1992; Penner, 1992; Clahsen, Eisenbeiss & Penke, 1994; Clahsen, Eisenbeiss & Vainikka, 1994). In terms of the verbal system, these latter researchers agree that the child has only one clausal position above VP but variously characterize it as either IP, some articulation of IP, or some precursor to the adult form of IP. Finally,

proponents of the full clause hypothesis (also known as the full competence hypothesis) claim that the child has access to all the functional categories at the earliest stage (Hyams, 1986, 1992, 1994; Weissenborn, 1990; Whitman, Lee & Lust, 1990; Roeper, 1992; Valian, 1992; Verrips & Weissenborn, 1992; Wexler, 1992, 1994; Deprez & Pierce, 1993, 1994; Guasti, 1993; Poeppel & Wexler, 1993; Hoekstra & Jordens, 1994; Rizzi, 1994). In terms of the verbal system, the child under this hypothesis has all of VP, IP and CP available, though the head and/or specifier positions of each may not be lexically filled from the earliest utterances.

One piece of evidence relevant to these hypotheses derives from the presence or absence of overt complementizers and inflections. The presence of overt functional elements implies that the elements are filling their correct positions in the child's grammar, and therefore that these positions exist, while the absence of overt functional elements potentially implies the reverse[111,112]. A second piece of evidence derives from the position of the verb in relation to other elements in the sentence. Recall that the heads of both IP and CP serve as landing sites for a moved verb under various conditions. The movement of the verb into either of these positions, as evidenced by its position in the sentence relative to negation, adverbials and such, then implies the existence of the relevant functional categories.

Inuktitut data can address this debate in two ways. First, the Inuktitut

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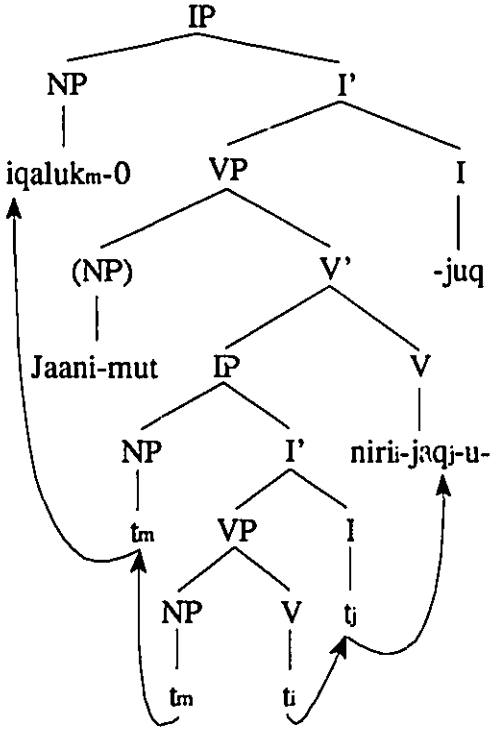
[111] As a side point, it is interesting to note that proponents of the small clause hypothesis are typically those who have analyzed acquisition data from languages with a poor inflectional system (English and Swedish), while proponents of the other two hypotheses are typically those who have analyzed acquisition data from languages with rich inflection (Bernese, Dutch, German, Italian and Sesotho).

[112] This point is controversial. Some researchers in fact claim that there is no reason to posit existence of any position before it is lexically filled (Platzack, 1992; Hoekstra & Jordens, 1994). Some even go so far as to say that material present in early child language that would be positioned in IP or CP in the adult language may not be in these positions in child language, but rather may be either adjoined to or within lexical categories (Guilfoyle & Noonan, 1992; Hoekstra & Jordens, 1994). Other researchers claim that the full clause hypothesis is the null hypothesis and that there is no reason to assume the child does not have the full complement of functional categories just because they are not lexically filled, especially when the presence of these categories can be inferred from evidence of verb movement into their heads (Hyams, 1994).

inflectional system is very rich, as described in section 1.3. Early child utterances show a number of inflections used productively at the earliest two-word stage (Allen & Crago, 1992b; Crago, Allen & Hough-Eyamie, in press; see also data from West Greenlandic in Fortescue, 1985, and Fortescue & Lennert Olsen, 1992). Though no detailed analysis of acquisition of inflections in Inuktitut has been carried out to date, the robust observational evidence reported in the literature so far indicates that at least the IP must be present in the earliest child grammar.

Second, evidence presented in this thesis, as well as in Allen & Crago (1989), shows that various processes of head movement are present in early child language. All three of the mechanisms of transitivity alternation discussed here include head movement. In the passive, the root verb in the lowest V moves into the passive participle in the lowest I, then this composite moves into the copula in the next highest V, and finally all move into the the next highest I. The relevant tree from chapter 3 is repeated here in (202) for convenience.

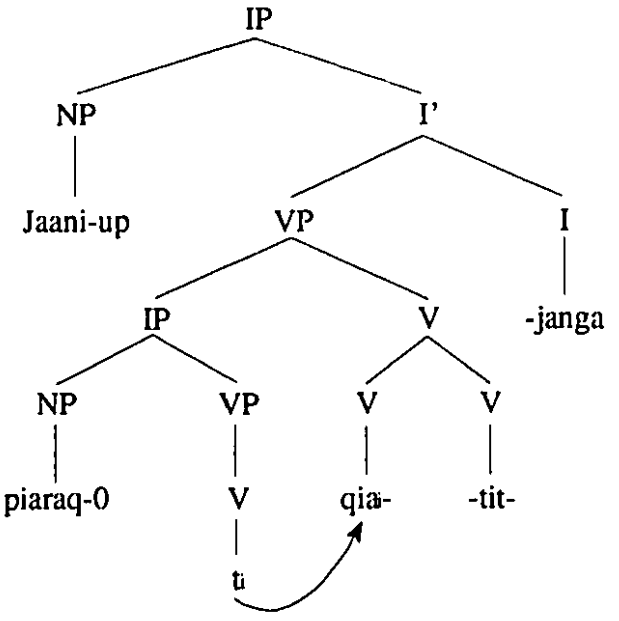
(202)



The morphological causative is a standard case of verb incorporation (Baker, 1988) in that the root verb incorporates into the affixal causative verb. The

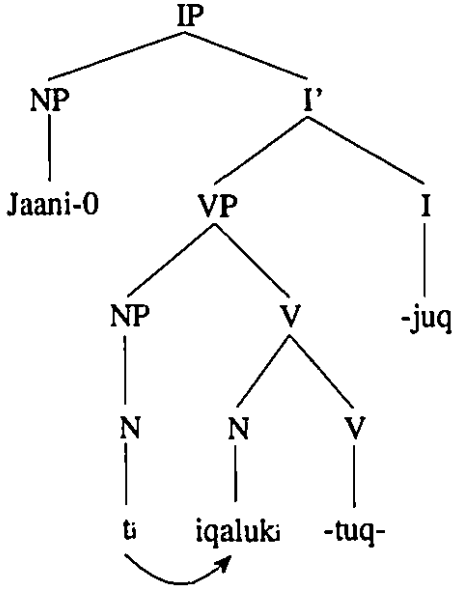
relevant tree from chapter 4 is repeated in (203).

(203)



Finally, noun incorporation structures involve movement of the head noun into the affixal verb, another case of head movement. The relevant tree from chapter 5 is repeated in (204).

(204)



The passive structure is a clear case of the verb moving into the head of IP, and thus acquisition data reported here imply the presence of IP in early child grammar. The other two structures, while not cases of movement into a

functional category, do involve head movement. Acquisition data, then, illustrate at least that the general process of head movement evidenced in these structures is available at a very young age. Noun incorporation, in particular, seems to be available from the time of earliest three-morpheme utterances. This early presence of head movement in the Inuktitut data, then, concurs with data from other languages which show early verb movement.

One limitation of the Inuktitut data discussed here is that it may not come from children at young enough ages to properly address these acquisition questions. Proponents of both the small and short clause hypotheses generally concur that all functional categories are in place by between 2;6 and 3;0. However, the data from Inuktitut presented in this thesis include only two sessions with one child below the age of 2;6. Analyses of data from four younger Inuktitut-speaking children aged 1;0 through 2;9 (Crago, 1988; analyzed in Allen & Crago, 1989, and Crago, Allen & Hough-Eyamie, in press) confirm the findings from the older children discussed here. However, it would be useful to conduct more thorough analyses of these data as well as of data from other Inuktitut-speaking children of ages younger than 2;6.

6.3.2 Early development from the initial state

A second debate in the literature focuses on how children progress from the initial state to an adult-like state in terms of their language production. Researchers agree that children's early utterances are not adult-like. However, they disagree concerning the reasons for this and the ways by which children develop linguistically. Two major hypotheses are distinguished in the literature, termed here the maturation hypothesis and the continuity hypothesis[113]. Proponents of the maturation hypothesis believe that the child's

[113] Note that this distinction is not exactly the same as that between continuity and discontinuity (Weissenborn, Goodluck & Roeper, 1992). In the latter sense, proponents of continuity believe that the child's grammar is consistent with UG at all stages of development while proponents of discontinuity believe that child utterances may not be consistent with UG if the relevant principles and/or categories are not yet present. Researchers who argue for versions of the maturation hypothesis may believe in continuity in this sense (Borer & Wexler, 1987, 1992; Rizzi, 1993) or may believe in discontinuity (Felix, 1987, 1992; Lebeaux, 1988; Radford, 1990; Guilfoyle & Noonan, 1992).

initial production errors arise because the early grammar is not complete, and that developments in grammar can be attributed to a biological process of maturation of various linguistic elements. Elements which have been claimed to mature include functional categories in general (Platzack, 1990; Radford, 1990; Ouhalla, 1991b; Guilfoyle & Noonan, 1992), the principles underlying A-chain formation implicated in NP-movement (Borer & Wexler, 1987, 1992), UG principles in general (Felix, 1987, 1992), and the specification of which functional category constitutes the root clause (Rizzi, 1993). Proponents of the continuity hypothesis, on the other hand, consider that the child grammar is identical to the adult grammar at all stages though certain elements may not appear in early language. Development in linguistic abilities may be attributed to a variety of non-maturational mechanisms including triggering, learning, increased processing abilities and general cognitive development. The continuity hypothesis may be divided into three levels, termed here strong, intermediate and weak following Hoekstra & Schwartz (1994). Those researchers adhering to a strong continuity hypothesis assume that all functional categories are present and accessible to the child from the earliest stages, even though they may not be overtly filled for a variety of reasons including limited vocabulary or the complexity of morphological paradigms (Hyams, 1983, 1994; Pinker, 1984; Weissenborn, 1990; Boser, Lust, Santelmann & Whitman, 1992; Deprez & Pierce, 1994). Those adhering to an intermediate continuity hypothesis assume that all functional categories are innately present, but are not accessible to the child, or used in an adult-like way by the child, until they are triggered through phonology (Demuth, 1992a) or other means (Hoekstra & Jordens, 1994; Penner, 1994; Rizzi, 1994). Finally, those adhering to a weak continuity hypothesis assume that only the principles of X-bar theory are available to the child innately, and that the adult-like instantiation of functional categories must be learned gradually through an interaction of the principles of X-bar theory and the input, termed lexical learning (Clahsen, 1990; Clahsen & Penke, 1992; Clahsen, Eisenbeiss & Penke, 1994; Clahsen, Eisenbeiss & Vainikka, 1994). In essence, the lexical learning hypothesis claims that learning grammar is nothing more than learning

lexical and morphological items and their associated properties.

Data from Inuktitut acquisition clearly argue against a maturation hypothesis. First, as discussed in section 6.3.1, the early presence of verbal inflections show that at least IP seems to be present from the earliest stages of Inuktitut child language (Allen & Crago, 1992b; Crago, Allen & Hough-Eyamie, in press). This suggests that at least one level of functional category is present in Inuktitut-speaking children from the earliest stages and thus does not mature at some later stage.

Second, the early acquisition of productive passives and lexical causatives discussed in chapters 3 and 4 respectively argues against the maturation of the principles underlying A-chain formation. Recall that Borer & Wexler's (1987) version of the maturation hypothesis is based on the late maturation of the principle governing A-chain formation implicated in NP-movement required for both passives and unaccusative verbs. Their claim is based primarily on the late appearance of verbal passives and the late productive mastery of lexical causatives in English. It has been shown repeatedly that this hypothesis cannot be true as formulated in that article in the sense of being a maturationally determined event, from the perspective of both English and other languages, as discussed in the introduction to chapter 3 and in section 3.4.1. Inuktitut data add to the arguments against maturation since they show relatively early verbal passives and early productive use of lexical causatives with triflingly few cases of overgeneralization of lexical causatives to unergative verbs. If maturation of the principles underlying A-chain formation did occur, data from Inuktitut argue that it would have to occur by 2;6 or earlier, and this would fail to explain the late appearance of both the relevant structures implicated in English.

For these reasons, then, data from Inuktitut seem much more consistent with some version of the continuity hypothesis. In addition, there is some evidence from passive acquisition that the frequency of passive structures in the input influences earlier time of acquisition and more prolific use of passives in Inuktitut child language than in English child language. This is consistent with at least the weak continuity hypothesis as reflected in the

lexical learning hypothesis of Clahsen and his colleagues (Clahsen, 1990; Clahsen & Penke, 1992; Clahsen, Eisenbeiss & Penke, 1994; Clahsen, Eisenbeiss & Vainikka, 1994), and also with more computational proposals concerning the effect of input (Saleemi, 1992; Kapur, 1994; LeBlanc, 1994). Though the effect of frequency in input on relative time of acquisition has been claimed to be minimal in terms of differences across children learning the same language (Brown, 1973), perhaps this issue needs to be reassessed in terms of differences across children learning different languages, as alluded to by Platzack (1992, p. 78) and Demuth (1992a, p. 99).

As noted in section 6.3.1, the claims made here on the basis of data from Inuktitut acquisition would be strengthened by more careful analysis of data from younger children.

6.4 Directions for further research

Several directions for further research in Inuktitut acquisition are suggested by both the data discussed in this thesis and current concerns in acquisition theory. The clearest directions involve inflection, polysynthesis and ergativity; these are sketched out below.

6.4.1 Inflection

As discussed in section 1.3, both verbal and nominal inflectional paradigms in Inuktitut are extremely rich. Inflection on both verbs and nouns is obligatory for all persons, numbers, and either cases or modalities. Apart from the nominal inflection for singular absolutive non-possessed nouns, all inflections are overt and tend to have unique forms, though some homophony does exist. This richness of inflection provides fertile ground for a detailed study of the acquisition of inflection in Inuktitut. Since inflections in adult Inuktitut are assumed to be base-generated in either or both of the heads of IP and CP (Bok-Bennema, 1991; Bittner, 1994a), early presence of inflection could be interpreted as strong evidence for the early existence of functional categories in this language, adding to crosslinguistic evidence pointing in this direction, as discussed in section 6.3.1.

6.4.2 Polysynthesis

Polysynthetic languages offer a rich and almost totally unexplored source of data relevant to language acquisition. Further analysis of processes of verb movement, including the many affixal verbs not treated in this thesis, would yield much information as to the acquisition of movement processes in general. Determination of the relationship between movement of verbs in incorporation structures and in structures involving verb raising to heads of functional categories could perhaps further enlighten current discussions in the literature linking verb movement to the presence of functional categories.

Further study of noun incorporation could also prove useful in this regard, determining ways in which it is similar to and different from verb incorporation and non-incorporating verb movement. One particularly interesting avenue of pursuit is the subgroup of noun incorporation structures involving locatives and adverbials. In these cases, it seems that a case-marked nominal is incorporated (Allen, 1988), which would be a clear violation of level-ordering constraints on word formation. This apparent violation should be investigated, and its implications for acquisition explored.

Finally, any polysynthetic language would prove interesting for research on morpheme segmentation abilities in the language learner (Peters, 1983, 1985). Research in Mohawk suggests that segmentation in that language initially occurs on a syllabic rather than morphemic basis (Mithun, 1989), though this pattern has not been observed to date in Inuktitut.

6.4.3 Ergativity

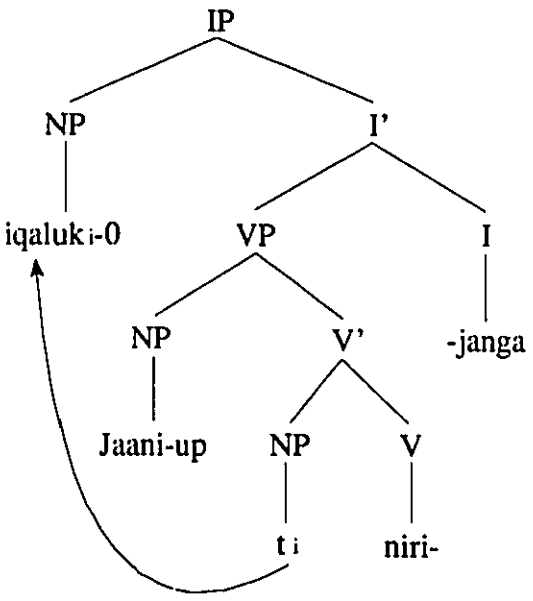
A somewhat more complicated endeavour is the study of the effect of the ergative system of Inuktitut on the acquisition of this language. Very little research has been reported on to date in the area of acquisition of ergativity. Both Pye (1990a) and Van Valin (1992) offer overviews of some of the issues inherent in acquisition of ergative languages, and a few studies of the acquisition of ergative languages are reported in the literature (Georgian: Imedadze & Tuite, 1992; Kaluli: Schieffelin, 1985; K'iche': Pye, 1980a, 1980b, 1983, 1985, 1990a, 1992, 1994; Pye & Quixtan Poz, 1988; Samoan:

Ochs, 1982, 1985, 1988; Urdu: Saleemi, 1994a, 1994b, in press; Warlpiri: Bavin & Shopen, 1985; Bavin, 1987, 1990, 1992; West Greenlandic: Fortescue, 1985, Fortescue & Lennert Olsen, 1992) in addition to one study of computer adventure games simulating L1 acquisition using an ergative miniature language (Ingram & Pye, 1993).

Inuktitut is somewhat unusual among ergative languages in that it is not split in its case-marking along lines of tense, mood or aspect, and in that it exhibits both passive and antipassive structures. Thus, it offers the opportunity to study the acquisition of ergativity uninhibited by the complications of splits, and it enables study of the effect of ergative structure on the acquisition of passive and antipassive structures.

One potentially interesting avenue into studying the effect of ergativity on acquisition in Inuktitut involves the NP-movement implicated in each of ergativity, passives, and unaccusatives, as proposed in section 3.4.2.3. Recall from discussion in sections 3.1.1 and 4.1.2 above that NP-movement of the theme argument from object position to NP,IP is implicated in passives and unaccusatives respectively. One analysis of ergativity in Inuit also assumes NP-movement of the theme argument from object position to NP,IP as a crucial component (Bittner, 1994a), as shown in (205).

(205)



The subject, base-generated in NP,VP, receives a special genitive case in that

position, while the object is forced to move due to the deficiency of the verb in its ability to license case-assignment to NP,V'.

This introduces an interesting possibility for crosslinguistic comparison. It is certainly a logical possibility that children speaking languages in which NP-movement does not occur in many structures would have more difficulty with and would acquire later such structures than children speaking languages in which NP-movement is a more common phenomenon. In this view, then, the relevant aspects of the NP-movement structure are mastered in each language more or less relative to their proliferation within that language, though the raw ability to produce them correctly is always present. This possibility is consistent with the view that frequency of input has some effect on language learning. This is not the traditional view of frequency tied to a particular lexical form - that a child will learn a certain inflection earlier if his or her caregiver produces it relatively more than other caregivers or than other inflections in input speech. Rather it represents an analogous situation in terms of abstract underlying structures. Essentially, it holds that the more an underlying structure is presented to a child, across a variety of phonological forms, the faster it will be learned.

A number of related issues would need to be explored in connection with such a hypothesis. The most prominent, perhaps, is the question of what evidence the child gets in his or her language that NP-movement is taking place. In many of the NP-movement structures, it is not immediately obvious, to the child at least, that the necessary way to analyze the structure is by means of NP-movement (cf. claims in Borer & Wexler, 1987, concerning unaccusative verbs). A second issue concerns the time of acquisition of NP-movement structures relative to other structures involving the formation of indexing chains, including movement of VP-internal subjects to NP,IP, raising constructions, and reflexives. Thirdly, one might expect Inuktitut-speaking children to have difficulty acquiring antipassive structures since they do not involve NP-movement. Antipassives might also make learning ergative structures more difficult for the children since they might initially have trouble differentiating between ergative and antipassive sentences. Fourth, a link

between emergence of passive and ergative structures in Inuktitut would be predicted and could serve as one test for the viability of the hypothesis proposed here. Finally, crosslinguistic investigation in other languages, both ergative and accusative, would be necessary.

If the hypothesis sketched here is viable, it may be that the overall importance and/or frequency of use of NP-movement in this language is one of the causes of early acquisition of passives and lack of difficulty with acquiring unaccusatives and correctly analyzing lexical causatives. In addition, the structure of ergative languages itself would pose a major problem for supporting the Maturation Hypothesis through late acquisition of the principle governing A-chain formation in NP-movement.

6.5 Conclusion

This chapter has provided a summary of the thesis and outlined the original contributions to the fields of research on Inuit languages and on crosslinguistic language acquisition. In addition, it has discussed ways in which the data presented here may contribute to two ongoing debates in the field of acquisition, namely the content of the initial state of the grammar and the ways in which the child develops from this initial state to adult competence. Finally, it has offered several directions for further research in the area of acquisition of Inuktitut.

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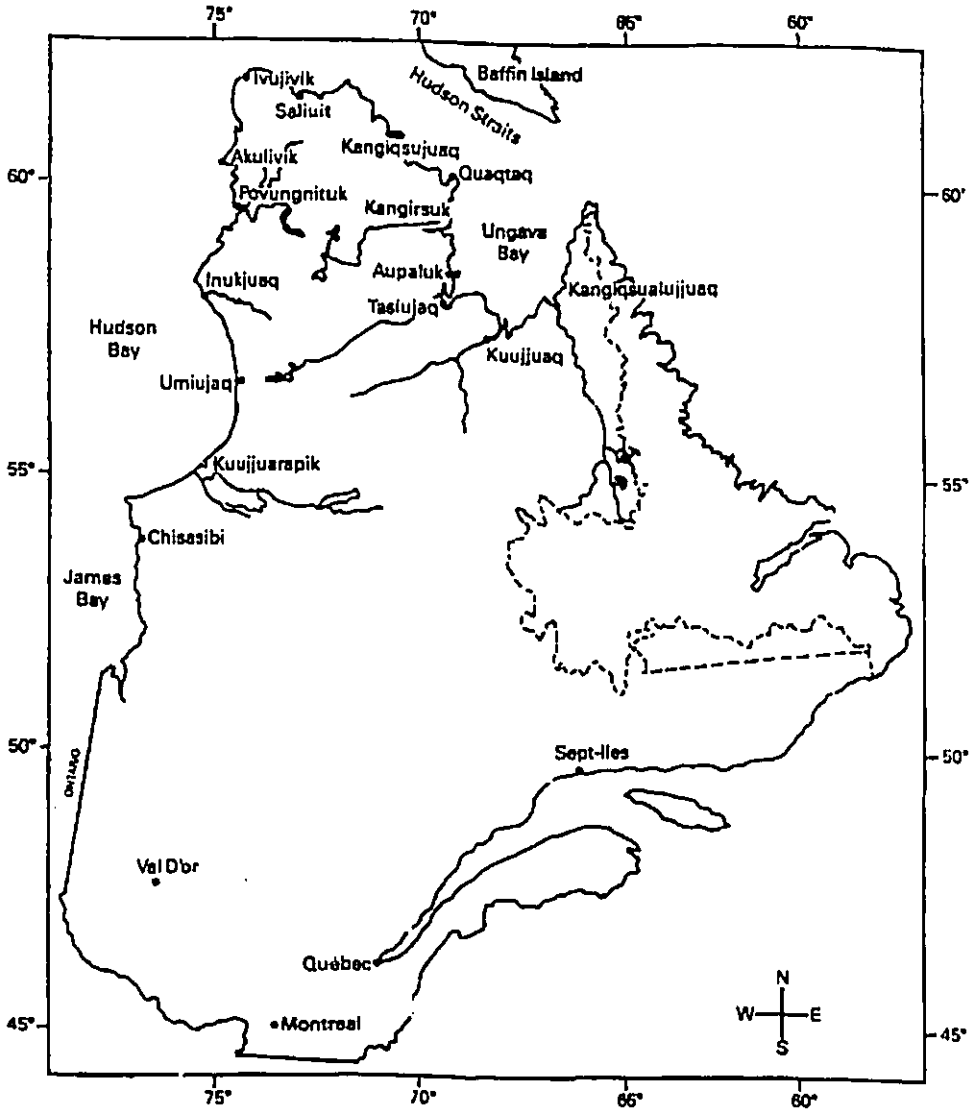
APPENDIX A
MAP INDICATING LOCATION OF QUAQTAQ



APPENDIX B
LIST OF (META)TRANSCRIPTION NOTATIONS

Terminators and linkers	
Declarative utterance	.
Exclamation	!
Incompletion	+...
Interruption	+/.
Other-completion	++
Pause	#
Question	?
Self-completion	+,
Self-interruption	+//.
Syntactic juncture	,
Retracings	
False start without retracing	<text> [/-]
Retracing without alteration	<text> [/]
Retracing with alteration	<text> [//]
Quotation	
Quoted word	<text> ["]
Quoted utterance	+"
Quotation precedes	+".
Quotation follows	+"/.
Unclear speech	
Alternative transcription	<text1> [=? text2]
Best guess at a word	<text> [?]
Phonological fragment	&
Unintelligible speech	xxx
Omissions & Errors	
Noncompletion of a word	(letters)
Error in preceding unit	<text> [*]
Information beyond the utterance	
Actions without speech	0
Explanation	[info]
Extraneous conversation	www
Paralinguistic information	[=! info]

Postcodes

[+ CQ] coding questionable enough to omit this utterance from analysis

[+ EX] utterance formed entirely of exclamatory material, fillers, or vocalizations

[+ IM] utterance formed entirely of an exact imitation of one of the 10 previous utterances of another speaker but which the child is using productively or has shown ability to use productively elsewhere in the transcript

[+ IR] utterance formed entirely of an exact imitation of one of the 10 previous utterances of another speaker which the child is parrotting and/or repeating on command (e.g. child repeating words of an utterance after a caregiver)

[+ PI] utterance only partially intelligible (e.g. inability to hear part of the utterance due to other noise, talking too softly, or unclear articulation; inability to understand the meaning intended by part of the utterance though the phonemes are clearly audible)

[+ QO] utterance formed entirely of quoted material

[+ RO] utterance formed entirely of material memorized as a routine (e.g. the alphabet, words to a song)

[+ RP] utterance formed entirely of exact repetition of one of the 10 previous utterances of the same speaker, but with a different discourse reference (e.g. asking the same question about two different referents, using the same word to refer to two identical pictures)

[+ SR] utterance formed entirely of exact repetition of one of the 10 previous utterances of the same speaker and with the same discourse reference (e.g. repetition for emphasis; repetition for clarity of comprehension of hearer)

[+ TO] utterance not properly completed (e.g. trailing off, interruption)

[+ UI] utterance not intelligible at all (e.g. inability to hear the utterance due to other noise, talking too softly, or unclear articulation; inability to understand the meaning intended by the utterance though the phonemes are clearly audible)

Note that utterances coded as [+ CQ], [+ EX], [+ IM], [+ IR], [+ PI], [+ QO], [+ RO], [+ SR], [+ TO], and [+ UI] are omitted from all analyses. All other utterances are included in all analyses.

APPENDIX C
LIST OF CODES FOR VERBAL UTTERANCES

Primary Codes

$AGT	agent of passive
$AIC	adverb incorporation construction
$ATP	antipassive construction
$ERG	two-argument inflection
$ERR	error in relevant construction
$ITR	one-argument inflection
$LIC	locative incorporation construction
$NIC	noun incorporation construction
$NSI	no stem or inflection
$OBJ	overt object present
$PAS	passive construction
$SNI	stem but no inflection
$SUB	overt subject present
$VER	verbal utterance
$XTR	non-verbal utterance including material relevant to preceding or following verbal utterance

Secondary Codes

:ai	adverbial incorporation stem
:ap	antipassive stem
:cs	causative stem
:em	empty stem
:li	locative incorporation stem
:ni	noun incorporation stem
:ps	passive stem
:uk	unknown stem (unintelligible, etc)
:vr	verb root as stem
:xx	error in construction

APPENDIX D
SAMPLE OF FULLY CODED TRANSCRIPT

@Begin
@File: JUP92 (0:00:00-1:57:21)
@Portion: JUP09F02.NOV (0:00:00-1:57:21)
@Tape: JUP09-2
@Timing: 0:00:00 Beginning of Tape

@Transcriber: Johnny Nowra; 06-AUG-1990
@Enterer: Johnny Nowra; 06-AUG-1990
@Checker: Louisa Angutigirk; 26-MAY-1992
@Coder: Shanley Allen; 14-NOV-1993

@Participants: JUP Juupi Subject; MAR Mary Mother
@Age of JUP: 2;9.5
@Birth of JUP: 26-FEB-1987

@Date: 01-DEC-1989
@Time: 9:30 AM to 12:30 PM
@Location: Quaqtaq, Quebec, Canada

@Situation: JUP is playing in the living room and talking with MAR

*JUP: imaak anaana ijukkalaujuvunga.
%eng: Mom this is how I fell.
%mor: ADV|imaak^like_this NR|anaana^mother VR|ijukkaq^fall+VV|TNS|lauju^PAST+VI|vunga^IND_1sS.
%cod: $VER $ITR:vr
%err: ijukkalaujuvunga = ijukkalaurqunga $TNS
%tim: 0:22:14
%add: MAR
%sit: demonstrates to MAR how he fell
%com: assume tense is incorrect based on MAR's next utterance which indicates this action happened not in the far past

*MAR: aaa ijukkalaurtualuuvutit taimailingatsutit.
%eng: yes that is how you fell (yesterday).
%tim: 0:22:17
%add: JUP

*JUP: imailirisuarsunga [*].
%eng: that is how I tried it.
%mor: <ADV|imaak^like_this+VZ|it^COP+VV|IV|li^do+VV|IV|gasuaq^try +VI|tsunga^CTM_1sS> [*].
%cod: $VER $AIC $ITR:ai

%err: imailirisuarsunga = imailirasuarsunga $PHO $SUB
%tim: 0:22:23
%add: MAR
%sit: demonstrates how he tried to do it

*MAR: iim.
%eng: yes.
%tim: 0:22:25
%add: JUP

*MAR: naukkuut aannilaurqit?
%eng: where did you get hurt?
%tim: 0:22:26
%add: JUP

*JUP: mauna.
%eng: here.
%mor: LRIma^here+LIluuna^VIA.
%tim: 0:22:27
%add: MAR
%sit: touches his back of the head to show where he got hurt

*JUP: niarquasunga.
%eng: I hurt my head.
%mor: VRIniarquaq^bump_head+VIltsunga^CTM_1sS.
%cod: $VER $ITR:vr
%tim: 0:22:29
%add: MAR
%sit: falls on the couch and does some sort of martial arts

*MAR: aaa.
%eng: I see.
%tim: 0:22:31
%add: JUP

*JUP: iti(gaa)kka nanitsuti?
%eng: Where were my feet?
%mor: NRIitiga^foot+NIIVkka^ABS_1Sdu
WHInani^whereat+VZlit^COP+VIltsutik^CTM_4dpS?
%cod: $VER $LIC $ITR:li $SUB
%tim: 0:22:33
%add: MAR
%com: swallows the GA

*MAR: sua?
%eng: what?
%tim: 0:22:36
%add: JUP

*JUP: itigaakka nanitsuti?
%eng: where were my feet?
%mor: NRlitiga^foot+NIlVkka^ABS_1Sdu
W'Hlnani^whereat+VZlit^COP+VIltsutik^CTM_4dpS? [+ SR]
%cod: $VER $LIC $ITR:li $SUB
%tim: 0:22:37
%add: MAR

*MAR: maaniitsuti.
%eng: they were here.
%tim: 0:22:38
%add: JUP
%sit: taps the couch to show where they were

*JUP: asuu.
%eng: okay.
%mor: IACTlasuu^okay.
%tim: 0:22:43
%add: MAR

*MAR: ilaaniunngitu ilai katakallasutit?
%eng: you accidentally fell right?
%tim: 0:22:48
%add: JUP

*JUP: aaa.
%eng: right.
%mor: IACTlaaa^yes.
%tim: 0:22:51
%add: MAR

*JUP: namuut?
%eng: where?
%mor: WHlna^where+NIlmut^ALL_SG?
%tim: 0:22:53
%add: MAR

*MAR: natirmut.
%eng: on the floor.
%tim: 0:22:54
%add: JUP

*JUP: aaa.
%eng: yes.
%mor: IACTlaaa^yes.
%tim: 0:22:56
%add: MAR

*JUP: una siqur(ngujaq) +...
%eng: this clo(ck) +...
%mor: DR|u^here&SG_ST+DI|na^ABS_SG &siqur +... [+ TO]
%tim: 0:22:57
%add: MAR
%sit: points to the clock on the wall

*JUP: anaana &siqu &siqu +...
%eng: mother &clo &clo +...
%mor: NR|anaana^mother &siqu &siqu +... [+ TO]
%tim: 0:23:00
%add: MAR
%sit: goes to the clock on the wall

*JUP: una siqurnguja [*] surqajanngituq?
%eng: this clock doesn't work?
%mor: DR|u^here&SG_ST+DI|na^ABS_SG NR|siqirngujaq^clock [*]
VR|suq^do+VV|IV|qajaq^can+VV|nngit^NEG+VI|juq^PAR_3sS?
%cod: $VER $ITR:vr $SUB
%err: siqurnguja = siqirngujaq $PHO $SUB
%tim: 0:23:06
%add: MAR
%sit: touches the clock
%com: broken = siqumitsimajuq

*MAR: aaa.
%eng: yes.
%tim: 0:23:09
%add: JUP

*JUP: 0.
%eng: 0.
%mor: 0.
%tim: 0:23:11
%sit: plays with the clock

*MAR: kamaalunnagu.
%eng: don't touch it.
%tim: 0:23:12
%add: JUP

*JUP: kinau pialua?
%eng: whose is that?
%mor: WH|kina^who+NI|up^ERG_SG
NR|PLEON|pi^thing+NN|AUG|aluk^EMPH+NI|nga^ABS_3Ssg?
%tim: 0:23:14
%add: MAR
%sit: balances on the couch's arm

*MAR: ataatappit.
%eng: it's your father's.
%tim: 0:23:16
%add: JUP

*JUP: asuu.
%eng: okay.
%mor: IACTlasuu^okay.
%tim: 0:23:17
%add: MAR

*JUP: 0.
%eng: 0.
%mor: 0.
%tim: 0:23:19
%sit: proudly jumps over MAR on the couch

*MAR: ijukkakasagavit.
%eng: you nearly fell.
%tim: 0:23:22
%add: JUP

*JUP: namuu?
%eng: where?
%mor: WHlnamut^whereto?
%tim: 0:23:24
%add: MAR

*MAR: natirmut.
%eng: to the floor.
%tim: 0:23:25
%add: JUP

*JUP: maungaa?
%eng: here?
%mor: LRlma^here+LIlunnga^ALL?
%tim: 0:23:26
%add: MAR
%sit: points to the floor

*MAR: aaa.
%eng: yes.
%tim: 0:23:26
%add: JUP

*JUP: kasanngitungaa.
%eng: I didn't nearly (fall).
%mor: VVlkasak^almost+VVlnngit^NEG+VIljunga^PAR_1sS.

%cod: $VER $ITR:cm
%tim: 0:23:28
%add: MAR
%sit: JUP is showing off

*MAR: !utuu?
%eng: really?
%tim: 0:23:29
%add: JUP

*JUP: aaa.
%eng: yes.
%mor: IACT|aaa^yes.
%tim: 0:23:32
%sit: jumps to the floor from the couch and jumps to the pillow

*JUP: aahaah!
%eng: ouch!
%mor: EXCL|aah^ouch! [+ EX]
%tim: 0:23:36
%add: MAR
%sit: hits the floor with his knee

*JUP: <imirta &ts &ts quuliratta> [*]!
%eng: I think they're going to bring us water!
%mor: <NR|imiq^water+VZ|taq^fetch+0VV|VA|jau^PASS+VV|qquuq^pro
bably+VV|TNS|liq^PRES+VI|gatta^CSV_1pS> [*]!
%cod: $VER $PAS:ni $ITR:ni $ERR
%err: imirta &ts &ts quuliratta = imirtatauquuliratta $MOR
%tim: 0:23:40
%add: MAR
%sit: hears a snowmobile

*MAR: imirtatausirquuriirivita [?]?
%eng: are we probably going to get water delivered again?
%tim: 0:23:43
%add: JUP

*JUP: aaa.
%eng: yes.
%mor: IACT|aaa^yes.
%tim: 0:23:45
%add: MAR
%sit: checks out the window

*JUP: pisunngitutuu [*].
%eng: not walking.
%mor: <VR|pisuk^walk+VV|nngit^NEG+VI|juq^PAR_3sS> [*].

%cod: $VER $ITR:vr
%err: pisunngitutuu = pisunngituq $PHO
%tim: 0:23:49
%add: MAR

*JUP: anaana kalijaugumajunga [*]!
%eng: Mom I'd like to get pulled!
%mor: NR|anaana^mother
<VR|kalik^tow+VV|VAljau^PASS+VV|IV|guma^want+VI|junga^P
AR_1sS> [*]!
%cod: $VER $PAS:vr $ITR:ps
%err: kalijaugumajunga = kalittaugumajunga $PHO
%tim: 0:24:09
%add: MAR
%sit: sees a snowmobile
%com: not really incorrect due to change in pronunciation standards

*MAR: kalijaugumavit [*]?
%eng: you'd like to get pulled?
%err: kalijaugumavit = kalittaugumavit $PHO
%tim: 0:24:12
%add: JUP
%com: not really incorrect due to change in pronunciation standards;
MAR is probably imitating JUP here

*JUP: aaa!
%eng: yes!
%mor: IACT|aaa^yes!
%tim: 0:24:14
%add: MAR

*MAR: kinamut?
%eng: by whom?
%tim: 0:24:15
%add: JUP

*JUP: ataataganut!
%eng: by my dad!
%mor: NR|ataata^father+NI|ganut^ALL_1Ssg!
%cod: $XTR $PAS $AGT
%tim: 0:24:17
%add: MAR

*MAR: asuu.
%eng: I see.
%tim: 0:24:17
%add: JUP

*MAR: kaligalii?
%eng: does he have a sled?
%tim: 0:24:18
%add: JUP

*JUP: aaa.
%eng: yes.
%mor: IACT|aaa^yes.
%tim: 0:24:19
%add: MAR

*JUP: qaigit!
%eng: come here!
%mor: VR|qai^come+VI|git^IMP_2sS!
%cod: $VER $ITR:vr
%tim: 0:24:22
%add: MAR
%sit: MAR goes to him at the window

*JUP: kaligaqarquq!
%eng: there is a sled (for pulling)!
%mor: NR|kaligaq^towed_object+VZ|qaq^have+VI|vuq^IND_3sS!
%cod: $VER $NIC $ITR:ni
%tim: 0:24:25
%add: MAR
%com: non-lexicalized form is:
V|kali^pull+NN|gaq^that_which_is_always_treated_thus

*MAR: ilai kaligaqartuq?
%eng: there is a sled for pulling isn't that right?
%tim: 0:24:33
%add: JUP

*JUP: aaa.
%eng: yes.
%mor: IACT|aaa^yes.
%tim: 0:24:35
%add: MAR

*JUP: kalijaugumajunga [*].
%eng: I'd like to get pulled.
%mor: VR|kalik^tow+VV|VA|jau^PASS+VV|IV|guma^want+VI|junga^PA
R_1sS.
%cod: $VER $PAS:vr $ITR:ps
%err: kalijaugumajunga = kalittaugumajunga $PHO
%tim: 0:24:36
%add: MAR
%com: not really incorrect due to change in pronunciation standards